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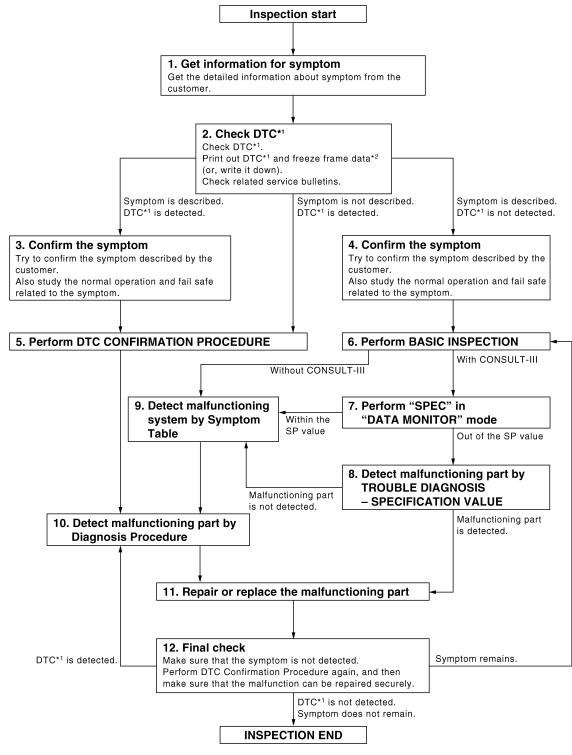
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BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

OVERALL SEQUENCE



^{*1:} Include 1st trip DTC.

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^{*2:} Include 1st trip freeze frame data.

DIAGNOSIS AND REPAIR WORKFLOW

[FOR CALIFORNIA] < BASIC INSPECTION >

1.GET INFORMATION FOR SYMPTOM

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the "Diagnostic Work Sheet". (Refer to EC-20, "Diagnostic Work Sheet".)

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>> GO TO 2.

2.CHECK DTC

- 1. Check DTC.
- 2. Perform the following procedure if DTC is displayed.
- Record DTC and freeze frame data. (Print them out with CONSULT-III or GST.)
- Erase DTC. (Refer to EC-92, "Diagnosis Description".)
- Study the relationship between the cause detected by DTC and the symptom described by the customer. (Symptom Table is useful. Refer to <u>EC-475</u>, "Symptom Table".)
- Check related service bulletins for information.

Is any symptom described and is any DTC detected?

Symptom is described, DTC is detected>>GO TO 3.

Symptom is described, DTC is not detected>>GO TO 4.

Symptom is not described, DTC is detected>>GO TO 5.

3.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer (except MIL ON).

Also study the normal operation and fail safe related to the symptom. Refer to EC-479, "Description" and EC-460, "Fail Safe".

Diagnosis Work Sheet is useful to verify the incident.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

4. CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

Also study the normal operation and fail safe related to the symptom. Refer to EC-479, "Description" and EC-460, "Fail Safe".

Diagnosis Work Sheet is useful to verify the incident.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 6.

5. PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC CONFIRMATION PROCEDURE for the displayed DTC, and then make sure that DTC is detected again.

If two or more DTCs are detected, refer to EC-462, "DTC Inspection Priority Chart" and determine trouble diagnosis order.

NOTE:

- Freeze frame data is useful if the DTC is not detected.
- Perform Component Function Check if DTC CONFIRMATION PROCEDURE is not included on Service Manual. This simplified check procedure is an effective alternative though DTC cannot be detected during this check.

If the result of Component Function Check is NG, it is the same as the detection of DTC by DTC CONFIR-MATION PROCEDURE.

Is DTC detected?

YES >> GO TO 10.

NO >> Check according to GI-41, "Intermittent Incident".

6.PERFORM BASIC INSPECTION

Perform EC-22, "BASIC INSPECTION: Special Repair Requirement".

Do you have CONSULT-III?

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION > [FOR CALIFORNIA]

YES >> GO TO 7. NO >> GO TO 9.

7. PERFORM SPEC IN DATA MONITOR MODE

(P)With CONSULT-III

Make sure that "MAS A/F SE-B1", "B/FUEL SCHDL" and "A/F ALPHA-B1" are within the SP value using CON-SULT-III in "SPEC" of "DATA MONITOR" mode. Refer to <u>EC-116</u>, "Component Function Check".

Is the measurement value within the SP value?

YES >> GO TO 9. NO >> GO TO 8.

8.DETECT MALFUNCTIONING PART BY TROUBLE DIAGNOSIS - SPECIFICATION VALUE

Detect malfunctioning part according to EC-117, "Diagnosis Procedure".

Is malfunctioning part detected?

YES >> GO TO 11. NO >> GO TO 9.

9.DETECT MALFUNCTIONING SYSTEM BY SYMPTOM TABLE

Detect malfunctioning system according to <u>EC-475</u>. "Symptom Table" based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptom.

>> GO TO 10.

10. DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

Inspect according to Diagnosis Procedure of the system.

NOTE:

The Diagnosis Procedure in EC section described based on open circuit inspection. A short circuit inspection is also required for the circuit check in the Diagnosis Procedure. For details, refer to Circuit Inspection in GI-44. "Circuit Inspection".

Is malfunctioning part detected?

YES >> GO TO 11.

NO >> Monitor input data from related sensors or check the voltage of related ECM terminals using CON-SULT-III. Refer to EC-436, "Reference Value".

11. REPAIR OR REPLACE THE MALFUNCTIONING PART

- 1. Repair or replace the malfunctioning part.
- Reconnect parts or connectors disconnected during Diagnosis Procedure again after repair and replacement.
- 3. Check DTC. If DTC is displayed, erase it. Refer to EC-92, "Diagnosis Description".

>> GO TO 12.

12. FINAL CHECK

When DTC was detected in step 2, perform DTC CONFIRMATION PROCEDURE or Component Function Check again, and then make sure that the malfunction have been repaired securely.

When symptom was described from the customer, refer to confirmed symptom in step 3 or 4, and make sure that the symptom is not detected.

Is DTC detected and does symptom remain?

YES-1 >> DTC is detected: GO TO 10.

YES-2 >> Symptom remains: GO TO 6.

NO >> Before returning the vehicle to the customer, make sure to erase unnecessary DTC in ECM and TCM (Transmission Control Module). (Refer to EC-92, "Diagnosis Description".) If the completion of SRT is needed, drive vehicle under the specific DRIVING PATTERN in EC-467, "How to Set SRT Code".

Diagnostic Work Sheet

INFOID:0000000001715007

DESCRIPTION

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION > [FOR CALIFORNIA]

There are many operating conditions that lead to the malfunction of engine components. A good grasp of such conditions can make troubleshooting faster and more accurate.

In general, each customer feels differently about an incident. It is important to fully understand the symptoms or conditions for a customer complaint.

Utilize a diagnostic worksheet like the one on the next page in order to organize all the information for troubleshooting.

Some conditions may cause the MIL to come on steady or blink and DTC to be detected. Examples:

- Vehicle ran out of fuel, which caused the engine to misfire.
- Fuel filler cap was left off or incorrectly screwed on, allowing fuel to evaporate into the atmosphere.

KEY POINTS

WHAT Vehicle & engine model
WHEN Date, Frequencies
WHERE..... Road conditions
HOW Operating conditions,
Weather conditions,

Symptoms

SEF907L

WORKSHEET SAMPLE

Customer nar	ne MR/MS	Model & Year	VIN
Engine #		Trans.	Mileage
Incident Date		Manuf. Date	In Service Date
Fuel and fuel	filler cap	☐ Vehicle ran out of fuel causing misfire☐ Fuel filler cap was left off or incorrectly	screwed on.
	☐ Startability	☐ Impossible to start ☐ No combustion ☐ Partial combustion ☐ Partial combustion affected by throttle position ☐ Partial combustion NOT affected by throttle position ☐ Possible but hard to start ☐ Others []	
Symptoms	☐ Idling	☐ No fast idle ☐ Unstable ☐ H☐ Others [ligh idle ☐ Low idle
,,,,	☐ Driveability	☐ Stumble ☐ Surge ☐ Knock ☐ Lack of power ☐ Intake backfire ☐ Exhaust backfire ☐ Others []	
	☐ Engine stall	☐ At the time of start ☐ While idling ☐ While accelerating ☐ While dece ☐ Just after stopping ☐ While loadi	lerating
Incident occur	rrence	☐ Just after delivery ☐ Recently ☐ In the morning ☐ At night ☐	☐ In the daytime
Frequency		☐ All the time ☐ Under certain cond	ditions
Weather cond	litions	☐ Not affected	
	Weather	☐ Fine ☐ Raining ☐ Snowing	☐ Others []
	Temperature	☐ Hot ☐ Warm ☐ Cool ☐] Cold ☐ Humid °F
		☐ Cold ☐ During warm-up ☐ /	After warm-up
Engine conditions		4,000 6,000 8,000 rpm	
Road conditio	ns	☐ In town ☐ In suburbs ☐ Hig	hway
Driving conditions		 Not affected At starting While idling At racing While accelerating While cruising While decelerating While turning (RH/LH) 	
Vehicle speed		30 40 50 60 MPH	
Malfunction in	dicator lamp	☐ Turned on ☐ Not turned on	

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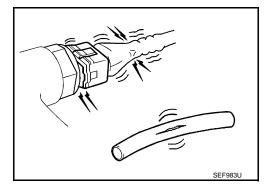
INSPECTION AND ADJUSTMENT BASIC INSPECTION

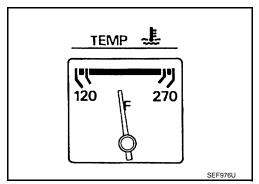
BASIC INSPECTION: Special Repair Requirement

INFOID:0000000001715008

1.INSPECTION START

- 1. Check service records for any recent repairs that may indicate a related malfunction, or a current need for scheduled maintenance.
- 2. Open engine hood and check the following:
- Harness connectors for improper connections
- Wiring harness for improper connections, pinches and cut
- Vacuum hoses for splits, kinks and improper connections
- Hoses and ducts for leaks
- Air cleaner clogging
- Gasket
- 3. Confirm that electrical or mechanical loads are not applied.
- Headlamp switch is OFF.
- Air conditioner switch is OFF.
- Rear window defogger switch is OFF.
- Steering wheel is in the straight-ahead position, etc.
- 4. Start engine and warm it up until engine coolant temperature indicator points the middle of gauge. Ensure engine stays below 1,000 rpm.

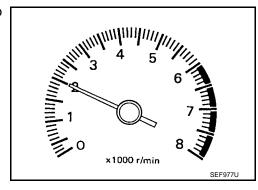




- 5. Run engine at about 2,000 rpm for about 2 minutes under no load.
- 6. Make sure that no DTC is displayed with CONSULT-III or GST.

Is any DTC detected?

YES >> GO TO 2. NO >> GO TO 3.



2. REPAIR OR REPLACE

Repair or replace components as necessary according to corresponding Diagnosis Procedure.

>> GO TO 3

3. CHECK TARGET IDLE SPEED

1. Run engine at about 2,000 rpm for about 2 minutes under no load.

[FOR CALIFORNIA] < BASIC INSPECTION >

Rev engine (2,000 to 3,000 rpm) two or three times under no load, then run engine at idle speed for about 1 minute.

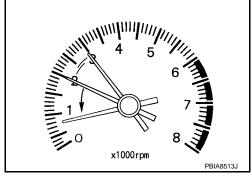
Check idle speed.

For procedure, refer to EC-26, "IDLE SPEED: Special Repair Requirement".

For specification, refer to EC-491, "Idle Speed".

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 4.



f 4.PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Stop engine.

2. Perform EC-27, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 5.

${f 5}$.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 6.

6.PERFORM IDLE AIR VOLUME LEARNING

Perform EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 7.

NO >> Follow the instruction of Idle Air Volume Learning. Then GO TO 4.

7.CHECK TARGET IDLE SPEED AGAIN

Start engine and warm it up to normal operating temperature.

2. Check idle speed.

For procedure, refer to EC-26, "IDLE SPEED: Special Repair Requirement".

For specification, refer to EC-491, "Idle Speed".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 8.

8.DETECT MALFUNCTIONING PART

Check the Following.

- Check camshaft position sensor (PHASE) and circuit. Refer to <u>EC-256, "DTC Logic"</u>.
- Check crankshaft position sensor (POS) and circuit. Refer to EC-252, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace. Then GO TO 4.

9. CHECK ECM FUNCTION

- Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)
- 2. Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs. Refer to EC-25, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> GO TO 4.

10.CHECK IGNITION TIMING

Run engine at idle.

Revision: 2008 January

Check ignition timing with a timing light.

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EC-23

2008 Rogue

< BASIC INSPECTION >

[FOR CALIFORNIA]

For procedure, refer to <u>EC-26, "IGNITION TIMING: Special Repair Requirement"</u>. For specification, refer to EC-491, "Ignition Timing".

Is the inspection result normal?

YES >> GO TO 19. NO >> GO TO 11.

11. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

- Stop engine.
- Perform <u>EC-27</u>, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 12.

12. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 13.

13. PERFORM IDLE AIR VOLUME LEARNING

Perform EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 14.

NO >> Follow the instruction of Idle Air Volume Learning. Then GO TO 4.

14. CHECK TARGET IDLE SPEED AGAIN

- 1. Start engine and warm it up to normal operating temperature.
- Check idle speed.

For procedure, refer to EC-26, "IDLE SPEED: Special Repair Requirement".

For specification, refer to EC-491, "Idle Speed".

Is the inspection result normal?

YES >> GO TO 15. NO >> GO TO 17.

15. CHECK IGNITION TIMING AGAIN

- 1. Run engine at idle.
- Check ignition timing with a timing light.

For procedure, refer to EC-26, "IGNITION TIMING: Special Repair Requirement".

For specification, refer to EC-491, "Ignition Timing".

Is the inspection result normal?

YES >> GO TO 19. NO >> GO TO 16.

16. CHECK TIMING CHAIN INSTALLATION

Check timing chain installation. Refer to EM-69, "Removal and Installation".

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair the timing chain installation. Then GO TO 4.

17. DETECT MALFUNCTIONING PART

Check the following.

- Check camshaft position sensor (PHASE) and circuit. Refer to EC-256, "DTC Logic".
- Check crankshaft position sensor (POS) and circuit. Refer to EC-252, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 18.

NO >> Repair or replace. Then GO TO 4.

18. CHECK ECM FUNCTION

< BASIC INSPECTION > [FOR CALIFORNIA]

1. Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)

2. Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs. Refer to EC-25, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

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>> GO TO 4.

19. INSPECTION END

If ECM is replaced during this BASIC INSPECTION procedure, go to <u>EC-25</u>, "ADDITIONAL SERVICE WHEN <u>REPLACING CONTROL UNIT</u>: Special Repair Requirement".

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>> INSPECTION END

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Description

INFOID:0000000001715009

When replacing ECM, this procedure must be performed.

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement

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1. PERFORM INITIALIZATION OF NATS SYSTEM AND REGISTRATION OF ALL NATS IGNITION KEY IDS

Refer to <u>SEC-9</u>, "ECM RE-COMMUNICATING FUNCTION: Special Repair Requirement" (With Intelligent key system), <u>SEC-168</u>, "ECM RE-COMMUNICATING FUNCTION: Special Repair Requirement" (Without Intelligent key system).

>> GO TO 2.

2.PERFORM VIN REGISTRATION

Refer to EC-26, "VIN REGISTRATION: Special Repair Requirement".

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>> GO TO 3.

3.PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-27, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

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>> GO TO 4.

4. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 5.

5. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

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>> END

IDLE SPEED

IDLE SPEED: Description

INFOID:0000000001715011

This describes how to check the idle speed. For the actual procedure, follow the instructions in "BASIC INSPECTION".

< BASIC INSPECTION > [FOR CALIFORNIA]

IDLE SPEED: Special Repair Requirement

INFOID:0000000001715012

1. CHECK IDLE SPEED

(P)With CONSULT-III

Check idle speed in "DATA MONITOR" mode with CONSULT-III.

Check idle speed with Service \$01 of GST.

>> INSPECTION END

IGNITION TIMING

IGNITION TIMING: Description

INFOID:0000000001715013

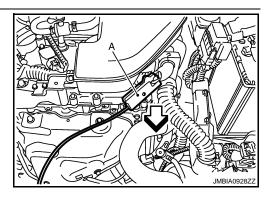
This describes how to check the ignition timing. For the actual procedure, follow the instructions in "BASIC INSPECTION".

IGNITION TIMING: Special Repair Requirement

INFOID:0000000001715014

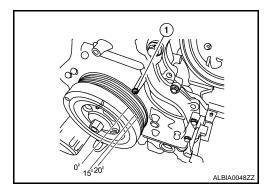
1. CHECK IGNITION TIMING

- 1. Attach timing light (A) to No. 1 ignition coil wire as shown.
- <: Vehicle front



- Check ignition timing.
- Timing indicator (1)

>> INSPECTION END



VIN REGISTRATION

VIN REGISTRATION: Description

INFOID:0000000001715015

VIN Registration is an operation to registering VIN in ECM. It must be performed each time ECM is replaced. **NOTE:**

Accurate VIN which is registered in ECM may be required for Inspection & Maintenance (I/M).

VIN REGISTRATION: Special Repair Requirement

INFOID:0000000001715016

1. CHECK VIN

Check the VIN of the vehicle and note it. Refer to GI-22, "Information About Identification or Model Code".

>> GO TO 2.

INSPECTION AND ADJUSTMENT	
< BASIC INSPECTION > [FOR CALIFORNIA]	
2.PERFORM VIN REGISTRATION	А
 With CONSULT-III 1. Turn ignition switch ON and engine stopped. 2. Select "VIN REGISTRATION" in "WORK SUPPORT" mode. 3. Follow the instruction of CONSULT-III display. 	EC
>> END ACCELERATOR PEDAL RELEASED POSITION LEARNING	С
ACCELERATOR PEDAL RELEASED POSITION LEARNING: Description INFOID:00000001715017	D
Accelerator Pedal Released Position Learning is a function of ECM to learn the fully released position of the accelerator pedal by monitoring the accelerator pedal position sensor output signal. It must be performed each time harness connector of accelerator pedal position sensor or ECM is disconnected.	E
ACCELERATOR PEDAL RELEASED POSITION LEARNING : Special Repair Requirement	F
1.start	
 Make sure that accelerator pedal is fully released. Turn ignition switch ON and wait at least 2 seconds. Turn ignition switch OFF and wait at least 10 seconds. Turn ignition switch ON and wait at least 2 seconds. Turn ignition switch OFF and wait at least 10 seconds. 	G H
>> END THROTTLE VALVE CLOSED POSITION LEARNING THROTTLE VALVE CLOSED POSITION LEARNING : Description	I
THROTTLE VALVE CLOSED POSITION LEARNING: Description Throttle Valve Closed Position Learning is a function of ECM to learn the fully closed position of the throttle valve by monitoring the throttle position sensor output signal. It must be performed each time harness connector of electric throttle control actuator or ECM is disconnected.	J
THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement	K
1.START	L
 Make sure that accelerator pedal is fully released. Turn ignition switch ON. Turn ignition switch OFF and wait at least 10 seconds. Make sure that throttle valve moves during above 10 seconds by confirming the operating sound. 	M
>> END IDLE AIR VOLUME LEARNING	N
IDLE AIR VOLUME LEARNING : Description	0

Idle Air Volume Learning is a function of ECM to learn the idle air volume that keeps each engine idle speed within the specific range. It must be performed under any of the following conditions:

INFOID:0000000001715022

- Each time electric throttle control actuator or ECM is replaced.
- Idle speed or ignition timing is out of specification.

IDLE AIR VOLUME LEARNING : Special Repair Requirement

1.PRECONDITIONING

Make sure that all of the following conditions are satisfied.

Revision: 2008 January EC-27 2008 Rogue

< BASIC INSPECTION > [FOR CALIFORNIA]

Learning will be cancelled if any of the following conditions are missed for even a moment.

- Battery voltage: More than 12.9V (At idle)
- Engine coolant temperature: 70 100°C (158 212°F)
- PNP switch: ON
- · Electric load switch: OFF

(Air conditioner, headlamp, rear window defogger)

On vehicles equipped with daytime light systems, if the parking brake is applied before the engine is started the headlamp will not be illuminated.

- Steering wheel: Neutral (Straight-ahead position)
- Vehicle speed: Stopped
- Transmission: Warmed-up
- With CONSULT-III: Drive vehicle until "ATF TENP SEN" in "DATA MONITOR" mode of "CVT" system indicates less than 0.9V.
- Without CONSULT-III: Drive vehicle for 10 minutes.

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

2. IDLE AIR VOLUME LEARNING

(P)With CONSULT-III

- Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-27</u>. "ACCELERATOR PEDAL <u>RELEASED POSITION LEARNING</u>: <u>Special Repair Requirement"</u>.
- Perform Throttle Valve Closed Position Learning. Refer to <u>EC-27</u>, "THROTTLE VALVE CLOSED POSI-TION LEARNING: Special Repair Requirement".
- 3. Start engine and warm it up to normal operating temperature.
- 4. Select "IDLE AIR VOL LEARN" in "WORK SUPPORT" mode.
- 5. Touch "START" and wait 20 seconds.

Is "CMPLT" displayed on CONSULT-III screen?

YES >> GO TO 4. NO >> GO TO 5.

3.IDLE AIR VOLUME LEARNING

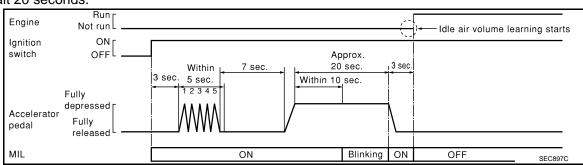
⋈Without CONSULT-III

NOTE:

- It is better to count the time accurately with a clock.
- It is impossible to switch the diagnostic mode when an accelerator pedal position sensor circuit has a malfunction.
- Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-27</u>, "ACCELERATOR PEDAL <u>RELEASED POSITION LEARNING</u>: Special Repair Requirement".
 Perform Throttle Valve Closed Position Learning. Refer to <u>EC-27</u>, "THROTTLE VALVE CLOSED POSI-
- Perform Throttle Valve Closed Position Learning. Refer to <u>EC-27</u>, "THROTTLE VALVE CLOSED POSI-TION LEARNING: Special Repair Requirement".
- 3. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 5. Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 6. Repeat the following procedure quickly five times within 5 seconds.
- Fully depress the accelerator pedal.
- Fully release the accelerator pedal.
- 7. Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 20 seconds until the MIL stops blinking and turned ON.
- 8. Fully release the accelerator pedal within 3 seconds after the MIL turned ON.
- Start engine and let it idle.

[FOR CALIFORNIA] < BASIC INSPECTION >

10. Wait 20 seconds.



>> GO TO 4.

4. CHECK IDLE SPEED AND IGNITION TIMING

Rev up the engine two or three times and make sure that idle speed and ignition timing are within the specifications.

ITEM	SPECIFICATION	
Idle speed	700 ± 50 rpm (in P or N position)	
Ignition timing	15 ± 5° (in P or N position)	

Is the inspection result normal?

YES >> INSPECTION END

${f 5}$.DETECT MALFUNCTIONING PART

Check the following

- Check that throttle valve is fully closed.
- Check PCV valve operation.
- Check that downstream of throttle valve is free from air leakage.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning part.

$oldsymbol{6}.$ DETECT MALFUNCTIONING PART

Engine component parts and their installation condition are questionable. Check and eliminate the cause of the incident.

It is useful to perform "TROUBLE DIAGNOSIS - SPECIFICATION VALUE". Refer to EC-116, "Description". If any of the following conditions occur after the engine has started, eliminate the cause of the incident and perform Idle Air Volume Learning all over again:

- · Engine stalls.
- · Erroneous idle.

>> INSPECTION END

MIXTURE RATIO SELF-LEARNING VALUE CLEAR

MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Description

This describes how to erase the mixture ratio self-learning value. For the actual procedure, follow the instructions in "Diagnosis Procedure".

MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement

1.START

(P)With CONSULT-III

- Start engine and warm it up to normal operating temperature.
- Select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CONSULT-III.

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2008 Rogue

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< BASIC INSPECTION > [FOR CALIFORNIA]

3. Clear mixture ratio self-learning value by touching "CLEAR".

With GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF.
- 3. Disconnect mass air flow sensor harness connector.
- 4. Restart engine and let it idle for at least 5 seconds.
- 5. Stop engine and reconnect mass air flow sensor harness connector.
- 6. Select Service \$03 with GST. Make sure DTC P0102 is detected.
- 7. Select Service \$04 with GST to erase the DTC P0102.

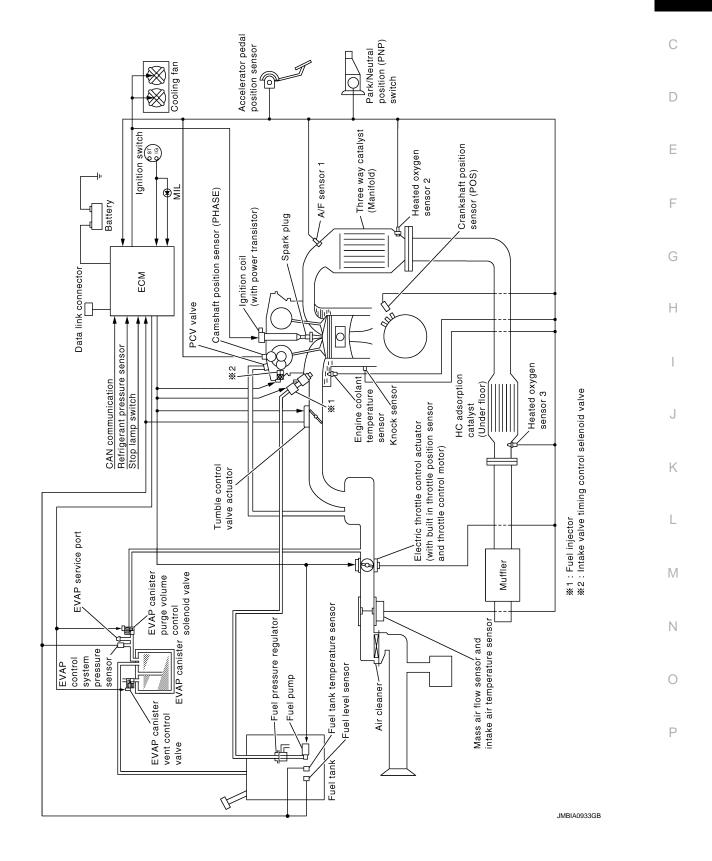
>> END

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FUNCTION DIAGNOSIS

ENGINE CONTROL SYSTEM

System Diagram



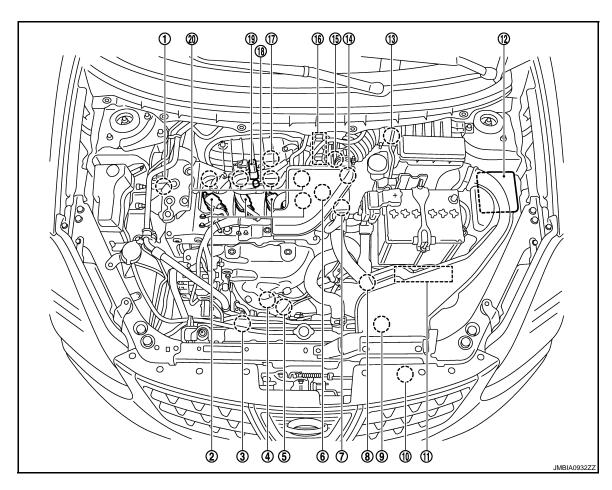
System Description

INFOID:0000000001715026

ECM performs various controls such as fuel injection control and ignition timing control.

Component Parts Location

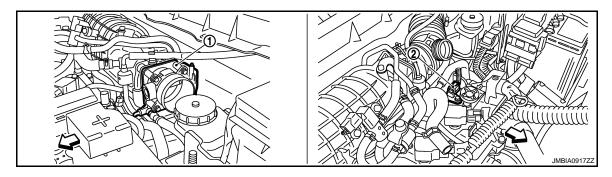
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- Intake valve timing control solenoid
- Air fuel ratio (A/F) sensor 1 4.
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. temperature sensor)
- 16. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 19. EVAP canister purge volume control 20. Fuel injector solenoid valve

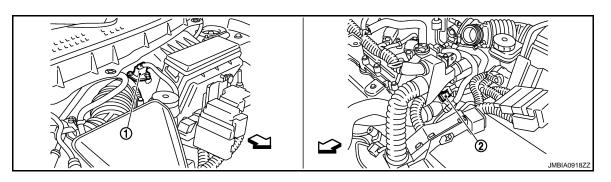
- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- 8. Park/neutral position (PNP) switch
- 11. ECM
- Tumble control valve actuator
- 17. Knock sensor

- Cooling fan motor-2 3.
- Camshaft position sensor (PHASE) 6.
- Cooling fan motor-1 9.
- IPDM E/R 12.
- Crankshaft position sensor (POS)
- 18. EVAP service port

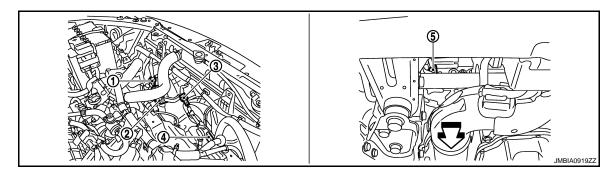


- 1. Electric throttle control actuator
- 2. Camshaft position sensor (PHASE)

√ Vehicle front



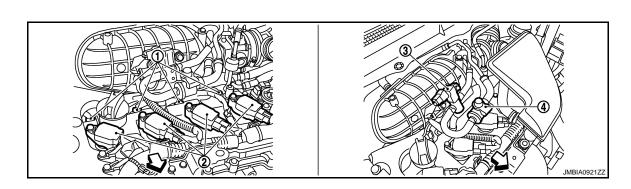
- . Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)
- ∀ Vehicle front



- Cooling fan motor-1 harness connector
- 2. Cooling fan motor-1
- 3. Cooling fan motor-2 harness connector

- 4. Cooling fan motor-2
- ✓ Vehicle front

5. Crankshaft position sensor (POS)



Revision: 2008 January EC-33 2008 Rogue

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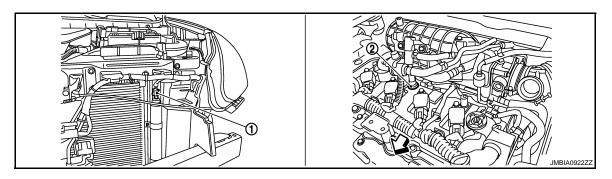
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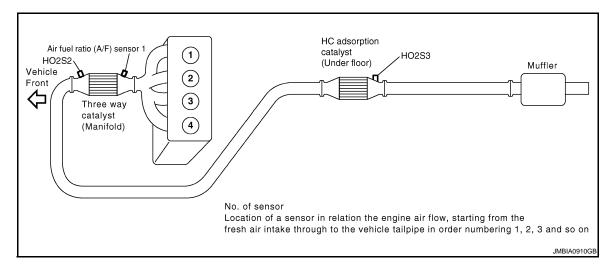
Fuel injector

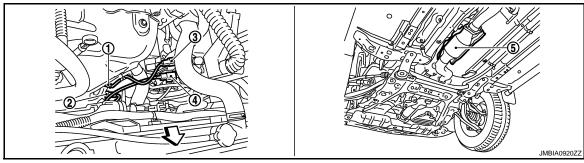
- 2. Ignition coil (with power transistor) and spark plug
- 3. EVAP canister purge volume control solenoid valve

- 4. EVAP service port
- ✓ Vehicle front



- 1. Refrigerant pressure sensor
- 2. PCV valve

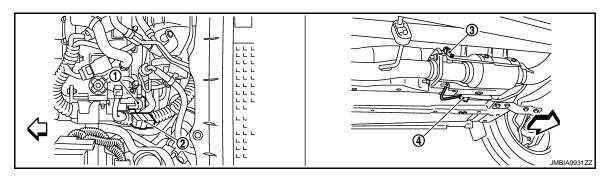




- 1. Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector
- ⟨ Vehicle front

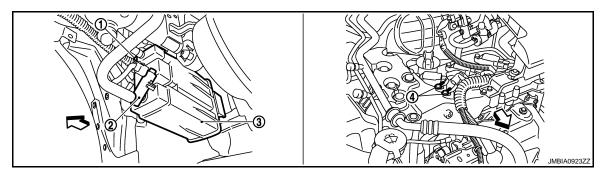
5. HC adsorption catalyst (Under floor)



- Tumble control valve actuator 1.
- 2. Condenser

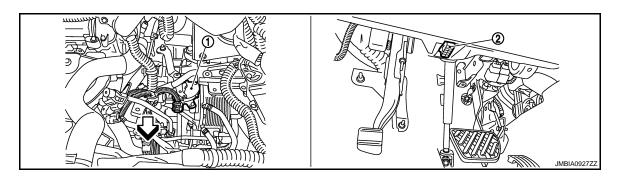
3. Heated oxygen sensor 3

- Heated oxygen sensor 3 harness connector

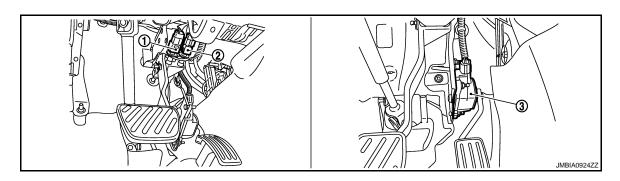


- EVAP control system pressure sen- 2. EVAP canister vent control valve
- **EVAP** canister

- Body ground
- Vehicle front



- Park/neutral position (PNP) switch
- 2. Data link connector



EC-35 Revision: 2008 January 2008 Rogue

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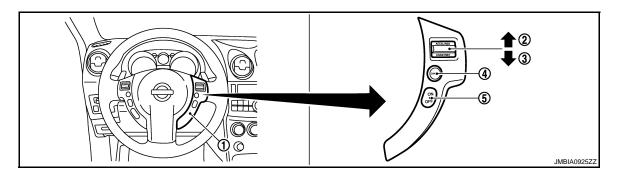
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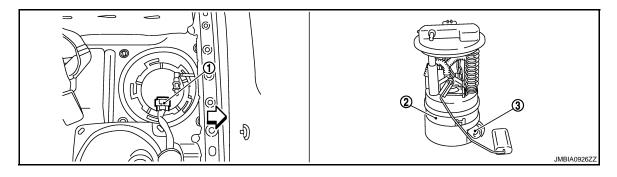
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- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor



- ASCD steering switch
- CANSEL switch
- SET/COAST switch
- MAIN switch

RESUME/ACCERELATE switch



- harness connector
- Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator

Component Description

INFOID:0000000001715028

Component	Reference
A/F sensor 1	EC-173, "Description"
A/F sensor 1 heater	EC-133, "Description"
Accelerator pedal position sensor	EC-382, "Description"
ASCD brake switch	EC-353, "Description"
ASCD steering switch	EC-350, "Description"
ASCD vehicle speed sensor	EC-358, "Description"
Camshaft position sensor (PHASE)	EC-256, "Description"
Crankshaft position sensor (POS)	EC-252, "Description"
Cooling fan motor	EC-65, "System Description"
Electric throttle control actuator	EC-380, "Description"
Engine coolant temperature sensor	EC-160, "Description"
EVAP canister purge volume control solenoid valve	EC-275, "Description"
EVAP canister vent control valve	EC-282, "Description"
EVAP control system pressure sensor	EC-290, "Description"
Fuel injector	EC-416, "Description"
Fuel level sensor	EC-317, "Description"
Fuel pump	EC-419, "Description"

ENGINE CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[FOR CALIFORNIA]

Component	Reference	
Fuel tank temperature sensor	EC-235, "Description"	
Heated oxygen sensor 2	EC-188, "Description"	
Heated oxygen sensor 2 heater	EC-136, "Description"	EC
Heated oxygen sensor 3	EC-207, "Description"	
Heated oxygen sensor 3 heater	EC-139, "Description"	
Ignition signal	EC-422, "Description"	С
Intake air temperature sensor	EC-157, "Description"	
Intake valve timing control solenoid valve	EC-80, "System Description"	
Knock sensor	EC-250, "Description"	
Mass air flow sensor	EC-145, "Description"	
Park/neutral position switch	EC-335, "Description"	E
PCV valve	EC-433, "Description"	
Refrigerant pressure sensor	EC-434, "Description"	
Stop lamp switch	EC-362, "Description"	
Throttle control motor	EC-378, "Description"	
Throttle control motor relay	EC-372, "Description"	G
Throttle position sensor	EC-163, "Description"	
Tumble control valve	EC-364, "Description"	
Tumble control valve position sensor	EC-369, "Description"	
Vehicle speed sensor	EC-322, "Description"	

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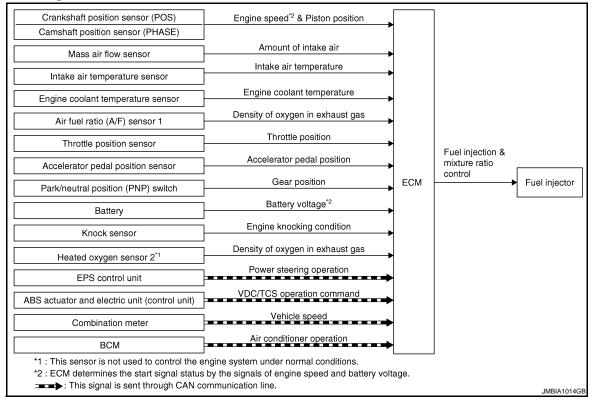
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MULTIPORT FUEL INJECTION SYSTEM

System Diagram

INFOID:0000000001715029



System Description

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INPUT/OUTPUT SIGNAL CHART

Sensor	Input Signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed*3		
Camshaft position sensor (PHASE)	Piston position		
Mass air flow sensor	Amount of intake air		
Intake air temperature sensor	Intake air temperature		
Engine coolant temperature sensor	Engine coolant temperature		
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas		
Throttle position sensor	Throttle position		
Accelerator pedal position sensor	Accelerator pedal position	Fuel injection	
Park/neutral position (PNP) switch	Gear position	& mixture ratio	Fuel injector
Battery	Battery voltage*3		
Knock sensor	Engine knocking condition		
Heated oxygen sensor 2*1	Density of oxygen in exhaust gas		
EPS control unit	Power steering operation*2	peration*2	
ABS actuator and electric unit (control unit)	ABS operation command*2		
Combination meter	Vehicle speed*2		
ВСМ	Air conditioner operation*2		

^{*1:} This sensor is not used to control the engine system under normal conditions.

^{*2:} This signal is sent to the ECM through CAN communication line.

*3: ECM determines the start signal status by the signals of engine speed and battery voltage.

SYSTEM DESCRIPTION

The amount of fuel injected from the fuel injector is determined by the ECM. The ECM controls the length of time the valve remains open (injection pulse duration). The amount of fuel injected is a program value in the ECM memory. The program value is preset by engine operating conditions. These conditions are determined by input signals (for engine speed and intake air) from the crankshaft position sensor (POS), camshaft position sensor (PHASE) and the mass air flow sensor.

VARIOUS FUEL INJECTION INCREASE/DECREASE COMPENSATION

In addition, the amount of fuel injected is compensated to improve engine performance under various operating conditions as listed below.

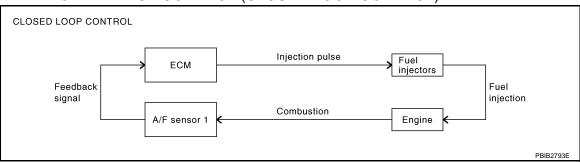
<Fuel increase>

- During warm-up
- When starting the engine
- During acceleration
- Hot-engine operation
- When selector lever is changed from N to D
- · High-load, high-speed operation

<Fuel decrease>

- During deceleration
- During high engine speed operation

MIXTURE RATIO FEEDBACK CONTROL (CLOSED LOOP CONTROL)



The mixture ratio feedback system provides the best air-fuel mixture ratio for driveability and emission control. The three way catalyst (manifold) can then better reduce CO, HC and NOx emissions. This system uses A/F sensor 1 in the exhaust manifold to monitor whether the engine operation is rich or lean. The ECM adjusts the injection pulse width according to the sensor voltage signal. For more information about A/F sensor 1, refer to EC-173, "DTC Logic". This maintains the mixture ratio within the range of stoichiometric (ideal air-fuel mixture).

This stage is referred to as the closed loop control condition.

Heated oxygen sensor 2 is located downstream of the three way catalyst (manifold). Even if the switching characteristics of A/F sensor 1 shift, the air-fuel ratio is controlled to stoichiometric by the signal from heated oxygen sensor 2.

Open Loop Control

The open loop system condition refers to when the ECM detects any of the following conditions. Feedback control stops in order to maintain stabilized fuel combustion.

- Deceleration and acceleration
- High-load, high-speed operation
- Malfunction of A/F sensor 1 or its circuit
- Insufficient activation of A/F sensor 1 at low engine coolant temperature
- High engine coolant temperature
- During warm-up
- After shifting from N to D
- When starting the engine

MIXTURE RATIO SELF-LEARNING CONTROL

The mixture ratio feedback control system monitors the mixture ratio signal transmitted from A/F sensor 1. This feedback signal is then sent to the ECM. The ECM controls the basic mixture ratio as close to the theoretical mixture ratio as possible. However, the basic mixture ratio is not necessarily controlled as originally

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MULTIPORT FUEL INJECTION SYSTEM

< FUNCTION DIAGNOSIS >

[FOR CALIFORNIA]

designed. Both manufacturing differences (i.e., mass air flow sensor hot wire) and characteristic changes during operation (i.e., fuel injector clogging) directly affect mixture ratio.

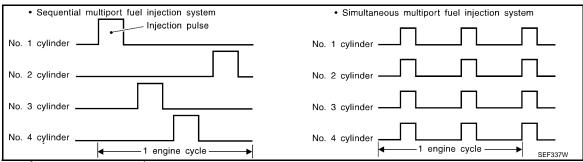
Accordingly, the difference between the basic and theoretical mixture ratios is monitored in this system. This is then computed in terms of "injection pulse duration" to automatically compensate for the difference between the two ratios.

"Fuel trim" refers to the feedback compensation value compared against the basic injection duration. Fuel trim includes short term fuel trim and long term fuel trim.

"Short term fuel trim" is the short-term fuel compensation used to maintain the mixture ratio at its theoretical value. The signal from A/F sensor 1 indicates whether the mixture ratio is RICH or LEAN compared to the theoretical value. The signal then triggers a reduction in fuel volume if the mixture ratio is rich, and an increase in fuel volume if it is lean.

"Long term fuel trim" is overall fuel compensation carried out long-term to compensate for continual deviation of the short term fuel trim from the central value. Such deviation will occur due to individual engine differences, wear over time and changes in the usage environment.

FUEL INJECTION TIMING



Two types of systems are used.

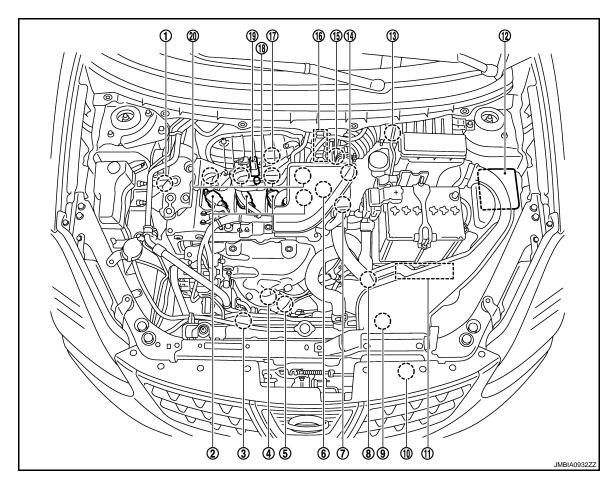
- Sequential Multiport Fuel Injection System
 - Fuel is injected into each cylinder during each engine cycle according to the firing order. This system is used when the engine is running.
- Simultaneous Multiport Fuel Injection System
 - Fuel is injected simultaneously into all four cylinders twice each engine cycle. In other words, pulse signals of the same width are simultaneously transmitted from the ECM.
 - The four injectors will then receive the signals two times for each engine cycle.
 - This system is used when the engine is being started and/or if the fail-safe system (CPU) is operating.

FUEL SHUT-OFF

Fuel to each cylinder is cut off during deceleration, operation of the engine at excessively high speeds or operation of the vehicle at excessively high speeds.

Component Parts Location

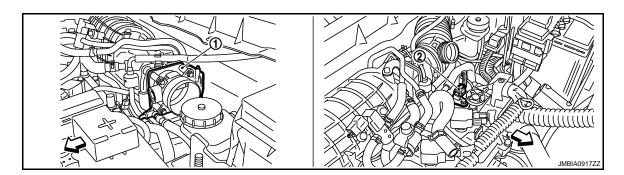
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- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. temperature sensor)
- 16. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 19. EVAP canister purge volume control 20. Fuel injector solenoid valve

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.
- Tumble control valve actuator
- 17. Knock sensor

- 3. Cooling fan motor-2
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- IPDM E/R 12.
- Crankshaft position sensor (POS)
- 18. EVAP service port



- Electric throttle control actuator

 - Vehicle front

Camshaft position sensor (PHASE)

EC-41 Revision: 2008 January 2008 Rogue

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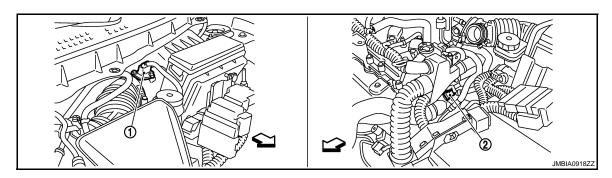
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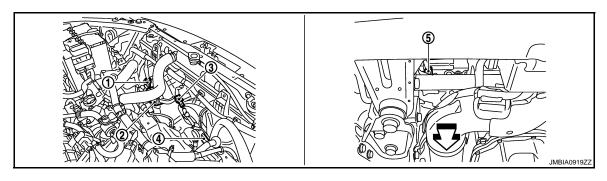
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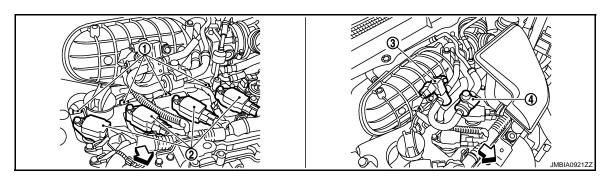


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- ✓ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



- Fuel injector
- 4. EVAP service port

- 2. Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve

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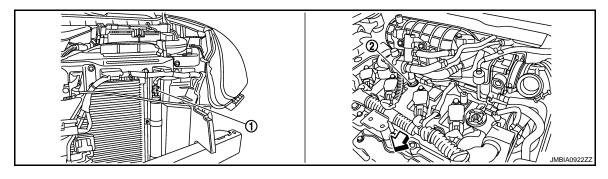
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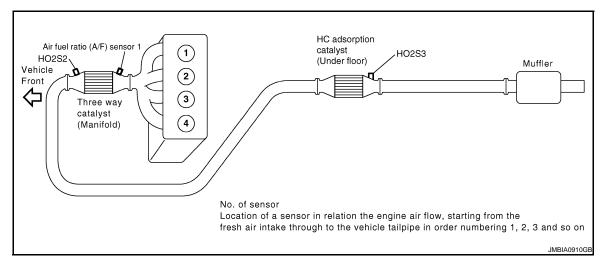
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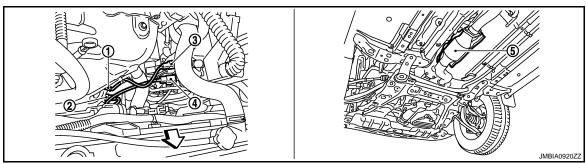
Р



1. Refrigerant pressure sensor

2. PCV valve

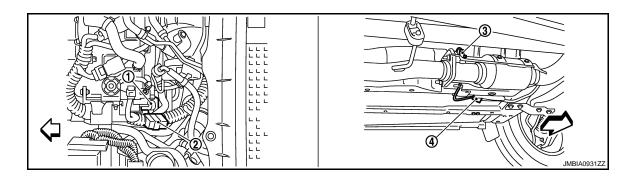




- 1. Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- 3. Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector
- 00111100101
- 5. HC adsorption catalyst (Under floor)

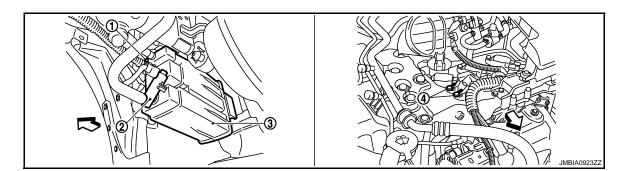




- Tumble control valve actuator
- Heated oxygen sensor 3 harness connector

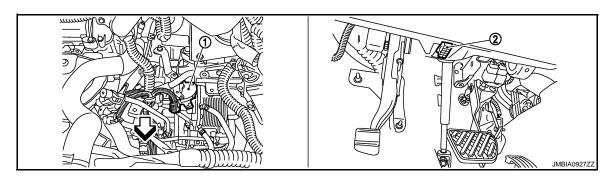
Condenser

Heated oxygen sensor 3



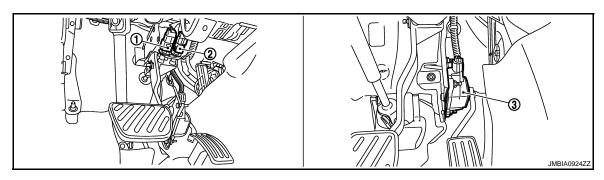
- EVAP control system pressure sen- 2. EVAP canister vent control valve
- **EVAP** canister

- Body ground
- Vehicle front



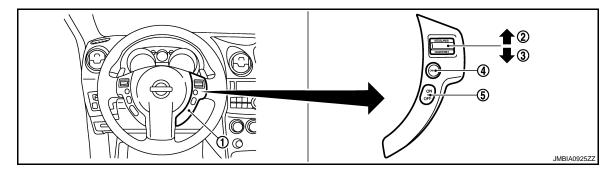
- Park/neutral position (PNP) switch
- Data link connector

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→ Vehicle front



- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor 3.

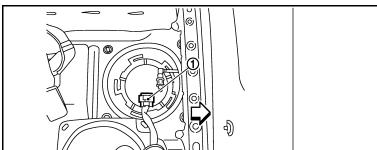
MULTIPORT FUEL INJECTION SYSTEM



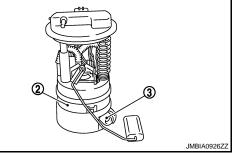
- ASCD steering switch 1.
- 2. CANSEL switch MAIN switch

RESUME/ACCERELATE switch

4. SET/COAST switch



5.



Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

INFOID:0000000001715032

Component	Reference	
A/F sensor 1	EC-173, "Description"	
Accelerator pedal position sensor	EC-382, "Description"	
Camshaft position sensor (PHASE)	EC-256, "Description"	
Crankshaft position sensor (POS)	EC-252, "Description"	
Engine coolant temperature sensor	EC-160, "Description"	
Fuel injector	EC-416, "Description"	
Heated oxygen sensor 2	EC-136, "Description"	
Intake air temperature sensor	EC-157, "Description"	
Knock sensor	EC-250, "Description"	
Mass air flow sensor	EC-145, "Description"	
Park/neutral position switch	EC-335, "Description"	
Throttle position sensor	EC-163, "Description"	
Vehicle speed sensor	EC-322, "Description"	

EC-45 Revision: 2008 January 2008 Rogue

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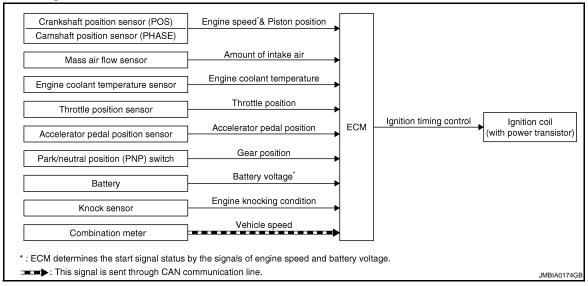
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ELECTRIC IGNITION SYSTEM

System Diagram

INFOID:0000000001715033



System Description

INFOID:000000001715034

INPUT/OUTPUT SIGNAL CHART

Sensor	Input Signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed*2		Ignition coil (with power transistor)
Camshaft position sensor (PHASE)	Piston position		
Mass air flow sensor	Amount of intake air		
Engine coolant temperature sensor	Engine coolant temperature		
Throttle position sensor	Throttle position	Ignition timing	
Accelerator pedal position sensor	Accelerator pedal position	control	
Battery	Battery voltage*2		
Knock sensor	Engine knocking		
Park/neutral position (PNP) switch	Gear position		
Combination meter	Vehicle speed*1		

^{*1:} This signal is sent to the ECM through CAN communication line.

SYSTEM DESCRIPTION

Firing order: 1 - 3 - 4 - 2

The ignition timing is controlled by the ECM to maintain the best air-fuel ratio for every running condition of the engine. The ignition timing data is stored in the ECM.

The ECM receives information such as the injection pulse width and camshaft position sensor (PHASE) signal. Computing this information, ignition signals are transmitted to the power transistor.

During the following conditions, the ignition timing is revised by the ECM according to the other data stored in the ECM.

- At starting
- During warm-up
- At idle
- At low battery voltage
- During acceleration

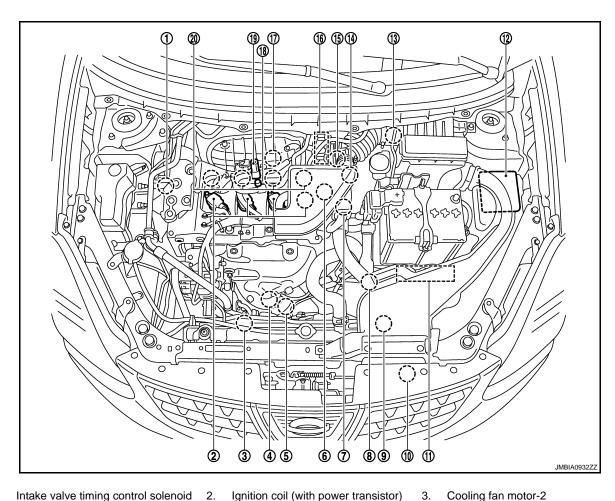
The knock sensor retard system is designed only for emergencies. The basic ignition timing is programmed within the anti-knocking zone, if recommended fuel is used under dry conditions. The retard system does not

^{*2:} ECM determines the start signal status by the signals of engine speed and battery voltage.

operate under normal driving conditions. If engine knocking occurs, the knock sensor monitors the condition. The signal is transmitted to the ECM. The ECM retards the ignition timing to eliminate the knocking condition.

Component Parts Location

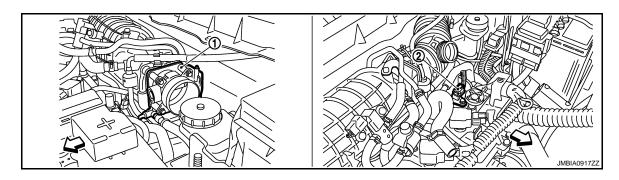
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- Intake valve timing control solenoid 1. valve
- Air fuel ratio (A/F) sensor 1 4.
- Engine coolant temperature sensor 7.
- 10. Refrigerant pressure sensor
- 13. Mass air flow sensor (with intake air temperature sensor)
- 16. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 19. EVAP canister purge volume control 20. Fuel injector solenoid valve

- 2. Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch
- **ECM**
- 14. Tumble control valve actuator
- 17. Knock sensor

- Cooling fan motor-2
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- IPDM E/R 12.
- Crankshaft position sensor (POS)
- 18. EVAP service port



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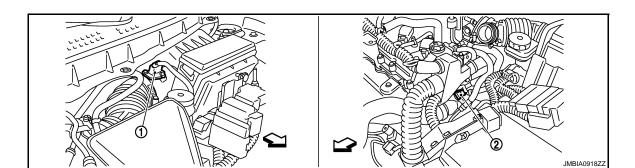
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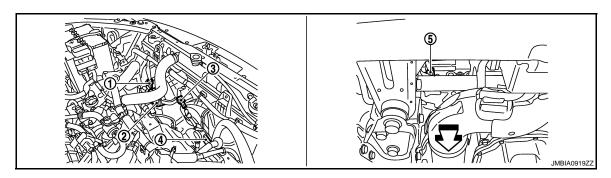
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- 1. Electric throttle control actuator
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 ⇒ Vehicle front

2. Camshaft position sensor (PHASE)

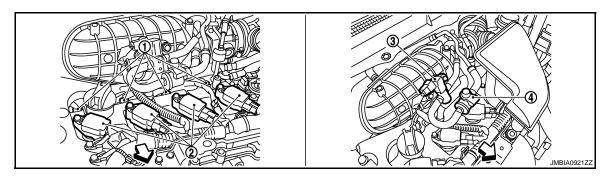


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



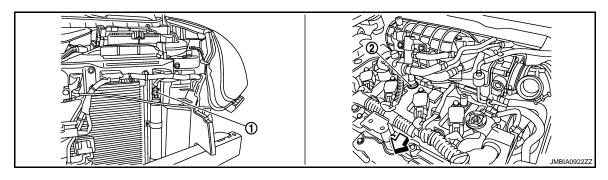
- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



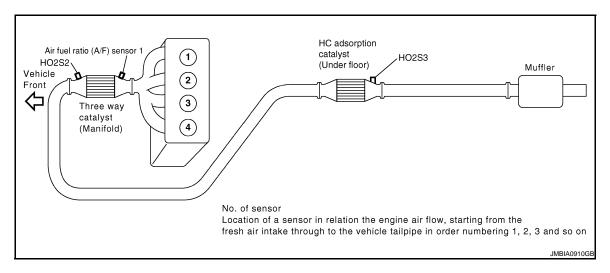
- Fuel injector
- 4. EVAP service port
- ⟨
 → Vehicle front

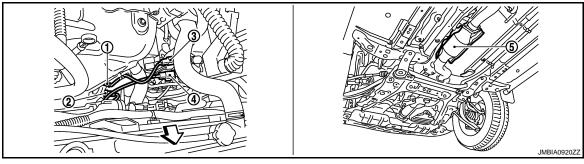
- 2. Ignition coil (with power transistor) and spark plug
- 3. EVAP canister purge volume control solenoid valve



Refrigerant pressure sensor

2. PCV valve

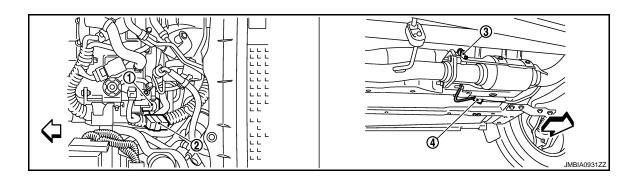




- Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- Air fuel ratio (A/F) sensor 1 harness connector

- Heated oxygen sensor 2 harness connector
- 5. HC adsorption catalyst (Under floor)





EC-49 Revision: 2008 January 2008 Rogue

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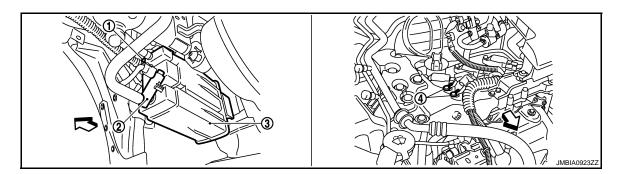
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- Tumble control valve actuator
- Heated oxygen sensor 3 harness connector

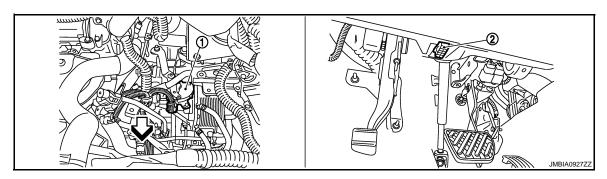
Condenser

Heated oxygen sensor 3



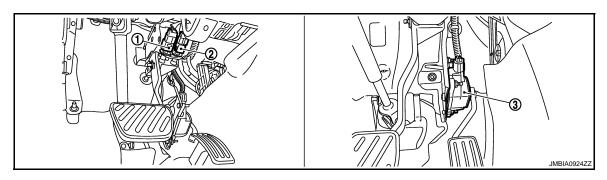
- EVAP control system pressure sen- 2. EVAP canister vent control valve
- **EVAP** canister

- Body ground
- Vehicle front

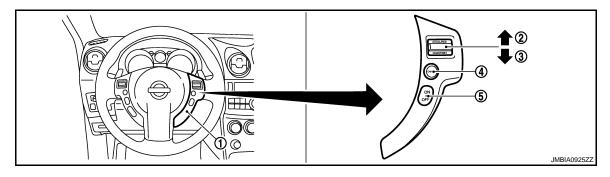


- Park/neutral position (PNP) switch
- Data link connector

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→ Vehicle front



- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor 3.

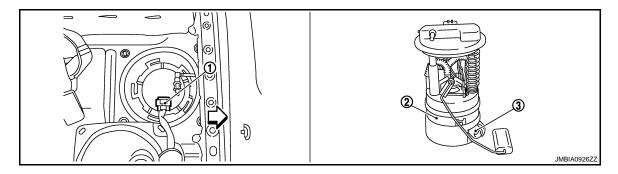


ASCD steering switch 1. SET/COAST switch

4.

- 2. CANSEL switch
- 5. MAIN switch

RESUME/ACCERELATE switch



Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

INFOID:0000000001715036

Component	Reference
Accelerator pedal position sensor	EC-382, "Description"
Camshaft position sensor (PHASE)	EC-256, "Description"
Crankshaft position sensor (POS)	EC-252, "Description"
Engine coolant temperature sensor	EC-160. "Description"
Ignition signal	EC-422, "Description"
Knock sensor	EC-250, "Description"
Mass air flow sensor	EC-145, "Description"
Park/neutral position switch	EC-335, "Description"
Throttle position sensor	EC-163, "Description"
Vehicle speed sensor	EC-322, "Description"

EC-51 Revision: 2008 January 2008 Rogue

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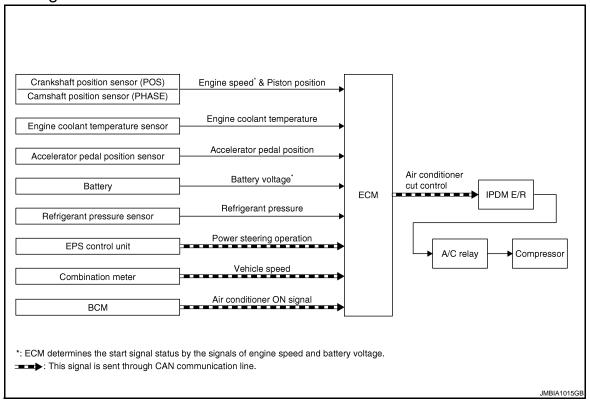
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AIR CONDITIONING CUT CONTROL

System Diagram

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System Description

INFOID:0000000001715038

INPUT/OUTPUT SIGNAL CHART

Sensor	Input Signal to ECM	ECM function	Actuator		
Accelerator pedal position sensor	Accelerator pedal position				
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*2		IPDM E/R		
Engine coolant temperature sensor	Engine coolant temperature				
Battery	Battery voltage*2	Air conditioner	↓ Air conditioner relay		
Refrigerant pressure sensor	Refrigerant pressure cut control		1		
EPS control unit	Power steering operation*1		Compressor		
Combination meter	Vehicle speed*1				
BCM	Air conditioner ON signal*1				

^{*1:} This signal is sent to the ECM through CAN communication line.

SYSTEM DESCRIPTION

This system improves engine operation when the air conditioner is used. Under the following conditions, the air conditioner is turned off.

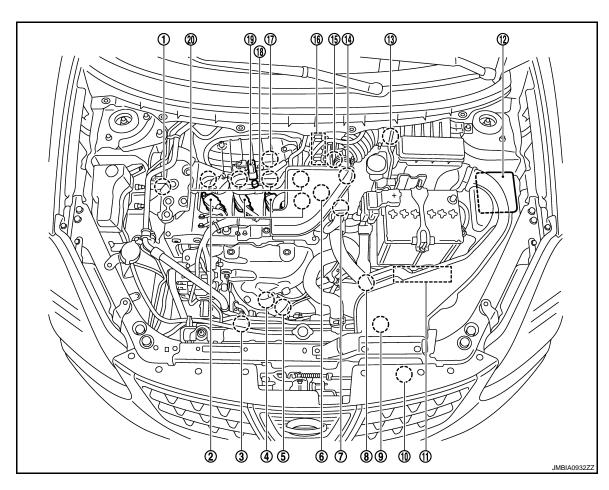
- When the accelerator pedal is fully depressed.
- When cranking the engine.
- · At high engine speeds.
- When the engine coolant temperature becomes excessively high.
- When operating power steering during low engine speed or low vehicle speed.
- When engine speed is excessively low.

^{*2:} ECM determines the start signal status by the signals of engine speed and battery voltage.

• When refrigerant pressure is excessively low or high.

Component Parts Location

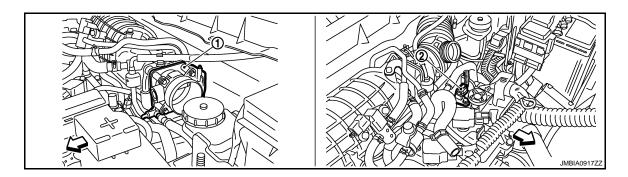
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- 1. Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor 7.
- 10. Refrigerant pressure sensor
- 13. Mass air flow sensor (with intake air 14. Tumble control valve actuator temperature sensor)
- 16. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 19. EVAP canister purge volume control 20. Fuel injector solenoid valve

- Ignition coil (with power transistor) 2. and spark plug
- 5. Heated oxygen sensor 2
- 8. Park/neutral position (PNP) switch
- **ECM** 11.
- 17. Knock sensor

- Cooling fan motor-2 3.
- Camshaft position sensor (PHASE) 6.
- 9. Cooling fan motor-1
- 12. IPDM E/R
- Crankshaft position sensor (POS)
- 18. EVAP service port



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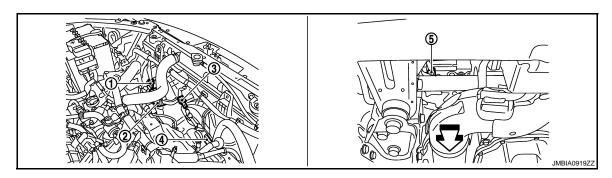
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- 1. Electric throttle control actuator
- √ Vehicle front

2. Camshaft position sensor (PHASE)

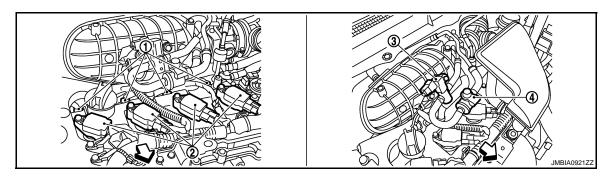


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



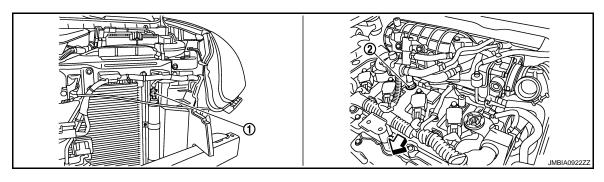
- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



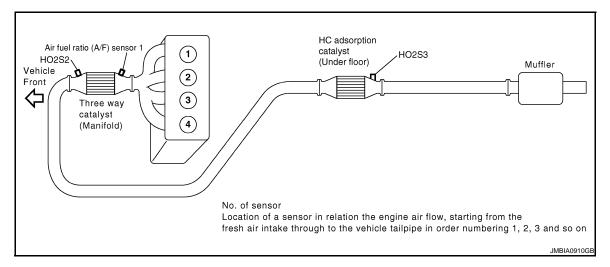
- Fuel injector
- 4. EVAP service port
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 → Vehicle front

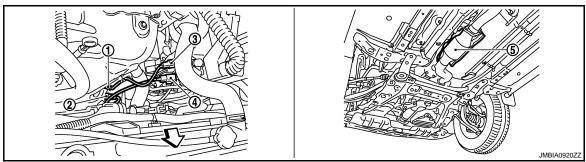
- Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve



Refrigerant pressure sensor

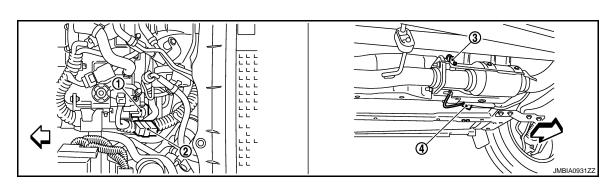
2. PCV valve





- Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- Air fuel ratio (A/F) sensor 1 harness connector

- Heated oxygen sensor 2 harness connector
- 5. HC adsorption catalyst (Under floor)



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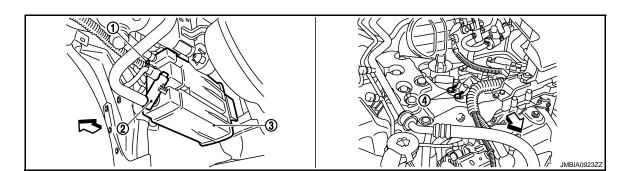
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- Tumble control valve actuator
 - Heated oxygen sensor 3 harness connector

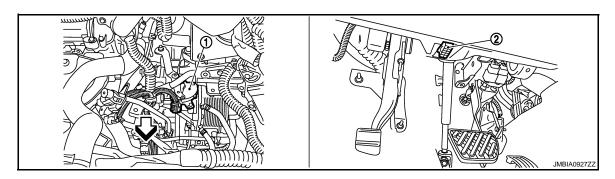
Condenser

Heated oxygen sensor 3



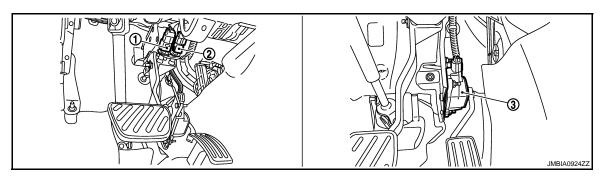
- EVAP control system pressure sen- 2. EVAP canister vent control valve
- **EVAP** canister

- Body ground
- Vehicle front



- Park/neutral position (PNP) switch
- Data link connector

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→ Vehicle front



- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor 3.

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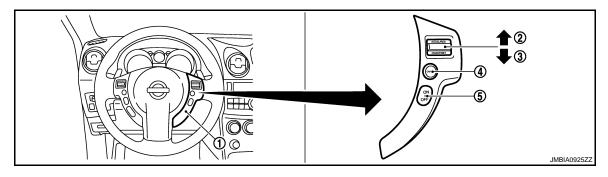
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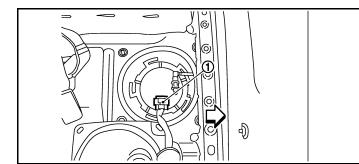


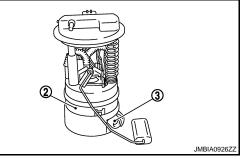
- ASCD steering switch
- 2. CANSEL switch MAIN switch

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RESUME/ACCERELATE switch

SET/COAST switch





Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

INFOID:0000000001715040

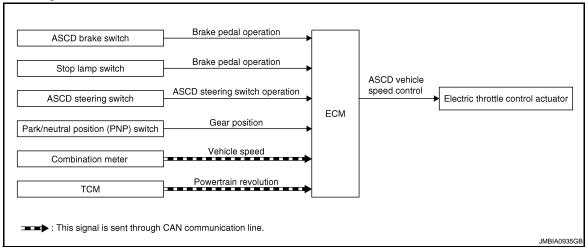
Component	Reference
Accelerator pedal position sensor	EC-382, "Description"
Camshaft position sensor (PHASE)	EC-256, "Description"
Crankshaft position sensor (POS)	EC-252, "Description"
Engine coolant temperature sensor	EC-160, "Description"
Refrigerant pressure sensor	EC-434, "Description"
Vehicle speed sensor	EC-322, "Description"

Revision: 2008 January

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

System Diagram

INFOID:0000000001715041



System Description

INFOID:0000000001715042

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator	
ASCD brake switch	Brake pedal operation			
Stop lamp switch	Brake pedal operation		Electric throttle control	
ASCD steering switch	ASCD steering switch operation	ASCD vahiola anada control		
Park/neutral position (PNP) switch	Gear position	ASCD vehicle speed control	actuator	
Combination meter	Vehicle speed*			
TCM	Powertrain revolution*			

^{*:} This signal is sent to the ECM through CAN communication line

BASIC ASCD SYSTEM

Refer to Owner's Manual for ASCD operating instructions.

Automatic Speed Control Device (ASCD) allows a driver to keep vehicle at predetermined constant speed without depressing accelerator pedal. Driver can set vehicle speed in advance between approximately 40 km/h (25 MPH) and 144 km/h (89 MPH).

ECM controls throttle angle of electric throttle control actuator to regulate engine speed.

Operation status of ASCD is indicated by CRUISE lamp and SET lamp in combination meter. If any malfunction occurs in ASCD system, it automatically deactivates control.

NOTE:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

SET OPERATION

Press MAIN switch. (The CRUISE lamp in combination meter illuminates.)

When vehicle speed reaches a desired speed between approximately 40 km/h (25 MPH) and 144 km/h (89 MPH), press SET/COAST switch. (Then SET lamp in combination meter illuminates.)

ACCELERATE OPERATION

If the RESUME/ACCELERATE switch is pressed during cruise control driving, increase the vehicle speed until the switch is released or vehicle speed reaches maximum speed controlled by the system. And then ASCD will keep the new set speed.

CANCEL OPERATION

When any of following conditions exist, cruise operation will be canceled.

- CANCEL switch is pressed
- More than 2 switches at ASCD steering switch are pressed at the same time (Set speed will be cleared)
- · Brake pedal is depressed

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

< FUNCTION DIAGNOSIS >

- Selector lever is changed to N, P, R position
- Vehicle speed decreased to 13 km/h (8 MPH) lower than the set speed
- TCS system is operated

When the ECM detects any of the following conditions, the ECM will cancel the cruise operation and inform the driver by blinking indicator lamp.

 Engine coolant temperature is slightly higher than the normal operating temperature. CRUISE lamp may blink slowly.

When the engine coolant temperature decreases to the normal operating temperature, CRUISE lamp will stop blinking and the cruise operation will be able to work by pressing SET/COAST switch or RESUME/ ACCELERATE switch.

Malfunction for some self-diagnoses regarding ASCD control: SET lamp will blink quickly.

If MAIN switch is turned to OFF during ASCD is activated, all of ASCD operations will be canceled and vehicle speed memory will be erased.

COAST OPERATION

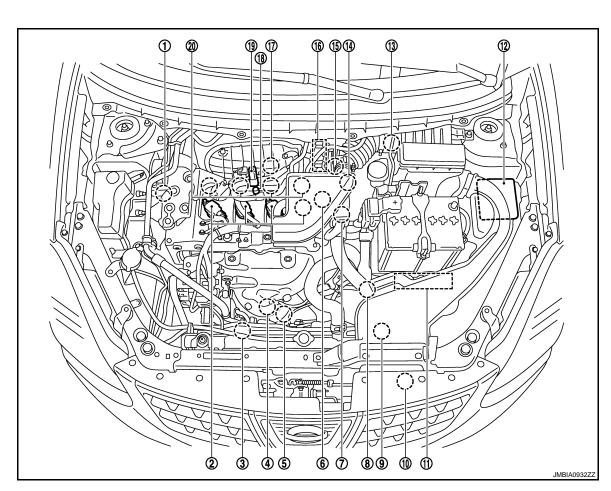
When the SET/COAST switch is pressed during cruise control driving, decrease vehicle set speed until the switch is released. And then ASCD will keep the new set speed.

RESUME OPERATION

When the RESUME/ACCELERATE switch is pressed after cancel operation other than pressing MAIN switch is performed, vehicle speed will return to last set speed. To resume vehicle set speed, vehicle condition must meet following conditions.

- Brake pedal is released
- Selector lever is in other than P and N positions
- Vehicle speed is greater than 40 km/h (25 MPH) and less than 144 km/h (89 MPH)

Component Parts Location



- Intake valve timing control solenoid
- Air fuel ratio (A/F) sensor 1
- Ignition coil (with power transistor) and spark plug
- Heated oxygen sensor 2
- Cooling fan motor-2
- Camshaft position sensor (PHASE)

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[FOR CALIFORNIA]

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EC-59 Revision: 2008 January 2008 Rogue

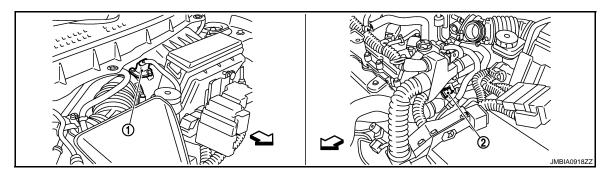
AUTOMATIC SPEED CONTROL DEVICE (ASCD)

[FOR CALIFORNIA] < FUNCTION DIAGNOSIS >

- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- 13. Mass air flow sensor (with intake air 14. Tumble control valve actuator temperature sensor)
- 16. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 19. EVAP canister purge volume control 20. Fuel injector solenoid valve
- Park/neutral position (PNP) switch 8.
- 11. **ECM**
- 17. Knock sensor

- Cooling fan motor-1 9.
- 12. IPDM E/R
- Crankshaft position sensor (POS)
- 18. EVAP service port
- ummini
- Electric throttle control actuator
- Camshaft position sensor (PHASE)

⟨□ Vehicle front

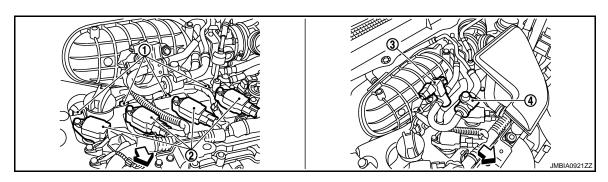


- Mass air flow sensor (with intake air 2. temperature sensor)
- Engine coolant temperature sensor



- Cooling fan motor-1 harness con-
- Cooling fan motor-2
- Vehicle front

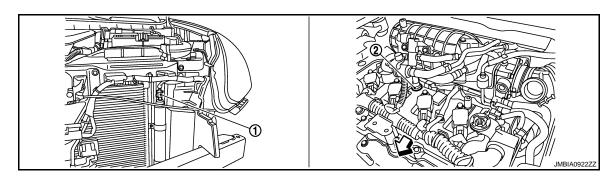
- Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



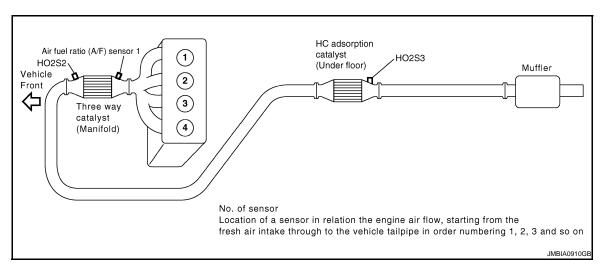
1. Fuel injector

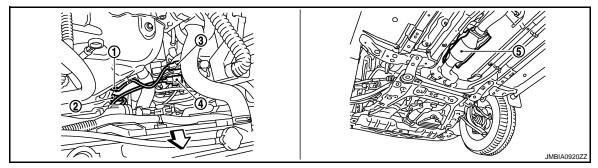
- 2. Ignition coil (with power transistor) and spark plug
- 3. EVAP canister purge volume control solenoid valve

- 4. EVAP service port



- 1. Refrigerant pressure sensor
- 2. PCV valve





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HC adsorption catalyst (Under floor)

- Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2

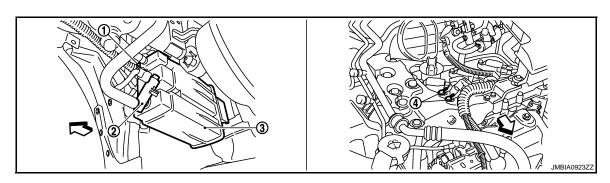
5.

Air fuel ratio (A/F) sensor 1 harness connector

- Heated oxygen sensor 2 harness
- connector
- Tumble control valve actuator
- 2. Condenser

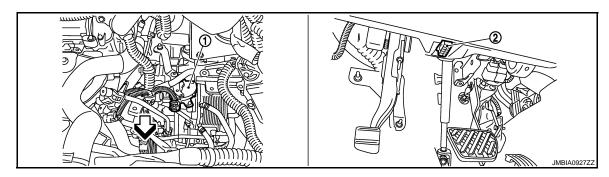
Heated oxygen sensor 3

- Heated oxygen sensor 3 harness connector



- EVAP control system pressure sen- 2. EVAP canister vent control valve
- **EVAP** canister

- Body ground
- ⟨□ Vehicle front



- Park/neutral position (PNP) switch
- Data link connector

Vehicle front

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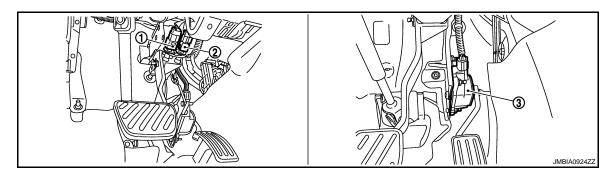
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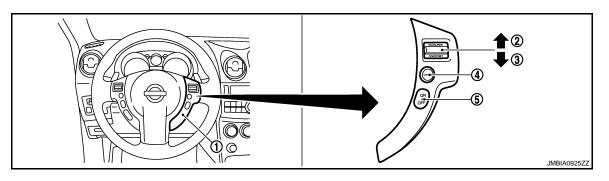
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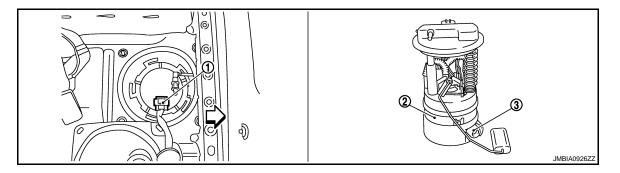
- Stop lamp switch
- 2. ASCD brake switch
- 3. Accelerator pedal position sensor



- ASCD steering switch 1.
- CANSEL switch 2.

RESUME/ACCERELATE switch

- SET/COAST switch
- MAIN switch



- harness connector
- Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator

Component Description

INFOID:0000000001715044

Component	Reference
ASCD steering switch	EC-350, "Description"
ASCD clutch switch	EC-353, "Description"
ASCD brake switch	EC-353, "Description"
Stop lamp switch	EC-362, "Description"
Electric throttle control actuator	EC-380, "Description"
ASCD indicator	EC-406, "Description"

CAN COMMUNICATION

< FUNCTION DIAGNOSIS >

[FOR CALIFORNIA]

CAN COMMUNICATION

System Description

INFOID:0000000001715045

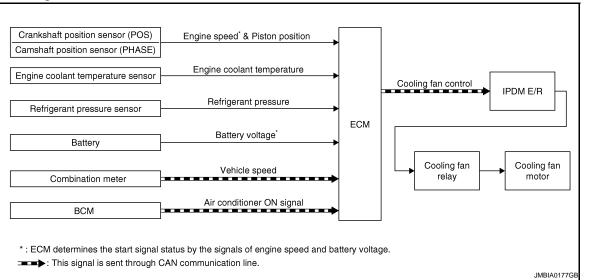
CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

Refer to LAN-23, "CAN Communication Signal Chart", about CAN communication for detail...

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COOLING FAN CONTROL

System Diagram



System Description

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*1			
Engine coolant temperature sensor	Engine coolant temperature	IPDM E/R		
Refrigerant pressure sensor	Refrigerant pressure	Cooling fan	↓ Cooling fan relay	
Battery	Battery voltage*1	control	1	
Combination meter	Vehicle speed* ²		Cooling fan motor	
BCM	Air conditioner ON signal*2			

^{*1:} The ECM determines the start signal status by the signals of engine speed and battery voltage.

SYSTEM DESCRIPTION

ECM controls cooling fan speed corresponding to vehicle speed, engine coolant temperature, refrigerant pressure, air conditioner ON signal. Then control system has 3-step control [HIGH/LOW/OFF].

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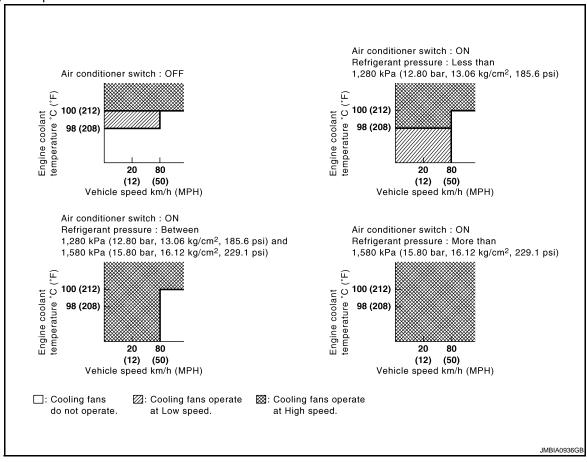
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^{*2:} This signal is sent to ECM through CAN communication line.

Cooling Fan Operation



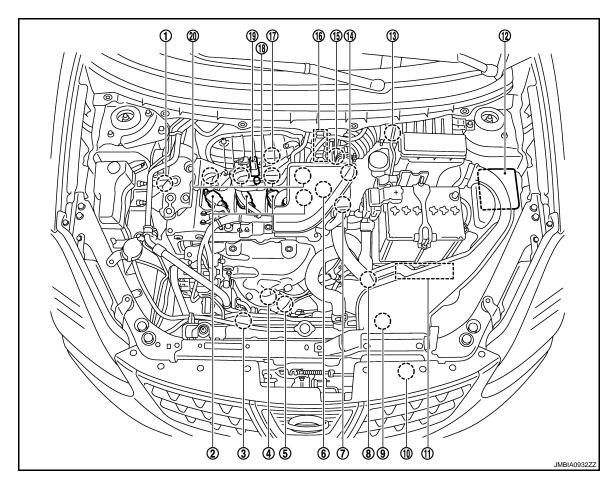
Cooling Fan Relay Operation

The ECM controls cooling fan relays through CAN communication line.

Cooling fan speed			Cooling fan relay		
Cooling lan speed	1	2	3	4	5
Stop (OFF)	OFF	OFF	OFF	OFF	OFF
Low (LOW)	OFF	OFF	OFF	ON	OFF
High (HI)	ON	ON	ON	OFF	ON

Component Parts Location

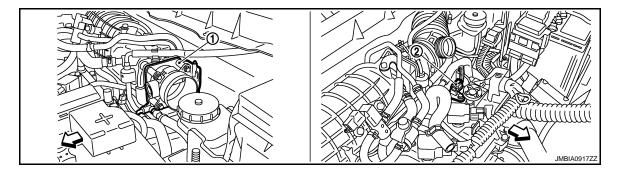
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- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. temperature sensor)
- 16. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 19. EVAP canister purge volume control 20. Fuel injector solenoid valve

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.
- Tumble control valve actuator
- 17. Knock sensor

- 3. Cooling fan motor-2
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- 12. IPDM E/R
- Crankshaft position sensor (POS)
- 18. EVAP service port



- Electric throttle control actuator
- Vehicle front

Camshaft position sensor (PHASE)

EC-67 Revision: 2008 January 2008 Rogue

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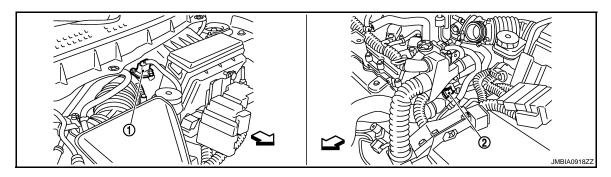
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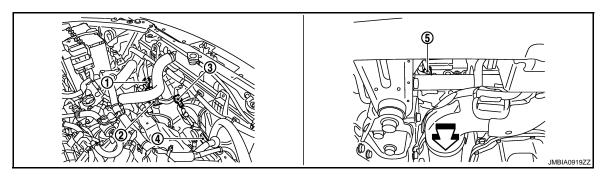
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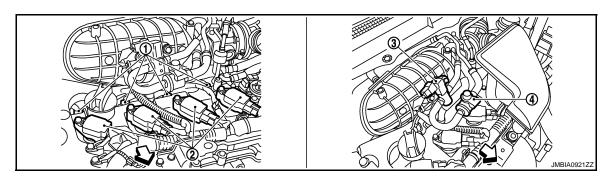


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- ✓ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



- Fuel injector
- 4. EVAP service port

- 2. Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve

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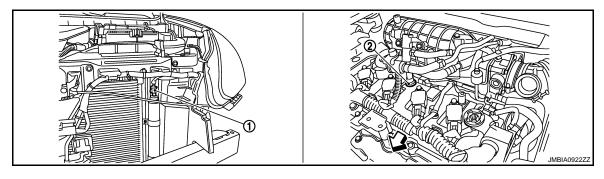
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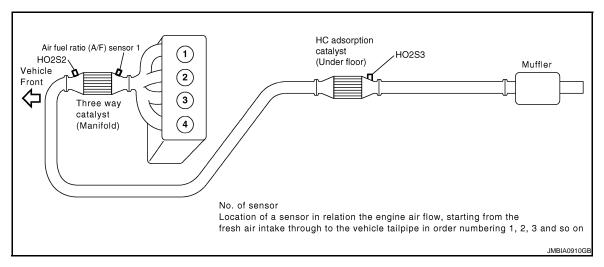
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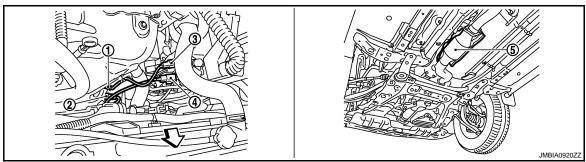
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Refrigerant pressure sensor

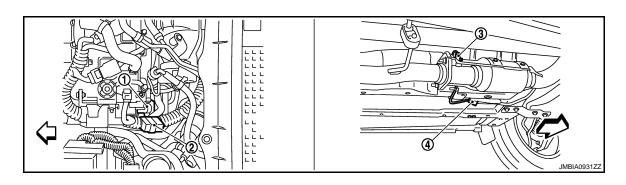
2. PCV valve





- Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- Air fuel ratio (A/F) sensor 1 harness connector

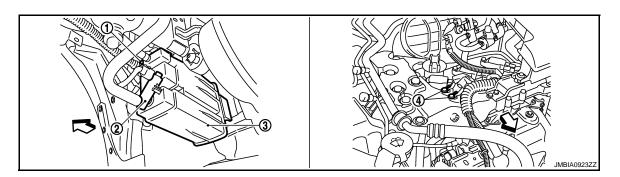
- Heated oxygen sensor 2 harness connector
- 5. HC adsorption catalyst (Under floor)



- Tumble control valve actuator
- Heated oxygen sensor 3 harness connector

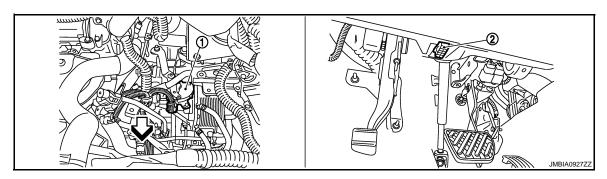
Condenser

Heated oxygen sensor 3



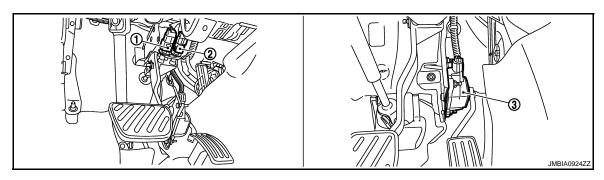
- EVAP control system pressure sen- 2. EVAP canister vent control valve
- **EVAP** canister

- Body ground
- Vehicle front

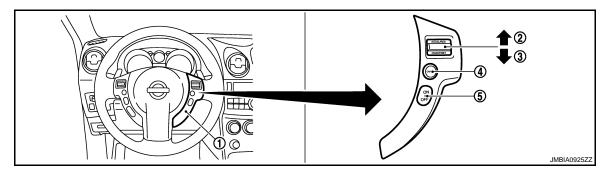


- Park/neutral position (PNP) switch
- Data link connector

⟨
→ Vehicle front



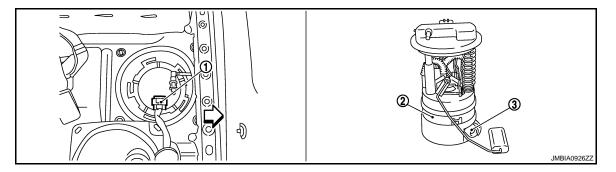
- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor 3.



- 1. ASCD steering switch
- 2. CANSEL switch

3. RESUME/ACCERELATE switch

- 4. SET/COAST switch
- 5. MAIN switch



 Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

INFOID:0000000001715049

Component	Reference
Camshaft position sensor (PHASE)	EC-256, "Description"
Crankshaft position sensor (POS)	EC-252, "Description"
Cooling fan motor	EC-65, "System Description"
Engine coolant temperature sensor	EC-160, "Description"
Refrigerant pressure sensor	EC-434, "Description"
Vehicle speed sensor	EC-322, "Description"

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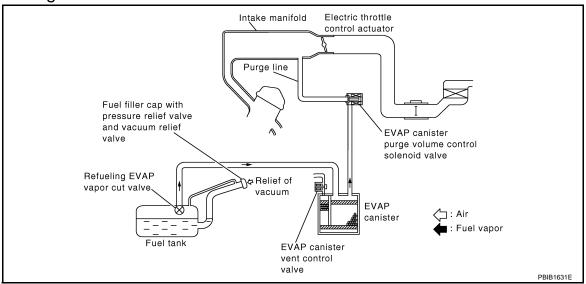
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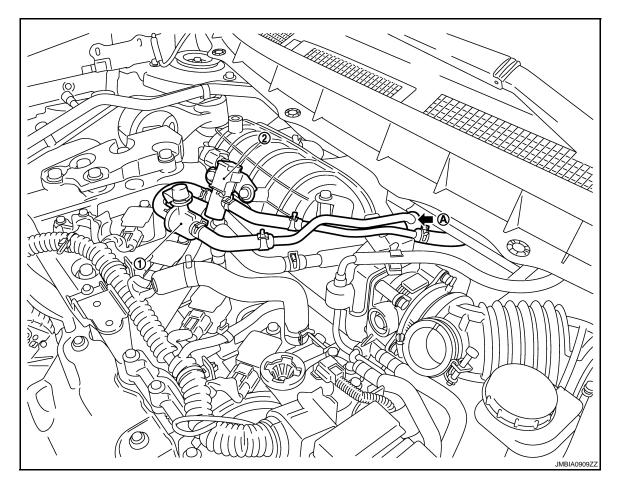
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EVAPORATIVE EMISSION SYSTEM

System Diagram



EVAPORATIVE EMISSION LINE DRAWING



- 1. EVAP service port
- EVAP canister purge volume control solenoid valve

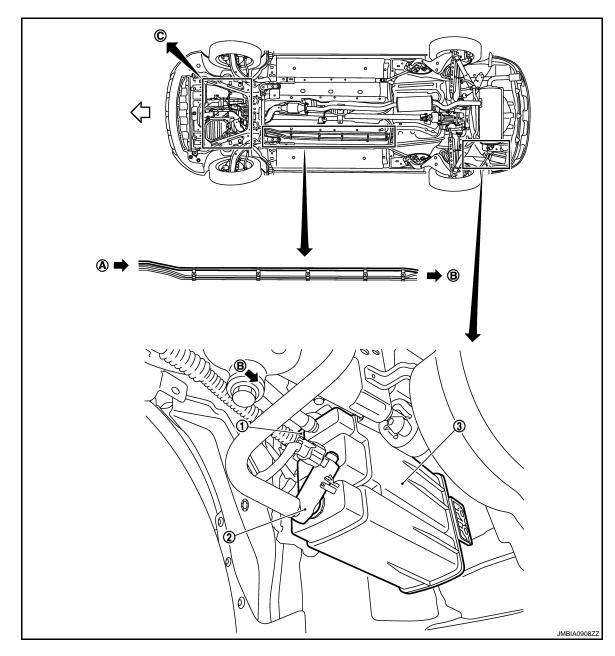
A. From next figure

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- 1. EVAP control system pressure sensor 2.
- 2. EVAP canister vent control valve
 - B. To/From B in this figure
- 3. EVAP canister
- C. Refer to previous figure

NOTE:

Do not use soapy water or any type of solvent while installing vacuum hose or purge hoses.

System Description

A. To previous figure

INFOID:0000000001715051

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INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*1		
Mass air flow sensor	Amount of intake air		
Engine coolant temperature sensor	Engine coolant temperature		
Battery	Battery voltage*1		
Throttle position sensor	Throttle position	EVAP canister	EVAP canister purge vol-
Accelerator pedal position sensor	Accelerator pedal position	purge flow control	ume control solenoid valve
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)		
Fuel tank temperature sensor	Fuel temperature in fuel tank		
EVAP control system pressure sensor	Pressure in purge line		
Combination meter	Vehicle speed*2		

^{*1:} ECM determines the start signal status by the signals of engine speed and battery voltage.

SYSTEM DESCRIPTION

The evaporative emission system is used to reduce hydrocarbons emitted into the atmosphere from the fuel system. This reduction of hydrocarbons is accomplished by activated charcoals in the EVAP canister.

The fuel vapor in the sealed fuel tank is led into the EVAP canister which contains activated carbon and the vapor is stored there when the engine is not operating or when refueling to the fuel tank.

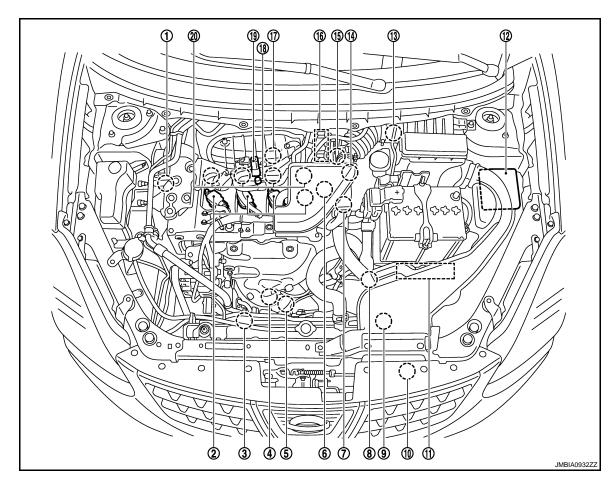
The vapor in the EVAP canister is purged by the air through the purge line to the intake manifold when the engine is operating. EVAP canister purge volume control solenoid valve is controlled by ECM. When the engine operates, the flow rate of vapor controlled by EVAP canister purge volume control solenoid valve is proportionally regulated as the air flow increases.

EVAP canister purge volume control solenoid valve also shuts off the vapor purge line during decelerating.

^{*2:} This signal is sent to the ECM through CAN communication line.

Component Parts Location

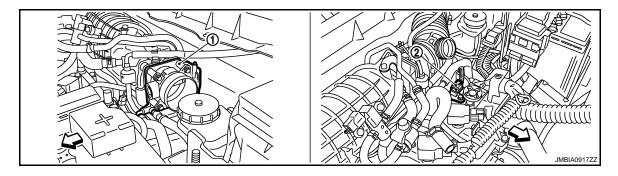
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- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. temperature sensor)
- 16. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 19. EVAP canister purge volume control 20. Fuel injector solenoid valve

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.
- Tumble control valve actuator
- 17. Knock sensor

- 3. Cooling fan motor-2
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- IPDM E/R 12.
- Crankshaft position sensor (POS)
- 18. EVAP service port



Electric throttle control actuator

Vehicle front

- Camshaft position sensor (PHASE)

EC-75 Revision: 2008 January 2008 Rogue

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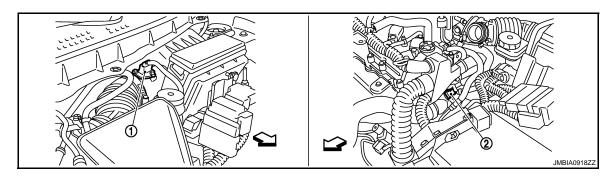
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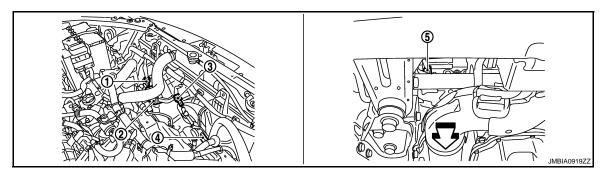
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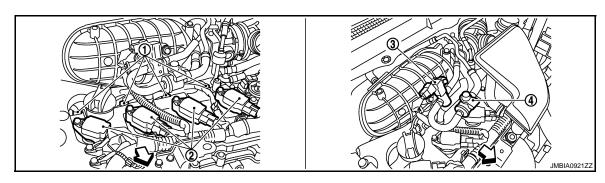


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- ✓ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



- Fuel injector
- 4. EVAP service port

- 2. Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve

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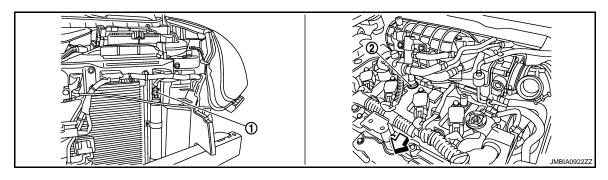
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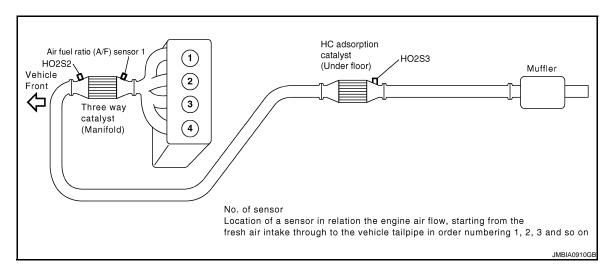
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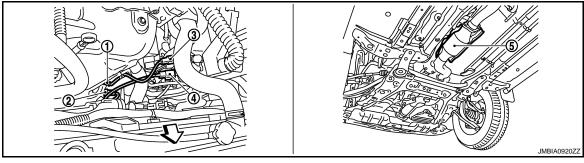
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Refrigerant pressure sensor

2. PCV valve

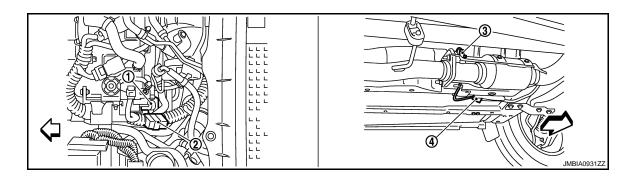




- Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- Air fuel ratio (A/F) sensor 1 harness connector

- Heated oxygen sensor 2 harness connector
- 5. HC adsorption catalyst (Under floor)

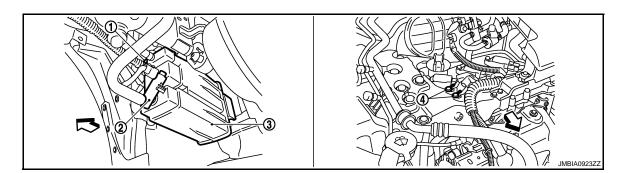




- Tumble control valve actuator
 - Heated oxygen sensor 3 harness
- connector ⟨→ Vehicle front

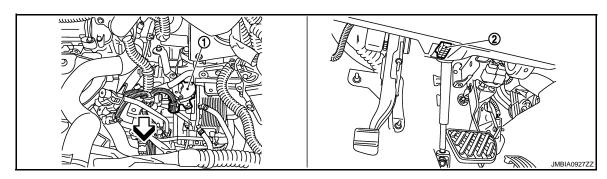
Condenser

Heated oxygen sensor 3



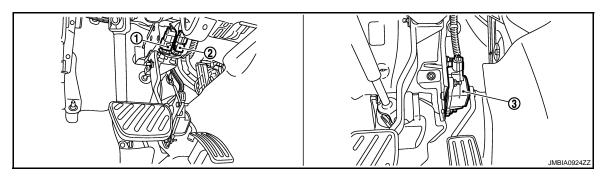
- EVAP control system pressure sen- 2. EVAP canister vent control valve
- **EVAP** canister

- Body ground
- Vehicle front

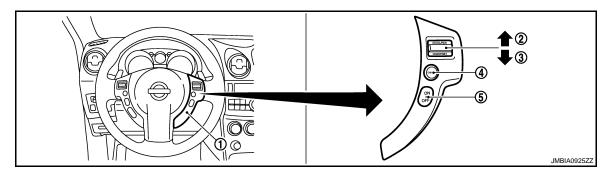


- Park/neutral position (PNP) switch
- Data link connector

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→ Vehicle front



- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor 3.

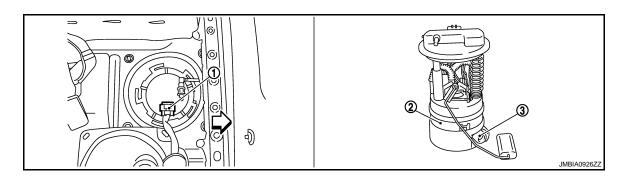


- ASCD steering switch 1.
- 2. CANSEL switch MAIN switch

5.

RESUME/ACCERELATE switch

4. SET/COAST switch



- Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

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Component	Reference		
A/F sensor 1	EC-173, "Description"		
Accelerator pedal position sensor	EC-382, "Description"		
Camshaft position sensor (PHASE)	EC-256, "Description"		
Crankshaft position sensor (POS)	EC-252, "Description"		
Engine coolant temperature sensor	EC-160, "Description"		
EVAP canister purge volume control solenoid valve	EC-275, "Description"		
EVAP control system pressure sensor	EC-290, "Description"		
Fuel tank temperature sensor	EC-235, "Description"		
Mass air flow sensor	EC-145, "Description"		
Throttle position sensor	EC-163, "Description"		
Vehicle speed sensor	EC-322, "Description"		

EC-79 Revision: 2008 January 2008 Rogue

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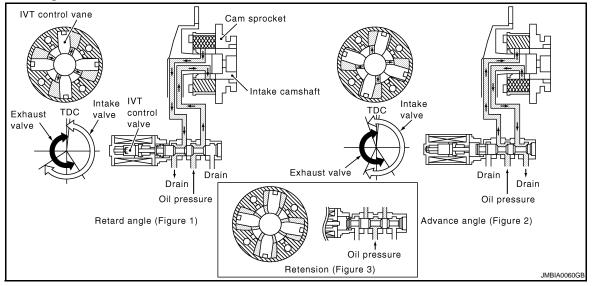
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INTAKE VALVE TIMING CONTROL

System Diagram

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System Description

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INPUT/OUTPUT SIGNAL CHART

Sensor Input signal to ECM		ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed and piston position		
Camshaft position sensor (PHASE)	Engine speed and piston position	Intake valve	Intake valve timing control
Engine coolant temperature sensor	Engine coolant temperature	timing control	solenoid valve
Combination meter	Vehicle speed*		

^{*:} This signal is sent to the ECM through CAN communication line

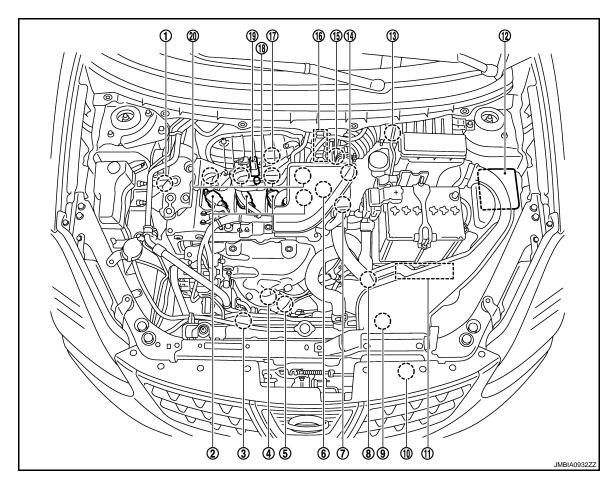
SYSTEM DESCRIPTION

This mechanism hydraulically controls cam phases continuously with the fixed operating angle of the intake valve.

The ECM receives signals such as crankshaft position, camshaft position, engine speed, and engine coolant temperature. Then, the ECM sends ON/OFF pulse duty signals to the intake valve timing (IVT) control solenoid valve depending on driving status. This makes it possible to control the shut/open timing of the intake valve to increase engine torque in low/mid speed range and output in high-speed range.

Component Parts Location

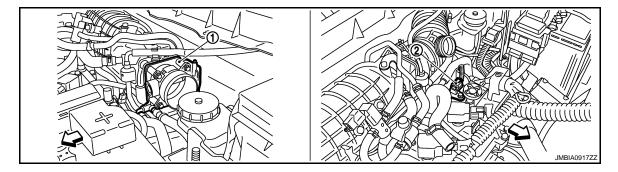
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- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. temperature sensor)
- 16. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 19. EVAP canister purge volume control 20. Fuel injector solenoid valve

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.
- Tumble control valve actuator
- 17. Knock sensor

- 3. Cooling fan motor-2
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- IPDM E/R 12.
- Crankshaft position sensor (POS)
- 18. EVAP service port



- Electric throttle control actuator
- Vehicle front

Camshaft position sensor (PHASE)

EC-81 Revision: 2008 January 2008 Rogue

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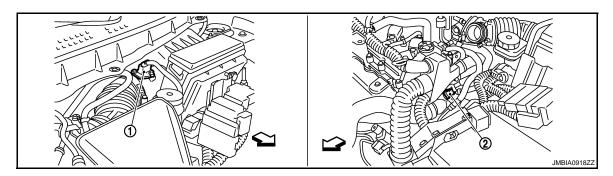
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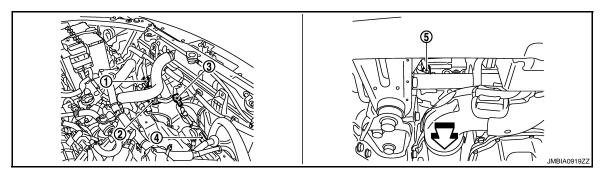
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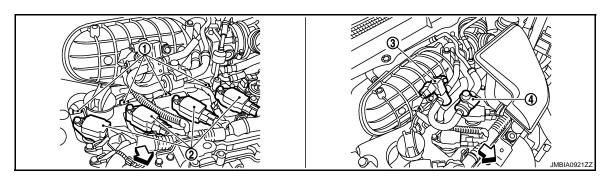


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



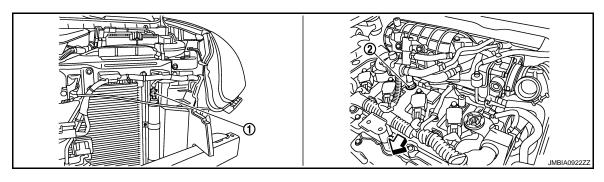
- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- ✓ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



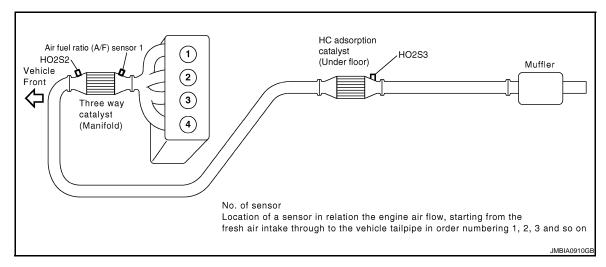
- Fuel injector
- 4. EVAP service port

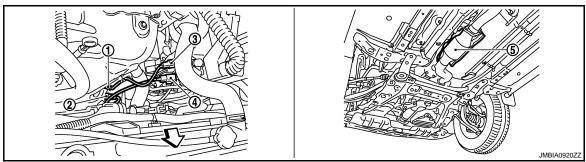
- 2. Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve



1. Refrigerant pressure sensor

2. PCV valve

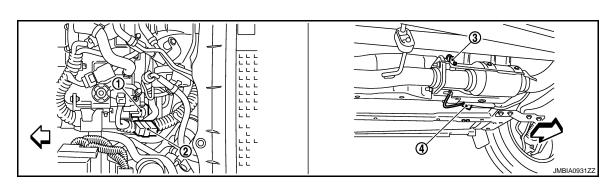




- 1. Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- 3. Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector
- 5. HC adsorption catalyst (Under floor)

⟨→ Vehicle front



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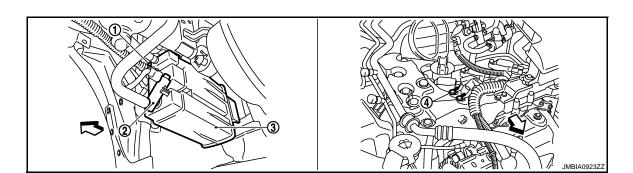
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- Tumble control valve actuator
- Heated oxygen sensor 3 harness connector
- ⟨→ Vehicle front

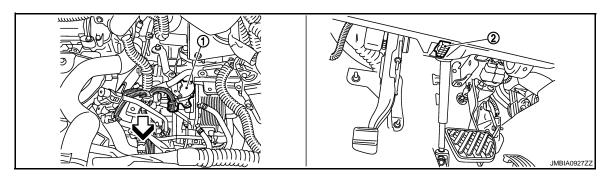
Condenser

Heated oxygen sensor 3



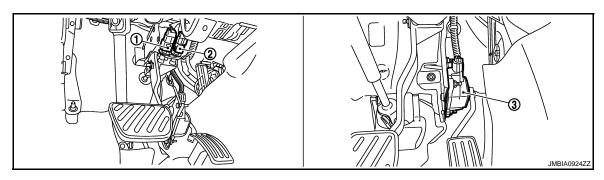
- EVAP control system pressure sen- 2. EVAP canister vent control valve
- **EVAP** canister

- Body ground
- Vehicle front

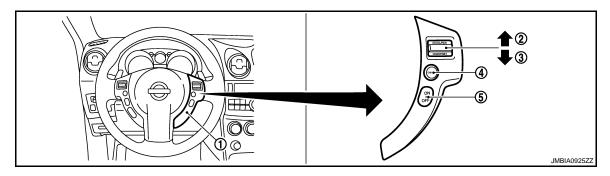


- Park/neutral position (PNP) switch
- Data link connector

⟨
→ Vehicle front



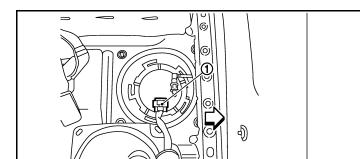
- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor 3.



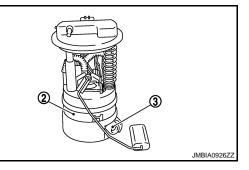
- ASCD steering switch
- 2. CANSEL switch MAIN switch

RESUME/ACCERELATE switch

SET/COAST switch



5.



Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

INFOID:0000000001715057

Component	Reference
Camshaft position sensor (PHASE)	EC-256, "Description"
Crankshaft position sensor (POS)	EC-252, "Description"
Engine coolant temperature sensor	EC-160, "Description"
Intake valve timing control solenoid valve	EC-80, "System Description"
Vehicle speed sensor	EC-322, "Description"

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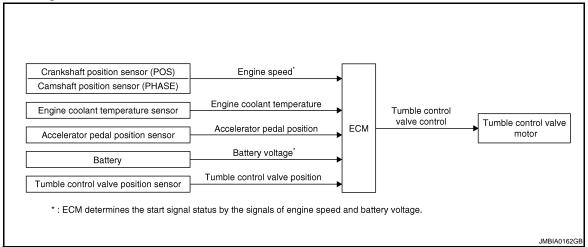
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[FOR CALIFORNIA]

TUMBLE CONTROL VALVE CONTROL

System Diagram

INFOID:0000000001715058



System Description

INFOID:0000000001715059

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed*		
Camshaft position sensor (PHASE)	Engine speed*		
Battery	Battery voltage*	Tumble control	Tumble control valve motor
Engine coolant temperature sensor	Engine coolant temperature	valve control	Tumble control valve motor
Accelerator pedal position sensor	Accelerator pedal position		
Tumble control valve position sensor	Tumble control valve position		

^{*:} ECM determines the start signal status by the signals of engine speed and battery voltage.

SYSTEM DESCRIPTION

Tumble control valve has a valve portion in the intake passage of each cylinder.

While idling and during low engine coolant temperature, the tumble control valve closes. Thus the velocity of the air in the intake passage increases, promoting the vaporization of the fuel and producing a tumble in the combustion chamber.

Because of this operation, this system tends to increase the burning speed of the gas mixture, improve fuel consumption, and increase the stability in running conditions.

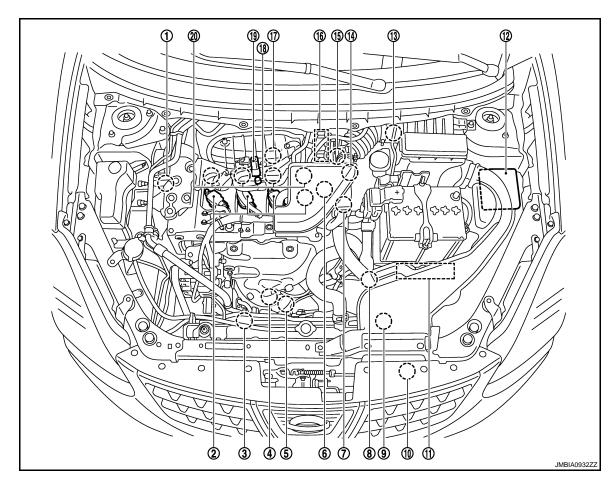
Also, except when idling and during low engine coolant temperature, this system opens the tumble control valve.

In this condition, this system tends to increase power by improving intake efficiency via reduction of intake flow resistance.

The tumble control valve is operated by the ECM.

Component Parts Location

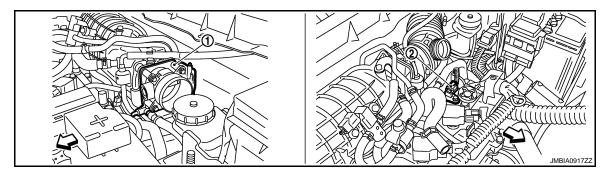
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- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. temperature sensor)
- 16. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 19. EVAP canister purge volume control 20. Fuel injector solenoid valve

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.
- Tumble control valve actuator
- 17. Knock sensor

- 3. Cooling fan motor-2
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- IPDM E/R 12.
- Crankshaft position sensor (POS)
- 18. EVAP service port



- Electric throttle control actuator
- Vehicle front

Camshaft position sensor (PHASE)

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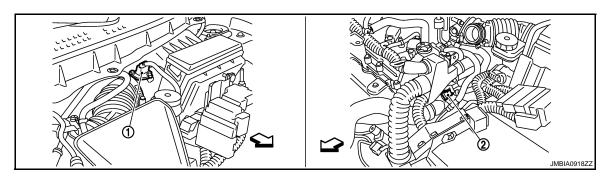
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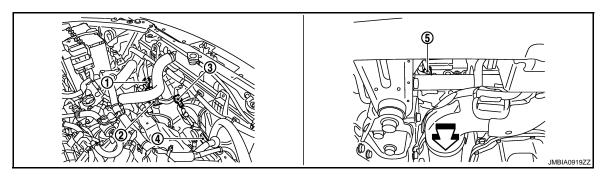
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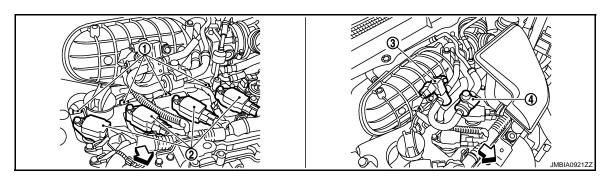


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



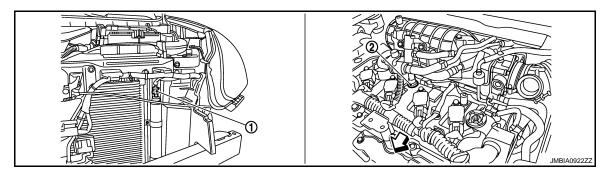
- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- ∠ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



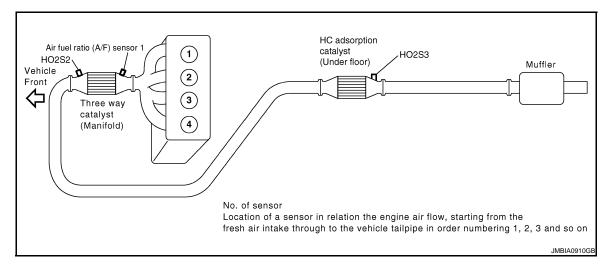
- Fuel injector
- 4. EVAP service port

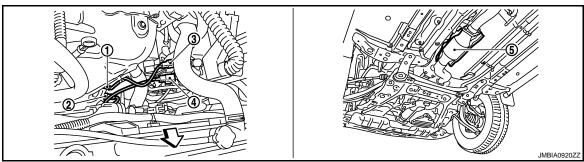
- 2. Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve



Refrigerant pressure sensor

2. PCV valve

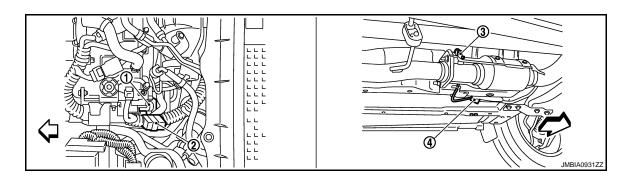




- Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- Air fuel ratio (A/F) sensor 1 harness connector

- Heated oxygen sensor 2 harness connector
- 5. HC adsorption catalyst (Under floor)





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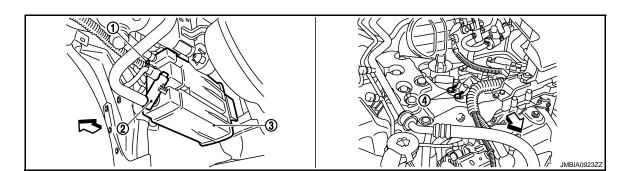
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- Tumble control valve actuator
- Heated oxygen sensor 3 harness connector
- ⟨→ Vehicle front

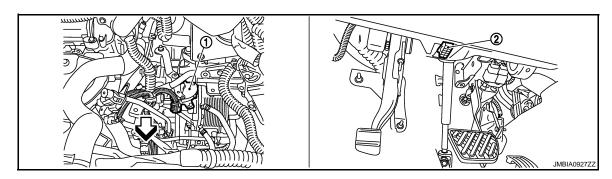
Condenser

Heated oxygen sensor 3



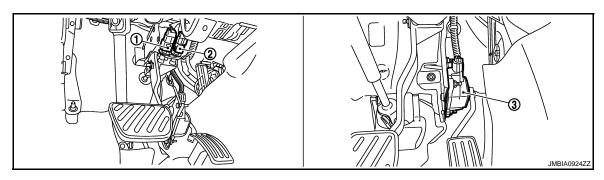
- EVAP control system pressure sen- 2. EVAP canister vent control valve
- **EVAP** canister

- Body ground
- Vehicle front

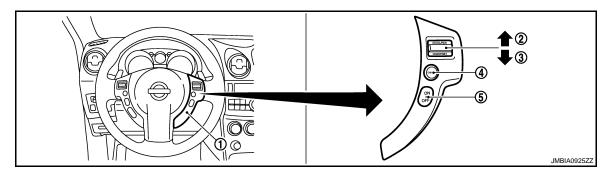


- Park/neutral position (PNP) switch
- Data link connector

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→ Vehicle front



- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor 3.

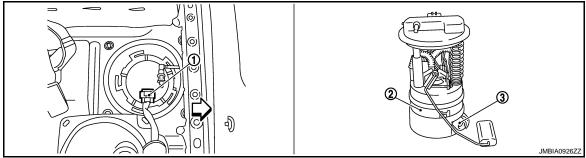


- ASCD steering switch 1.
- 2. CANSEL switch MAIN switch

RESUME/ACCERELATE switch

- SET/COAST switch

5.



- Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Revision: 2008 January

Component Description

INFOID:0000000001715061

Component	Reference
Accelerator pedal position sensor	EC-382, "Description"
Camshaft position sensor (PHASE)	EC-256, "Description"
Crankshaft position sensor (POS)	EC-252, "Description"
Engine coolant temperature sensor	EC-160, "Description"
Tumble control valve	EC-364, "Description"
Tumble control valve position sensor	EC-364, "Description"

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Diagnosis Description

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INTRODUCTION

The ECM has an on board diagnostic system, which detects malfunctions related to engine sensors or actuators. The ECM also records various emission-related diagnostic information including:

Emission-related diagnostic information	Diagnostic service
Diagnostic Trouble Code (DTC)	Service \$03 of SAE J1979
Freeze Frame data	Service \$02 of SAE J1979
System Readiness Test (SRT) code	Service \$01 of SAE J1979
1st Trip Diagnostic Trouble Code (1st Trip DTC)	Service \$07 of SAE J1979
1st Trip Freeze Frame data	
Test values and Test limits	Service \$06 of SAE J1979
Calibration ID	Service \$09 of SAE J1979

The above information can be checked using procedures listed in the table below.

×: Applicable —: Not applicable

	DTC	1st trip DTC	Freeze Frame data	1st trip Freeze Frame data	SRT code	SRT status	Test value
CONSULT-III	×	×	×	×	×	×	_
GST	×	×	×	_	×	×	×
ECM	×	×*	_	_	_	×	_

^{*:} When DTC and 1st trip DTC simultaneously appear on the display, they cannot be clearly distinguished from each other.

The malfunction indicator lamp (MIL) on the instrument panel lights up when the same malfunction is detected in two consecutive trips (Two trip detection logic), or when the ECM enters fail-safe mode. (Refer to EC-460, <a href="Fail Safe".)

TWO TRIP DETECTION LOGIC

When a malfunction is detected for the first time, 1st trip DTC and 1st trip Freeze Frame data are stored in the ECM memory. The MIL will not light up at this stage. <1st trip>

If the same malfunction is detected again during the next drive, the DTC and Freeze Frame data are stored in the ECM memory, and the MIL lights up. The MIL lights up at the same time when the DTC is stored. <2nd trip> The "trip" in the "Two Trip Detection Logic" means a driving mode in which self-diagnosis is performed during vehicle operation. Specific on board diagnostic items will cause the ECM to light up or blink the MIL, and store DTC and Freeze Frame data, even in the 1st trip, as shown below.

×: Applicable —: Not applicable

							1	
	MIL			DTC		1st trip DTC		
Items	1st trip		2nd trip		1st trip	2nd trip	1st trip	2nd trip
	Blinking	Lighting up	Blinking	Lighting up	displaying	displaying	displaying	displaying
Misfire (Possible three way catalyst damage) — DTC: P0300 - P0304 is being detected	×	_	_	_	_	_	×	_
Misfire (Possible three way catalyst damage) — DTC: P0300 - P0304 is being detected	_	_	×	_	_	×	_	_
One trip detection diagnoses (Refer to <u>EC-464</u> , " <u>DTC Index"</u> .)	_	×	_	_	×	_	_	_
Except above	_	_	_	×	_	×	×	_

DTC AND FREEZE FRAME DATA

DTC and 1st Trip DTC

< FUNCTION DIAGNOSIS >

[FOR CALIFORNIA]

The 1st trip DTC (whose number is the same as the DTC number) is displayed for the latest self-diagnostic result obtained. If the ECM memory was cleared previously, and the 1st trip DTC did not reoccur, the 1st trip DTC will not be displayed.

If a malfunction is detected during the 1st trip, the 1st trip DTC is stored in the ECM memory. The MIL will not light up (two trip detection logic). If the same malfunction is not detected in the 2nd trip (meeting the required driving pattern), the 1st trip DTC is cleared from the ECM memory. If the same malfunction is detected in the 2nd trip, both the 1st trip DTC and DTC are stored in the ECM memory and the MIL lights up. In other words, the DTC is stored in the ECM memory and the MIL lights up when the same malfunction occurs in two consecutive trips. If a 1st trip DTC is stored and a non-diagnostic operation is performed between the 1st and 2nd trips, only the 1st trip DTC will continue to be stored. For malfunctions that blink or light up the MIL during the 1st trip, the DTC and 1st trip DTC are stored in the ECM memory.

Procedures for clearing the DTC and the 1st trip DTC from the ECM memory are described in "How to Erase DTC and 1st Trip DTC.

For malfunctions in which 1st trip DTCs are displayed, refer to <u>EC-464, "DTC Index"</u>. These items are required by legal regulations to continuously monitor the system/component. In addition, the items monitored non-continuously are also displayed on CONSULT-III.

1st trip DTC is specified in Service \$07 of SAE J1979. 1st trip DTC detection occurs without lighting up the MIL and therefore does not warn the driver of a malfunction. However, 1st trip DTC detection will not prevent the vehicle from being tested, for example during Inspection/Maintenance (I/M) tests.

When a 1st trip DTC is detected, check, print out or write down and erase (1st trip) DTC and Freeze Frame data as specified in Work Flow procedure Step 2, refer to EC-18, "Work Flow". Then perform DTC CONFIRMATION PROCEDURE or Component Function Check to try to duplicate the malfunction. If the malfunction is duplicated, the item requires repair.

Freeze Frame Data and 1st Trip Freeze Frame Data

The ECM records the driving conditions such as fuel system status, calculated load value, engine coolant temperature, short term fuel trim, long term fuel trim, engine speed, vehicle speed, absolute throttle position, base fuel schedule and intake air temperature at the moment a malfunction is detected.

Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data. The data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT-III or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-III screen, not on the GST.

Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. 1st trip freeze frame data is stored in the ECM memory along with the 1st trip DTC. There is no priority for 1st trip freeze frame data and it is updated each time a different 1st trip DTC is detected. However, once freeze frame data (2nd trip detection/MIL on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

Priority	Items					
1	Freeze frame data	Misfire — DTC: P0300 - P0304 Fuel Injection System Function — DTC: P0171, P0172				
2	Except the above items (Includes CVT related items)					
3	1st trip freeze frame da	ata				

For example, the EGR malfunction (Priority: 2) was detected and the freeze frame data was stored in the 2nd trip. After that when the misfire (Priority: 1) is detected in another trip, the freeze frame data will be updated from the EGR malfunction to the misfire. The 1st trip freeze frame data is updated each time a different malfunction is detected. There is no priority for 1st trip freeze frame data. However, once freeze frame data is stored in the ECM memory, 1st trip freeze data is no longer stored (because only one freeze frame data or 1st trip freeze frame data can be stored in the ECM). If freeze frame data is stored in the ECM memory and freeze frame data with the same priority occurs later, the first (original) freeze frame data remains unchanged in the ECM memory.

Both 1st trip freeze frame data and freeze frame data (along with the DTCs) are cleared when the ECM memory is erased. Procedures for clearing the ECM memory are described in "How to Erase DTC and 1st Trip DTC".

How to Read DTC and 1st Trip DTC

(I) With CONSULT-III

With GST

CONSULT-III or GST (Generic Scan Tool) Examples: P0340, P0850, P1148, etc.

These DTCs are prescribed by SAE J2012.

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< FUNCTION DIAGNOSIS >

(CONSULT-III also displays the malfunctioning component or system.)

No Tools

The number of blinks of the MIL in the Diagnostic Test Mode II (Self-Diagnostic Results) indicates the DTC. Example: 0340, 0850, 1148, etc.

These DTCs are controlled by NISSAN.

- 1st trip DTC No. is the same as DTC No.
- Output of a DTC indicates a malfunction. However, GST or the Diagnostic Test Mode II do not indicate whether the malfunction is still occurring or has occurred in the past and has returned to normal. CONSULT-III can identify malfunction status as shown below. Therefore, using CONSULT-III (if available) is recommended.

DTC or 1st trip DTC of a malfunction is displayed in "SELF-DIAGNOSTIC RESULTS" mode of CONSULT-III. Time data indicates how many times the vehicle was driven after the last detection of a DTC.

If the DTC is being detected currently, the time data will be [0].

If a 1st trip DTC is stored in the ECM, the time data will be [1t].

How to Erase DTC and 1st Trip DTC

(P) With CONSULT-III

NOTE:

- If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- If the DTC is not for CVT related items (see EC-464, "DTC Index"), skip step 1.
- 1. Erase DTC in TCM. Refer to TM-41, "Diagnosis Description".
- 2. Select "ENGINE" with CONSULT-III.
- 3. Select "SELF-DIAG RESULTS".
- 4. Touch "ERASE". (DTC in ECM will be erased.)

With GST

NOTE:

- If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- If the DTC is not for CVT related items (see EC-464, "DTC Index"), skip step 1.
- 1. Erase DTC in TCM. Refer to TM-41, "Diagnosis Description".
- 2. Select Service \$04 with GST (Generic Scan Tool).

No Tools

NOTE:

- If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- If the DTC is not for CVT related items (see EC-464, "DTC Index"), skip step 1.
- 1. Erase DTC in TCM. Refer to TM-41, "Diagnosis Description".
- Erase DTC in ECM. Refer to How to Erase Diagnostic Test Mode II (Self-diagnostic Results).
- If the battery is disconnected, the emission-related diagnostic information will be lost within 24 hours.
- The following data are cleared when the ECM memory is erased.
- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- Freeze frame data
- 1st trip freeze frame data
- System readiness test (SRT) codes
- Test values

Actual work procedures are explained using a DTC as an example. Be careful so that not only the DTC, but all of the data listed above, are cleared from the ECM memory during work procedures.

SYSTEM READINESS TEST (SRT) CODE

System Readiness Test (SRT) code is specified in Service \$01 of SAE J1979.

As part of an enhanced emissions test for Inspection & Maintenance (I/M), certain states require the status of SRT be used to indicate whether the ECM has completed self-diagnosis of major emission systems and components. Completion must be verified in order for the emissions inspection to proceed.

If a vehicle is rejected for a State emissions inspection due to one or more SRT items indicating "INCMP", use the information in this Service Manual to set the SRT to "CMPLT".

In most cases the ECM will automatically complete its self-diagnosis cycle during normal usage, and the SRT status will indicate "CMPLT" for each application system. Once set as "CMPLT", the SRT status remains "CMPLT" until the self-diagnosis memory is erased.

< FUNCTION DIAGNOSIS >

[FOR CALIFORNIA]

Occasionally, certain portions of the self-diagnostic test may not be completed as a result of the customer's normal driving pattern; the SRT will indicate "INCMP" for these items.

NOTE:

The SRT will also indicate "INCMP" if the self-diagnosis memory is erased for any reason or if the ECM memory power supply is interrupted for several hours.

If, during the state emissions inspection, the SRT indicates "CMPLT" for all test items, the inspector will continue with the emissions test. However, if the SRT indicates "INCMP" for one or more of the SRT items the vehicle is returned to the customer untested.

NOTE:

If MIL is ON during the state emissions inspection, the vehicle is also returned to the customer untested even though the SRT indicates "CMPLT" for all test items. Therefore, it is important to check SRT ("CMPLT") and DTC (No DTCs) before the inspection.

SRT Item

The table below shows required self-diagnostic items to set the SRT to "CMPLT".

SRT item (CONSULT-III indication)	Performance Priority*	Required self-diagnostic items to set the SRT to "CMPLT"	Corresponding DTC No.
CATALYST	2	Three way catalyst function	P0420
		HC adsorption catalyst function	P2423
EVAP SYSTEM	2	EVAP control system purge flow monitoring	P0441
	1	EVAP control system	P0442
	2	EVAP control system	P0456
HO2S	2	Air fuel ratio (A/F) sensor 1	P0133
		Heated oxygen sensor 2	P0137
		Heated oxygen sensor 2	P0138
		Heated oxygen sensor 2	P0139
		Heated oxygen sensor 3	P0143
		Heated oxygen sensor 3	P0144
		Heated oxygen sensor 3	P0145

^{*:} If completion of several SRTs is required, perform driving patterns (DTC CONFIRMATION PROCEDURE), one by one based on the priority for models with CONSULT-III.

SRT Set Timing

SRT is set as "CMPLT" after self-diagnosis has been performed one or more times. Completion of SRT is done regardless of whether the result is OK or NG. The set timing is different between OK and NG results and is shown in the table below.

Self-diagnosis result		Example					
		Diagnosis	Diagnosis $ \begin{array}{c} \text{Ignition cycle} \\ \leftarrow \text{ON} \rightarrow \text{ OFF } \leftarrow \text{ON} \rightarrow \text{ OFF } \leftarrow \text{ON} \rightarrow \text{ OFF } \leftarrow \text{ON} \\ \end{array} $				
All OK Case 1		P0400	OK (1)	—(1)	OK (2)	— (2)	
		P0402	OK (1)	— (1)	— (1)	OK (2)	
		P1402	OK (1)	OK (2)	— (2)	— (2)	
		SRT of EGR	"CMPLT"	"CMPLT"	"CMPLT"	"CMPLT"	
	Case 2	P0400	OK (1)	— (1)	— (1)	— (1)	
		P0402	— (0)	— (0)	OK (1)	— (1)	
		P1402	OK (1)	OK (2)	— (2)	— (2)	
		SRT of EGR	"INCMP"	"INCMP"	"CMPLT"	"CMPLT"	

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< FUNCTION DIAGNOSIS >

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NG exists	Case 3	P0400	OK	OK	_	_
		P0402	_	_	_	_
		P1402	NG	_	NG	NG (Consecutive NG)
		(1st trip) DTC	1st trip DTC	_	1st trip DTC	DTC (= MIL ON)
		SRT of EGR	"INCMP"	"INCMP"	"INCMP"	"CMPLT"

OK: Self-diagnosis is carried out and the result is OK.

NG: Self-diagnosis is carried out and the result is NG.

-: Self-diagnosis is not carried out.

When all SRT related self-diagnoses showed OK results in a single cycle (Ignition OFF-ON-OFF), the SRT will indicate "CMPLT". → Case 1 above

When all SRT related self-diagnoses showed OK results through several different cycles, the SRT will indicate "CMPLT" at the time the respective self-diagnoses have at least one OK result. → Case 2 above

If one or more SRT related self-diagnoses showed NG results in 2 consecutive cycles, the SRT will also indicate "CMPLT". \rightarrow Case 3 above

The table above shows that the minimum number of cycles for setting SRT as "INCMP" is one (1) for each self-diagnosis (Case 1 & 2) or two (2) for one of self-diagnoses (Case 3). However, in preparation for the state emissions inspection, it is unnecessary for each self-diagnosis to be executed twice (Case 3) for the following reasons:

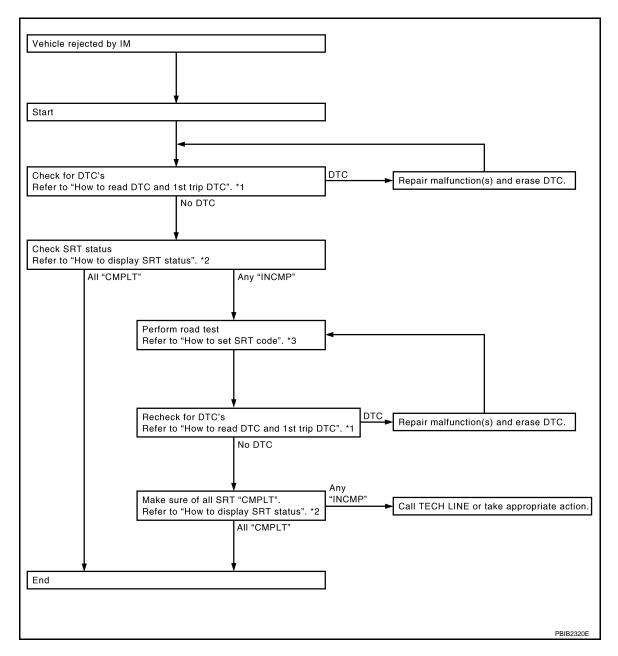
- The SRT will indicate "CMPLT" at the time the respective self-diagnoses have one (1) OK result.
- The emissions inspection requires "CMPLT" of the SRT only with OK self-diagnosis results.
- When, during SRT driving pattern, 1st trip DTC (NG) is detected prior to "CMPLT" of SRT, the self-diagnosis memory must be erased from ECM after repair.
- If the 1st trip DTC is erased, all the SRT will indicate "INCMP".

NOTE:

SRT can be set as "CMPLT" together with the DTC(s). Therefore, DTC check must always be carried out prior to the state emission inspection even though the SRT indicates "CMPLT".

SRT Service Procedure

If a vehicle has failed the state emissions inspection due to one or more SRT items indicating "INCMP", review the flowchart diagnostic sequence on the next page.



"How to Read DTC and 1st Trip DTC" *2 "How to Display SRT Status"

*3 "How to Set SRT Code"

How to Display SRT Status

(P)WITH CONSULT-III

Selecting "SRT STATUS" in "DTC CONFIRMATION" mode with CONSULT-III.

For items whose SRT codes are set, a "CMPLT" is displayed on the CONSULT-III screen; for items whose SRT codes are not set, "INCMP" is displayed.

NOTE:

Though displayed on the CONSULT-III screen, "HO2S HTR" is not SRT item.

WITH GST

Selecting Service \$01 with GST (Generic Scan Tool)

NO TOOLS

A SRT code itself can not be displayed while only SRT status can be.

- Turn ignition switch ON and wait 20 seconds.
- SRT status is indicated as shown below.
 - When all SRT codes are set, MIL lights up continuously.

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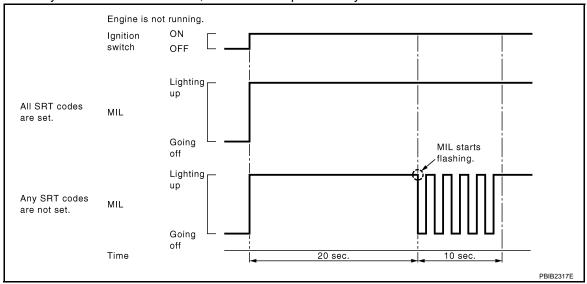
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· When any SRT codes are not set, MIL will flash periodically for 10 seconds.

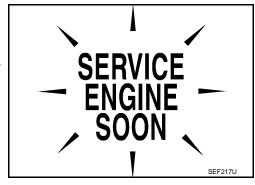


MALFUNCTION INDICATOR LAMP (MIL)

Description

The MIL is located on the instrument panel.

- The MIL will light up when the ignition switch is turned ON without the engine running. This is a bulb check.
 If the MIL does not light up, check MIL circuit. Refer to <u>EC-427</u>. "Component Function Check".
- 2. When the engine is started, the MIL should go off. If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.



On Board Diagnostic System Function

The on board diagnostic system has the following three functions.

< FUNCTION DIAGNOSIS >

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Diagnostic Test Mode	KEY and ENG. Status	Function	Explanation of Function
Mode I	Ignition switch in ON position Engine stopped	BULB CHECK	This function checks the MIL bulb for damage (blown, open circuit, etc.). If the MIL does not come on, check MIL circuit.
	Engine running	MALFUNCTION WARNING	This is a usual driving condition. When a malfunction is detected twice in two consecutive driving cycles (two trip detection logic), the MIL will light up to inform the driver that a malfunction has been detected. The following malfunctions will light up or blink the MIL in the 1st trip. • Misfire (Possible three way catalyst damage) • One trip detection diagnoses
Mode II	Ignition switch in ON position Engine stopped	SELF-DIAGNOSTIC RESULTS	This function allows DTCs and 1st trip DTCs to be read.

Diagnostic Test Mode I — Bulb Check

In this mode, the MIL on the instrument panel should stay ON. If it remains OFF, check MIL circuit. Refer to <u>EC-427</u>, "Component Function Check".

Diagnostic Test Mode I — Malfunction Warning

MIL	Condition			
ON	When the malfunction is detected.			
OFF	No malfunction.			

This DTC number is clarified in Diagnostic Test Mode II (SELF-DIAGNOSTIC RESULTS)

Diagnostic Test Mode II — Self-diagnostic Results

In this mode, the DTC and 1st trip DTC are indicated by the number of blinks of the MIL as shown below. The DTC and 1st trip DTC are displayed at the same time. If the MIL does not illuminate in diagnostic test mode I (Malfunction warning), all displayed items are 1st trip DTCs. If only one code is displayed when the MIL illuminates in diagnostic test mode II (SELF-DIAGNOSTIC RESULTS), it is a DTC; if two or more codes are displayed, they may be either DTCs or 1st trip DTCs. DTC No. is same as that of 1st trip DTC. These uniden-

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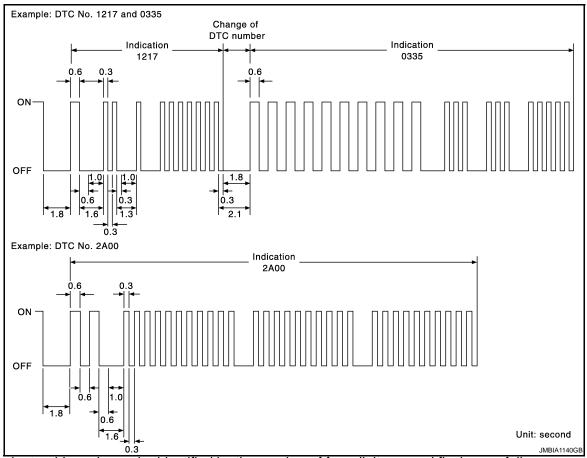
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tified codes can be identified by using the CONSULT-III or GST. A DTC will be used as an example for how to read a code.



A particular trouble code can be identified by the number of four-digit numeral flashes as follows.

Number	0	1	2	3	4	5	6	7	8	9	Α	В	С	D	Е	F
Flashes	10	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16

The length of time the 1,000th-digit numeral flashes on and off is 1.2 seconds consisting of an ON (0.6-second) - OFF (0.6-second) cycle.

The 100th-digit numeral and lower digit numerals consist of a 0.3-second ON and 0.3-second OFF cycle.

A change from one digit numeral to another occurs at an interval of 1.0-second OFF. In other words, the later numeral appears on the display 1.3 seconds after the former numeral has disappeared.

A change from one trouble code to another occurs at an interval of 1.8-second OFF.

In this way, all the detected malfunctions are classified by their DTC numbers. The DTC 0000 refers to no malfunction. (See <u>EC-464</u>, "<u>DTC Index"</u>)

How to Switch Diagnostic Test Mode

NOTE:

- It is better to count the time accurately with a clock.
- It is impossible to switch the diagnostic mode when an accelerator pedal position sensor circuit has a malfunction.
- Always ECM returns to Diagnostic Test Mode I after ignition switch is turned OFF.
 HOW TO SET DIAGNOSTIC TEST MODE II (SELF-DIAGNOSTIC RESULTS)
- 1. Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 2. Repeat the following procedure quickly five times within 5 seconds.
- Fully depress the accelerator pedal.
- Fully release the accelerator pedal.
- 3. Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 10 seconds until the MIL starts blinking.

NOTE:

Do not release the accelerator pedal for 10 seconds if MIL may start blinking on the halfway of this 10 seconds. This blinking is displaying SRT status and is continued for another 10 seconds.

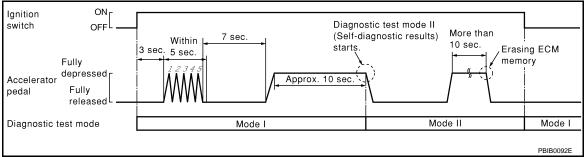
< FUNCTION DIAGNOSIS >

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Fully release the accelerator pedal.

ECM has entered to Diagnostic Test Mode II (Self-diagnostic results).

Wait until the same DTC (or 1st trip DTC) appears to confirm all DTCs certainly.



HOW TO ERASE DIAGNOSTIC TEST MODE II (SELF-DIAGNOSTIC RESULTS)

- Set ECM in Diagnostic Test Mode II (Self-diagnostic results). Refer to "How to Set Diagnostic Test Mode II (Self-diagnostic Results)".
- Fully depress the accelerator pedal and keep it for more than 10 seconds. The emission-related diagnostic information has been erased from the backup memory in the ECM.
- Fully release the accelerator pedal, and confirm the DTC 0000 is displayed.

How to Erase Diagnostic Test Mode II (Self-diagnostic Results)

The DTC can be erased from the back up memory in the ECM by depressing accelerator pedal. Refer to "How to Erase Diagnostic Test Mode II (Self-diagnostic Results)".

- If the battery is disconnected, the DTC will be lost from the backup memory within 24 hours.
- Be careful not to erase the stored memory before starting trouble diagnoses.

OBD System Operation Chart

Relationship Between MIL, 1st Trip DTC, DTC and Detectable Items

- When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data are stored in the ECM memory.
- When the same malfunction is detected in two consecutive trips, the DTC and the freeze frame data are stored in the ECM memory, and the MIL will come on.
- The MIL will go off after the vehicle is driven 3 times (driving pattern B) with no malfunction. The drive is counted only when the recorded driving pattern is met (as stored in the ECM). If another malfunction occurs while counting, the counter will reset.
- The DTC and the freeze frame data will be stored until the vehicle is driven 40 times (driving pattern A) without the same malfunction recurring (except for Misfire and Fuel Injection System). For Misfire and Fuel Injection System, the DTC and freeze frame data will be stored until the vehicle is driven 80 times (driving pattern C) without the same malfunction recurring. The "TIME" in "SELF-DIAGNOSTIC RESULTS" mode of CON-SULT-III will count the number of times the vehicle is driven.
- The 1st trip DTC is not displayed when the self-diagnosis results in OK for the 2nd trip.

Summary Chart

Items	Fuel Injection System	Misfire	Other
MIL (goes off)	3 (pattern B)	3 (pattern B)	3 (pattern B)
DTC, Freeze Frame Data (no display)	80 (pattern C)	80 (pattern C)	40 (pattern A)
1st Trip DTC (clear)	1 (pattern C), *1	1 (pattern C), *1	1 (pattern B)
1st Trip Freeze Frame Data (clear)	*1, *2	*1, *2	1 (pattern B)

For details about patterns B and C under "Fuel Injection System" and "Misfire", see "EXPLANATION FOR DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM".

For details about patterns A and B under Other, see "EXPLANATION FOR DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM".

*1: Clear timing is at the moment OK is detected.

Relationship Between MIL, DTC, 1st Trip DTC and Driving Patterns for "Misfire <Exhaust Quality Deterioration>",

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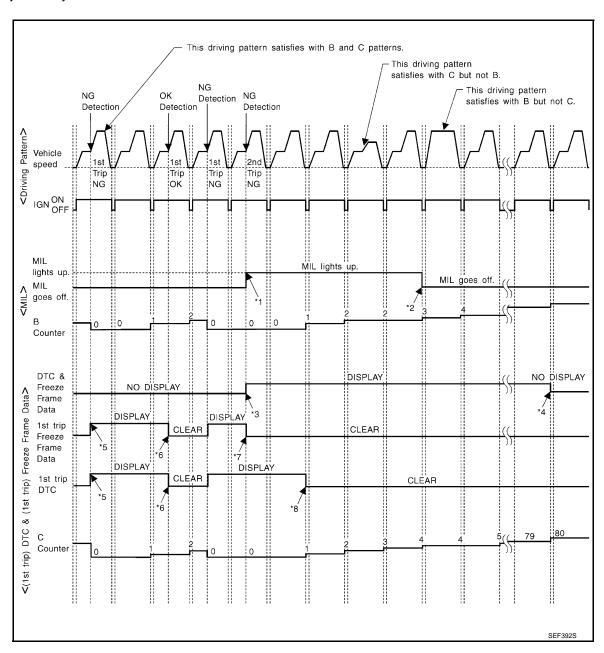
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^{*2:} Clear timing is when the same malfunction is detected in the 2nd trip.

"Fuel Injection System"



- *1: When the same malfunction is detected in two consecutive trips, MIL will light up.
- *4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 80 times (pattern C) without the same malfunction. (The DTC and the freeze frame data still remain in ECM.)
- *7: When the same malfunction is detected in the 2nd trip, the 1st trip freeze frame data will be cleared.

- *2: MIL will go off after vehicle is driven 3 *3: When the same malfunction is detimes (pattern B) without any malfunctions.
- *5: When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.
- *8: 1st trip DTC will be cleared when vehicle is driven once (pattern C) without the same malfunction after DTC is stored in ECM.
- tected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.
- *6: The 1st trip DTC and the 1st trip freeze frame data will be cleared at the moment OK is detected.

Explanation for Driving Patterns for "Misfire < Exhaust Quality Deterioration>", "Fuel Injection System" <Driving Pattern B>

Driving pattern B means the vehicle operation as follows:

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All components and systems should be monitored at least once by the OBD system.

- The B counter will be cleared when the malfunction is detected once regardless of the driving pattern.
- The B counter will be counted up when driving pattern B is satisfied without any malfunction.
- The MIL will go off when the B counter reaches 3. (*2 in "OBD SYSTEM OPERATION CHART") <Driving Pattern C>

Driving pattern C means the vehicle operation as follows:

The following conditions should be satisfied at the same time:

Engine speed: (Engine speed in the freeze frame data) \pm 375 rpm

Calculated load value: (Calculated load value in the freeze frame data) × (1±0.1) [%]

Engine coolant temperature (T) condition:

- When the freeze frame data shows lower than 70°C (158°F), T should be lower than 70°C (158°F).
- When the freeze frame data shows higher than or equal to 70°C (158°F), T should be higher than or equal to 70°C (158°F).

Example:

If the stored freeze frame data is as follows:

Engine speed: 850 rpm, Calculated load value: 30%, Engine coolant temperature: 80°C (176°F)

To be satisfied with driving pattern C, the vehicle should run under the following conditions:

Engine speed: 475 - 1,225 rpm, Calculated load value: 27 - 33%, Engine coolant temperature: more than 70°C (158°F)

- The C counter will be cleared when the malfunction is detected regardless of vehicle conditions above.
- The C counter will be counted up when vehicle conditions above is satisfied without the same malfunction.
- The DTC will not be displayed after C counter reaches 80.
- The 1st trip DTC will be cleared when C counter is counted once without the same malfunction after DTC is stored in ECM.

Relationship Between MIL, DTC, 1st Trip DTC and Driving Patterns Except For "Misfire <Exhaust Quality Deterioration>", "Fuel Injection System"

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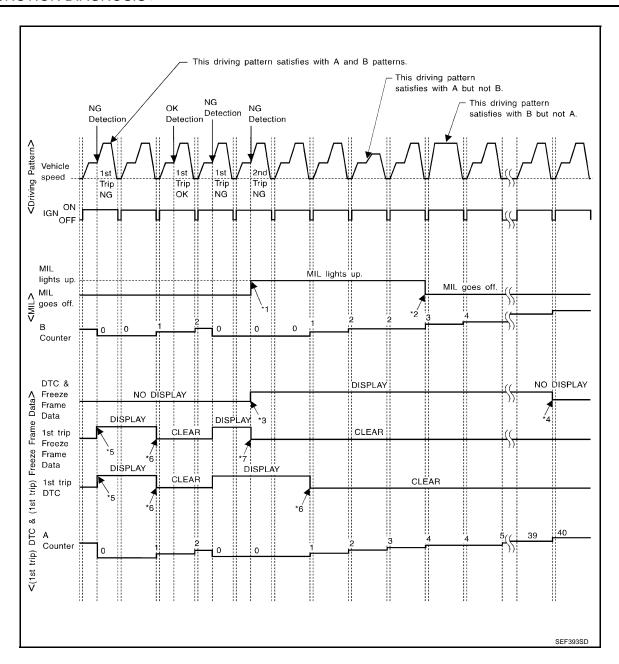
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- *1: When the same malfunction is detected in two consecutive trips, MIL will light up.
- *4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 40 times (pattern A) without the same malfunction. (The DTC and the freeze frame data still remain in ECM.)
- *7: When the same malfunction is detected in the 2nd trip, the 1st trip freeze frame data will be cleared.

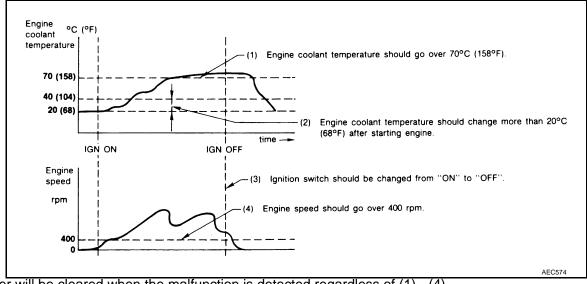
- *2: MIL will go off after vehicle is driven 3 times (pattern B) without any malfunctions.
- *5: When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.
- *3: When the same malfunction is detected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.
- *6: 1st trip DTC will be cleared after vehicle is driven once (pattern B) without the same malfunction.

Explanation for Driving Patterns Except for "Misfire <Exhaust Quality Deterioration>", "Fuel Injection System"

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<Driving Pattern A>



- The A counter will be cleared when the malfunction is detected regardless of (1) (4).
- The A counter will be counted up when (1) (4) are satisfied without the same malfunction.
- The DTC will not be displayed after the A counter reaches 40.

<Driving Pattern B>

Driving pattern B means the vehicle operation as follows:

All components and systems should be monitored at least once by the OBD system.

- The B counter will be cleared when the malfunction is detected once regardless of the driving pattern.
- The B counter will be counted up when driving pattern B is satisfied without any malfunctions.
- The MIL will go off when the B counter reaches 3 (*2 in OBD SYSTEM OPERATION CHART).

CONSULT-III Function

INFOID:0000000001715063

FUNCTION

Diagnostic test mode	Function
Work Support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on the CONSULT-III unit.
Self Diagnostic Result	Self-diagnostic results such as 1st trip DTC, DTCs and 1st trip freeze frame data or freeze frame data can be read and erased quickly.*
Data Monitor	Input/Output data in the ECM can be read.
Active Test	Diagnostic Test Mode in which CONSULT-III drives some actuators apart from the ECMs and also shifts some parameters in a specified range.
DTC & SRT Confirmation	The status of system monitoring tests and the self-diagnosis status/result can be confirmed.
Function Test	This mode is used to inform customers when their vehicle condition requires periodic maintenance.
ECU Part Number	ECM part number can be read.

^{*:} The following emission-related diagnostic information is cleared when the ECM memory is erased.

- · Diagnostic trouble codes
- · 1st trip diagnostic trouble codes
- · Freeze frame data
- · 1st trip freeze frame data
- · System readiness test (SRT) codes
- · Test values

ENGINE CONTROL COMPONENT PARTS/CONTROL SYSTEMS APPLICATION

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		DIAGNOSTIC TEST MODE								
			Self Diagr	ostic Result			DTC & SRT Confir- mation			
	ltem		DTC*1	FREEZE FRAME DATA*2	Data Monitor	Active Test	SRT STA- TUS	DTC WORK SUP- PORT		
	Crankshaft position sensor (POS)		×	×	×					
	Camshaft position sensor (PHASE)		×	×	×					
	Mass air flow sensor		×		×					
	Engine coolant temperature sensor		×	×	×	×				
	Air fuel ratio (A/F) sensor 1		×		×		×	×		
	Heated oxygen sensor 2		×		×		×	×		
	Heated oxygen sensor 3		×		×		×			
	Vehicle speed sensor		×	×	×					
STS	Accelerator pedal position sensor		×		×					
PA	Throttle position sensor		×	×	×					
Ϊ	Fuel tank temperature sensor		×		×	×				
Ö	EVAP control system pressure sensor		×		×					
ĕ ⊨	Intake air temperature sensor		×	×	×					
L CON	Knock sensor		×							
<u> </u>	Refrigerant pressure sensor				×					
ENGINE CONTROL COMPONENT PARTS INPUT	Closed throttle position switch (accelerator pedal position sensor signal)				×					
N N	Air conditioner switch				×					
EN	Park/neutral position (PNP) switch		×		×					
	Stop lamp switch		×		×					
	Battery voltage				×					
	Load signal				×					
	Primary speed sensor		×		×					
	Tumble control valve position sensor		×		×					
	Fuel level sensor		×		×					
	ASCD steering switch		×		×					
	ASCD brake switch		×		×					

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				DIAGNO	STIC TEST	MODE				
	Item			Self Diagr	nostic Result			DTC & SRT Confir- mation		
			Work Support	DTC*1	FREEZE FRAME DATA*2	Data Monitor	Active Test	SRT STA- TUS	DTC WORK SUP- PORT	Ε
		Fuel injector		×		×	×			
		Power transistor (Ignition timing)				×	×			
		Throttle control motor relay		×		×				
\TS		Throttle control motor		×						
ENGINE COTNROL COMPONENT PARTS		EVAP canister purge volume control solenoid valve		×		×	×		×	
Ä		Air conditioner relay				×				
MPO	⊢	Fuel pump relay	×			×	×			
Ö	OUTPUT	Cooling fan relay		×		×	×			
3OL	O	Air fuel ratio (A/F) sensor 1 heater		×		×		×* ³		
NE		Heated oxygen sensor 2 heater		×		×		×* ³		
ы С		Heated oxygen sensor 3 heater		×		×		×* ³		
N S		EVAP canister vent control valve	×	×		×	×			
Ä		Intake valve timing control solenoid valve		×		×	×			
		Tumble control valve motor		×		×	×			
		Calculated load value			×	×				

X: Applicable

INSPECTION PROCEDURE

Refer to CONSULT-III Operators Manual.

WORK SUPPORT MODE

Work Item

WORK ITEM	CONDITION	USAGE
FUEL PRESSURE RELEASE	FUEL PUMP WILL STOP BY TOUCHING "START" DUR- ING IDLING. CRANK A FEW TIMES AFTER ENGINE STALLS.	When releasing fuel pressure from fuel line
IDLE AIR VOL LEARN	THE IDLE AIR VOLUME THAT KEEPS THE ENGINE WITHIN THE SPECIFIED RANGE IS MEMORIZED IN ECM.	When learning the idle air volume
SELF-LEARNING CONT	THE COEFFICIENT OF SELF-LEARNING CONTROL MIXTURE RATIO RETURNS TO THE ORIGINAL COEF- FICIENT.	When clearing mixture ratio self- learning value

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^{*1:} This item includes 1st trip DTCs.

^{*2:} This mode includes 1st trip freeze frame data or freeze frame data. The items appear on CONSULT-III screen in freeze frame data mode only if a 1st trip DTC or DTC is detected. For details, refer to EC-92, "Diagnosis Description".

^{*3:} Always "CMPLT" is displayed.

< FUNCTION DIAGNOSIS >

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WORK ITEM	CONDITION	USAGE
EVAP SYSTEM CLOSE	CLOSE THE EVAP CANISTER VENT CONTROL VALVE IN ORDER TO MAKE EVAP SYSTEM CLOSE UNDER THE FOLLOWING CONDITIONS. IGN SW ON ENGINE NOT RUNNING AMBIENT TEMPERATURE IS ABOVE 0°C (32°F). NO VACUUM AND NO HIGH PRESSURE IN EVAP SYSTEM FUEL TANK TEMP. IS MORE THAN 0°C (32°F). WITHIN 10 MINUTES AFTER STARTING "EVAP SYSTEM CLOSE" UNDER THE CONDITION EXCEPT ABOVE, CONSULT-II WILL DISCONTINUE IT AND DISPLAY APPROPRIATE INSTRUCTION. NOTE: WHEN STARTING ENGINE, CONSULT-III MAY DISPLAY "BATTERY", EVEN IN USING CHARGED BATTERY".	When detecting EVAP vapor leak point of EVAP system
VIN REGISTRATION	IN THIS MODE, VIN IS REGISTERED IN ECM.	When registering VIN in ECM
TARGET IDLE RPM ADJ*	IDLE CONDITION	When setting target idle speed
TARGET IGN TIM ADJ*	IDLE CONDITION	When adjusting target ignition timing

^{*:} This function is not necessary in the usual service procedure.

SELF-DIAGNOSTIC RESULT MODE

Self Diagnostic Item

Regarding items of DTC and 1st trip DTC, refer to EC-464, "DTC Index".)

Freeze Frame Data and 1st Trip Freeze Frame Data

Freeze frame data item*	Description
DIAG TROUBLE CODE [PXXXX]	The engine control component part/control system has a trouble code, it is displayed as PXXXX. (Refer to EC-464, "DTC Index".)
FUEL SYS-B1	"Fuel injection system status" at the moment a malfunction is detected is displayed. One mode in the following is displayed. Mode2: Open loop due to detected system malfunction Mode3: Open loop due to driving conditions (power enrichment, deceleration enleanment) Mode4: Closed loop - using oxygen sensor(s) as feedback for fuel control Mode5: Open loop - has not yet satisfied condition to go to closed loop
CAL/LD VALUE [%]	The calculated load value at the moment a malfunction is detected is displayed.
COOLANT TEMP [°C] or [°F]	The engine coolant temperature at the moment a malfunction is detected is displayed.
L-FUEL TRM-B1 [%]	 "Long-term fuel trim" at the moment a malfunction is detected is displayed. The long-term fuel trim indicates much more gradual feedback compensation to the base fuel schedule than short-term fuel trim.
S-FUEL TRM-B1 [%]	 "Short-term fuel trim" at the moment a malfunction is detected is displayed. The short-term fuel trim indicates dynamic or instantaneous feedback compensation to the base fuel schedule.
ENGINE SPEED [rpm]	The engine speed at the moment a malfunction is detected is displayed.
VEHICL SPEED [km/h] or [mph]	The vehicle speed at the moment a malfunction is detected is displayed.
ABSOL TH-P/S [%]	The throttle valve opening angle at the moment a malfunction is detected is displayed.
B/FUEL SCHDL [msec]	The base fuel schedule at the moment a malfunction is detected is displayed.

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Freeze frame data item*	Description	_
INT/A TEMP SE [°C] or [°F]	The intake air temperature at the moment a malfunction is detected is displayed.	
FUEL SYS-B2		
L-FUEL TRM-B2 [%]		
S-FUEL TRM-B2 [%]	 Always a certain value is displayed. These items are not efficient for S35 models. 	
INT MANI PRES [kPa]	mode forms are not smooth for ede models.	
FTFMCH1		

^{*:} The items are the same as those of 1st trip freeze frame data.

DATA MONITOR MODE

Monitored Item

Monitored item	Unit	Description	Remarks
ENG SPEED	rpm	Indicates the engine speed computed from the signal of the crankshaft position sensor (POS) and camshaft position sensor (PHASE).	 Accuracy becomes poor if engine speed drops below the idle rpm. If the signal is interrupted while the engine is running, an abnormal value may be indicated.
MAS A/F SE-B1	V	The signal voltage of the mass air flow sensor is displayed.	 When the engine is stopped, a certain value is indicated. When engine is running specification range is indicated in "SPEC".
B/FUEL SCHDL	msec	"Base fuel schedule" indicates the fuel injection pulse width programmed into ECM, prior to any learned on board correction.	When engine is running specification range is indicated in "SPEC".
A/F ALPHA-B1	%	The mean value of the air-fuel ratio feedback cor- rection factor per cycle is indicated.	 When the engine is stopped, a certain value is indicated. When engine is running specification range is indicated in "SPEC". This data also includes the data for the air-fuel ratio learning control.
COOLAN TEMP/S	°C or °F	The engine coolant temperature (determined by the signal voltage of the engine coolant tempera- ture sensor) is displayed.	When the engine coolant temperature sensor is open or short-circuited, ECM enters fail-safe mode. The en- gine coolant temperature determined by the ECM is displayed.
A/F SEN1 (B1)	V	The A/F signal computed from the input signal of the air fuel ratio (A/F) sensor 1 is displayed.	
HO2S2 (B1)	V	The signal voltage of the heated oxygen sensor 2 is displayed.	
HO2S3 (B1)	V	The signal voltage of the heated oxygen sensor 3 is displayed.	
HO2S2 MNTR(B1)	RICH/LEAN	Display of heated oxygen sensor 2 signal: RICH: means the amount of oxygen after three way catalyst is relatively small. LEAN: means the amount of oxygen after three way catalyst is relatively large.	When the engine is stopped, a certain value is indicated.
HO2S3 MNTR(B1)	RICH/LEAN	Display of heated oxygen sensor 3 signal: RICH: means the amount of oxygen after HC adsorption catalyst is relatively small. LEAN: means the amount of oxygen after HC adsorption catalyst is relatively large.	When the engine is stopped, a certain value is indicated.
VHCL SPEED SE	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from combination meter is dis- played.	

< FUNCTION DIAGNOSIS >

[FOR CALIFORNIA]

Monitored item	Unit	Description	Remarks	
BATTERY VOLT	V	The power supply voltage of ECM is displayed.		
ACCEL SEN 1	V	The accelerator pedal position sensor signal voltage is displayed.	ACCEL SEN 2 signal is converted by ECM internally. Thus, it differs from	
ACCEL SEN 2		age is displayed.	ECM terminal voltage signal.	
TP SEN 1-B1 TP SEN 2-B1	V	The throttle position sensor signal voltage is displayed.	TP SEN 2-B1 signal is converted by ECM internally. Thus, it differs from COM to prince by talking a circuit. COM to prince by talking a circuit. COM to prince by talking a circuit.	
TI OLIVE DI			ECM terminal voltage signal.	
FUEL T/TMP SE	°C or °F	 The fuel temperature (determined by the signal voltage of the fuel tank temperature sensor) is displayed. 		
INT/A TEMP SE	°C or °F	 The intake air temperature (determined by the signal voltage of the intake air temperature sen- sor) is indicated. 		
EVAP SYS PRES	V	The signal voltage of EVAP control system pressure sensor is displayed.		
FUEL LEVEL SE	V	The signal voltage of the fuel level sensor is displayed.		
START SIGNAL	ON/OFF	Indicates start signal status [ON/OFF] computed by the ECM according to the signals of engine speed and battery voltage.	After starting the engine, [OFF] is dis- played regardless of the starter sig- nal.	
CLSD THL POS	ON/OFF	Indicates idle position [ON/OFF] computed by ECM according to the accelerator pedal position sensor signal.		
AIR COND SIG	ON/OFF	Indicates [ON/OFF] condition of the air conditioner switch as determined by the air conditioner signal.		
P/N POSI SW	ON/OFF	Indicates [ON/OFF] condition from the park/neutral position (PNP) switch signal.		
PW/ST SIGNAL	ON/OFF	[ON/OFF] condition of the power steering system (determined by the signal sent from EPS control unit) is indicated.		
LOAD SIGNAL	ON/OFF	Indicates [ON/OFF] condition from the electrical load signal. ON: Rear window defogger switch is ON and/or lighting switch is in 2nd position. OFF: Both rear window defogger switch and lighting switch are OFF.		
IGNITION SW	ON/OFF	Indicates [ON/OFF] condition from ignition switch signal.		
HEATER FAN SW	ON/OFF	Indicates [ON/OFF] condition from the heater fan switch signal.		
BRAKE SW	ON/OFF	Indicates [ON/OFF] condition from the stop lamp switch signal.		
INJ PULSE-B1	msec	Indicates the actual fuel injection pulse width compensated by ECM according to the input sig- nals.	When the engine is stopped, a certain computed value is indicated.	
IGN TIMING	BTDC	Indicates the ignition timing computed by ECM according to the input signals.	When the engine is stopped, a certain value is indicated.	
CAL/LD VALUE	%	"Calculated load value" indicates the value of the current air flow divided by peak air flow.		
MASS AIRFLOW	g⋅m/s	Indicates the mass air flow computed by ECM according to the signal voltage of the mass air flow sensor.		

< FUNCTION DIAGNOSIS >

[FOR CALIFORNIA]

Monitored item	Unit	Description	Remarks	Λ
PURG VOL C/V	%	 Indicates the EVAP canister purge volume control solenoid valve control value computed by the ECM according to the input signals. The opening becomes larger as the value increases. 		EC
INT/V TIM (B1)	°CA	Indicates [°CA] of intake camshaft advance angle.		С
INT/V SOL(B1)	%	 The control value of the intake valve timing control solenoid valve (determined by ECM according to the input signals) is indicated. The advance angle becomes larger as the value increases. 		D
SWRL CONT S/V	ON/OFF	The control condition of the tumble control valve (determined by ECM according to the input signals) is indicated. ON: Closed OFF: Open		E
TMBL POS SEN	V	The tumble control valve position sensor signal voltage is displayed.		F
AIR COND RLY	ON/OFF	The air conditioner relay control condition (determined by ECM according to the input signals) is indicated.		G
FUEL PUMP RLY	ON/OFF	Indicates the fuel pump relay control condition determined by ECM according to the input signals.		Н
VENT CONT/V	ON/OFF	The control condition of the EVAP canister vent control valve (determined by ECM according to the input signals) is indicated. ON: Closed OFF: Open		I
THRTL RELAY	ON/OFF	Indicates the throttle control motor relay control condition determined by the ECM according to the input signals.		J
COOLING FAN	HI/LOW/OFF	Indicates the condition of the cooling fan (determined by ECM according to the input signals). HI: High speed operation LOW: Low speed operation OFF: Stop		K L
HO2S2 HTR (B1)	ON/OFF	Indicates [ON/OFF] condition of heated oxygen sensor 2 heater determined by ECM according to the input signals.		M
HO2S3 HTR(B1)	ON/OFF	Indicates [ON/OFF] condition of heated oxygen sensor 3 heater determined by ECM according to the input signals.		N
I/P PULLY SPD	rpm	Indicates the engine speed computed from the turbine revolution sensor signal.		
VEHICLE SPEED	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from TCM is displayed.		0
IDL A/V LEARN	YET/CMPLT	Display the condition of Idle Air Volume Learning YET: Idle air volume learning has not been performed yet. CMPLT: Idle air volume learning has already been performed successfully.		Р
TRVL AFTER MIL	km or mile	Distance traveled while MIL is activated.		
A/F S1 HTR(B1)	%	 Air fuel ratio (A/F) sensor 1 heater control value computed by ECM according to the input signals. The current flow to the heater becomes larger as the value increases. 		

< FUNCTION DIAGNOSIS >

[FOR CALIFORNIA]

Monitored item	Unit	Description	Remarks
AC PRESS SEN	V	The signal voltage from the refrigerant pressure sensor is displayed.	
VHCL SPEED SE	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from combination meter is dis- played.	
SET VHCL SPD	km/h or mph	The preset vehicle speed is displayed.	
MAIN SW	ON/OFF	Indicates [ON/OFF] condition from MAIN switch signal.	
CANCEL SW	ON/OFF	Indicates [ON/OFF] condition from CANCEL switch signal.	
RESUME/ACC SW	ON/OFF	Indicates [ON/OFF] condition from RESUME/AC- CELERATE switch signal.	
SET SW	ON/OFF	Indicates [ON/OFF] condition from SET/COAST switch signal.	
BRAKE SW1	ON/OFF	Indicates [ON/OFF] condition from ASCD brake switch signal.	
BRAKE SW2	ON/OFF	Indicates [ON/OFF] condition of stop lamp switch signal.	
VHCL SPD CUT	NON/CUT	Indicates the vehicle cruise condition. NON: Vehicle speed is maintained at the ASCD set speed. CUT: Vehicle speed decreased to excessively low compared with the ASCD set speed, and ASCD operation is cut off.	
LO SPEED CUT	NON/CUT	Indicates the vehicle cruise condition. NON: Vehicle speed is maintained at the ASCD set speed. CUT: Vehicle speed decreased to excessively low, and ASCD operation is cut off.	
AT OD MONITOR	ON/OFF	Indicates [ON/OFF] condition of A/T O/D according to the input signal from the TCM.	
AT OD CANCEL	ON/OFF	Indicates [ON/OFF] condition of A/T O/D cancel request signal.	
CRUISE LAMP	ON/OFF	Indicates [ON/OFF] condition of CRUISE lamp determined by the ECM according to the input signals.	
SET LAMP	ON/OFF	Indicates [ON/OFF] condition of SET lamp determined by the ECM according to the input signals.	
A/F ADJ-B1	_	Indicates the correction of factor stored in ECM. The factor is calculated from the difference between the target air-fuel ratio stored in ECM and the air-fuel ratio calculated from A/F sensor 1 signal.	

NOTE

Any monitored item that does not match the vehicle being diagnosed is deleted from the display automatically.

ACTIVE TEST MODE

Test Item

< FUNCTION DIAGNOSIS >

[FOR CALIFORNIA]

TEST ITEM	CONDITION	JUDGMENT	CHECK ITEM (REMEDY)
FUEL INJECTION	Engine: Return to the original trouble condition Change the amount of fuel injection using CONSULT-III.	If trouble symptom disappears, see CHECK ITEM.	Harness and connectors Fuel injector Air fuel ratio (A/F) sensor 1
IGNITION TIMING	Engine: Return to the original trouble condition Timing light: Set Retard the ignition timing using CONSULT-III.	If trouble symptom disappears, see CHECK ITEM.	Perform Idle Air Volume Learning.
POWER BALANCE	 Engine: After warming up, idle the engine. A/C switch OFF Shift lever: P or N Cut off each fuel injector signal one at a time using CONSULT-III. 	Engine runs rough or dies.	 Harness and connectors Compression Fuel injector Power transistor Spark plug Ignition coil
COOLING FAN*	Ignition switch: ON Turn the cooling fan "LOW", "HI" and "OFF" using CONSULT-III.	Cooling fan moves and stops.	Harness and connectors IPDM E/R (Cooling fan relay) Cooling fan motor
ENG COOLANT TEMP	Engine: Return to the original trouble condition Change the engine coolant temperature using CONSULT-III.	If trouble symptom disappears, see CHECK ITEM.	Harness and connectors Engine coolant temperature sensor Fuel injector
FUEL PUMP RELAY	 Ignition switch: ON (Engine stopped) Turn the fuel pump relay "ON" and "OFF" using CONSULT-III and listen to operating sound. 	Fuel pump relay makes the operating sound.	Harness and connectors Fuel pump relay
PURG VOL CONT/V	 Engine: After warming up, run engine at 1,500 rpm. Change the EVAP canister purge volume control solenoid valve opening percent using CONSULT-III. 	Engine speed changes according to the opening percent.	Harness and connectors Solenoid valve
FUEL/T TEMP SEN	Change the fuel tank temperature	using CONSULT-III.	
VENT CONTROL/V	Ignition switch: ON (Engine stopped) Turn solenoid valve "ON" and "OFF" using CONSULT-III and listen to operating sound.	Solenoid valve makes an operating sound.	Harness and connectors Solenoid valve
V/T ASSIGN ANGLE	Engine: Return to the original trouble condition Change intake valve timing using CONSULT-III.	If trouble symptom disappears, see CHECK ITEM.	Harness and connectors Intake valve timing control solenoid valve
TUMBLE CONTROL VALVE	Ignition switch: ON Turn tumble control valve "ON" and "OFF" using CONSULT-III and listen to operating sound.	Tumble control valve motor makes an operating sound.	Harness and connectors Tumble control valve motor

^{*:} Leaving cooling fan OFF with CONSULT-III while engine is running may cause the engine to overheat.

DTC & SRT CONFIRMATION MODE

SRT STATUS Mode

For details, refer to EC-92. "Diagnosis Description".

SRT WORK SUPPORT Mode

This mode enables a technician to drive a vehicle to set the SRT while monitoring the SRT status.

DTC WORK SUPPORT Mode

Test mode	Test item	Corresponding DTC No.	Reference page
	EVP SML LEAK P0442/P1442*	P0442	EC-269
	EVF SIVIL LEAK FU442/F1442	P0455	EC-304
EVAPORATIVE SYSTEM	EVP V/S LEAK P0456/P1456*	P0456	EC-310
	PURG VOL CN/V P1444	P0443	EC-275
	PURG FLOW P0441	P0441	EC-264
A/F SEN1	A/F SEN1(B1) P1278/P1279	P0133	EC-183
A/F SENT	A/F SEN1(B1) P1276	P0130	EC-173
	HO2S2(B1) P1146	P0138	EC-194
HO2S2	HO2S2(B1) P1147	P0137	EC-188
	HO2S2(B1) P0139	P0139	EC-201

^{*:} DTC P1442 and P1456 does not apply to S35 models but appears in DTC Work Support Mode screens.

Diagnosis Tool Function

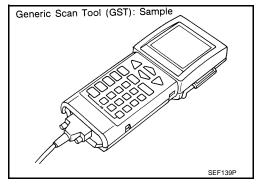
INFOID:0000000001715064

DESCRIPTION

Generic Scan Tool (OBD II scan tool) complying with SAE J1978 has 8 different functions explained below.

ISO 15765-4 is used as the protocol.

The name "GST" or "Generic Scan Tool" is used in this service manual.



FUNCTION

Di	agnostic Service	Function
Service \$01	READINESS TESTS This diagnostic service gains access to current emission-related data values, incluated alog inputs and outputs, digital inputs and outputs, and system status information	
Service \$02	(FREEZE DATA)	This diagnostic service gains access to emission-related data value which were stored by ECM during the freeze frame. For details, refer to EC-92 , "Diagnosis Description".
Service \$03	DTCs	This diagnostic service gains access to emission-related power train trouble codes which were stored by ECM.
Service \$04	CLEAR DIAG INFO	This diagnostic service can clear all emission-related diagnostic information. This includes: • Clear number of diagnostic trouble codes (Service \$01) • Clear diagnostic trouble codes (Service \$03) • Clear trouble code for freeze frame data (Service \$01) • Clear freeze frame data (Service \$02) • Reset status of system monitoring test (Service \$01) • Clear on board monitoring test results (Service \$06 and \$07)
Service \$06	(ON BOARD TESTS)	This diagnostic service accesses the results of on board diagnostic monitoring tests of specific components/systems that are not continuously monitored.
Service \$07	(ON BOARD TESTS)	This diagnostic service enables the off board test drive to obtain test results for emission-related powertrain components/systems that are continuously monitored during normal driving conditions.

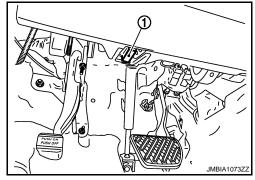
< FUNCTION DIAGNOSIS >

[FOR CALIFORNIA]

Diagnostic Service		Function
Service \$08	_	This diagnostic service can close EVAP system in ignition switch ON position (Engine stopped). When this diagnostic service is performed, EVAP canister vent control valve can be closed. In the following conditions, this diagnostic service cannot function. • Low ambient temperature • Low battery voltage • Engine running • Ignition switch OFF • Low fuel temperature • Too much pressure is applied to EVAP system
Service \$09	vice \$09 (CALIBRATION ID) This diagnostic service enables the off-board test device to request specific mation such as Vehicle Identification Number (VIN) and Calibration IDs.	

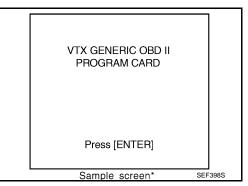
INSPECTION PROCEDURE

- Turn ignition switch OFF.
- Connect "GST" to data link connector (1), which is located under LH dash panel.
- Turn ignition switch ON.



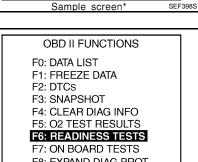
Enter the program according to instruction on the screen or in the operation manual.

(*: Regarding GST screens in this section, sample screens are shown.)



5. Perform each diagnostic mode according to each service proce-

For further information, see the GST Operation Manual of the tool maker.



F8: EXPAND DIAG PROT F9: UNIT CONVERSION

> Sample screen* SEF416S

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

COMPONENT DIAGNOSIS

TROUBLE DIAGNOSIS - SPECIFICATION VALUE

Description INFOID.000000001715065

The specification (SP) value indicates the tolerance of the value that is displayed in "SPEC" of "DATA MONITOR" mode of CONSULT-III during normal operation of the Engine Control System. When the value in "SPEC" of "DATA MONITOR" mode is within the SP value, the Engine Control System is confirmed OK. When the value in "SPEC" of "DATA MONITOR" mode is NOT within the SP value, the Engine Control System may have one or more malfunctions.

The SP value is used to detect malfunctions that may affect the Engine Control System, but will not light the MIL.

The SP value will be displayed for the following three items:

- B/FUEL SCHDL (The fuel injection pulse width programmed into ECM prior to any learned on board correction)
- A/F ALPHA-B1 (The mean value of air-fuel ratio feedback correction factor per cycle)
- MAS A/F SE-B1 (The signal voltage of the mass air flow sensor)

Component Function Check

INFOID:0000000001715066

1.START

Make sure that all of the following conditions are satisfied.

- Vehicle driven distance: More than 5,000 km (3,107 miles)
- Barometric pressure: 98.3 104.3 kPa (1.003 1.064 kg/cm², 14.25 15.12 psi)
- Atmospheric temperature: 20 30°C (68 86°F)
- Engine coolant temperature: 75 95°C (167 203°F)
- Engine speed: Idle
- Transmission: Warmed-up
- After the engine is warmed up to normal operating temperature, drive vehicle until "FLUID TEMP SE" (CVT fluid temperature sensor signal) indicates more than 60°C (140°F).
- Electrical load: Not applied
- Rear window defogger switch, air conditioner switch, lighting switch are OFF. Steering wheel is straight ahead.

>> GO TO 2.

2.PERFORM "SPEC" OF "DATA MONITOR" MODE

(P)With CONSULT-III

NOTE:

Perform "SPEC" in "DATA MONITOR" mode in maximum scale display.

- 1. Perform EC-22, "BASIC INSPECTION: Special Repair Requirement".
- Select "B/FUEL SCHDL", "A/F ALPHA-B1" and "MAS A/F SE-B1" in "SPEC" of "DATA MONITOR" mode with CONSULT-III.
- 3. Make sure that monitor items are within the SP value.

Is the inspection result normal?

YES >> END

NO >> Go to EC-117, "Diagnosis Procedure".

< COMPONENT DIAGNOSIS >

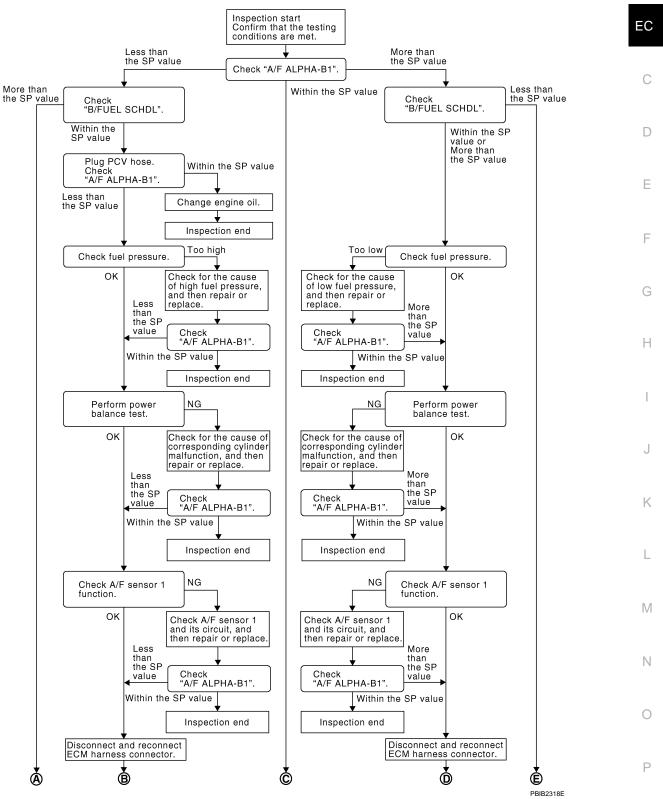
[FOR CALIFORNIA]

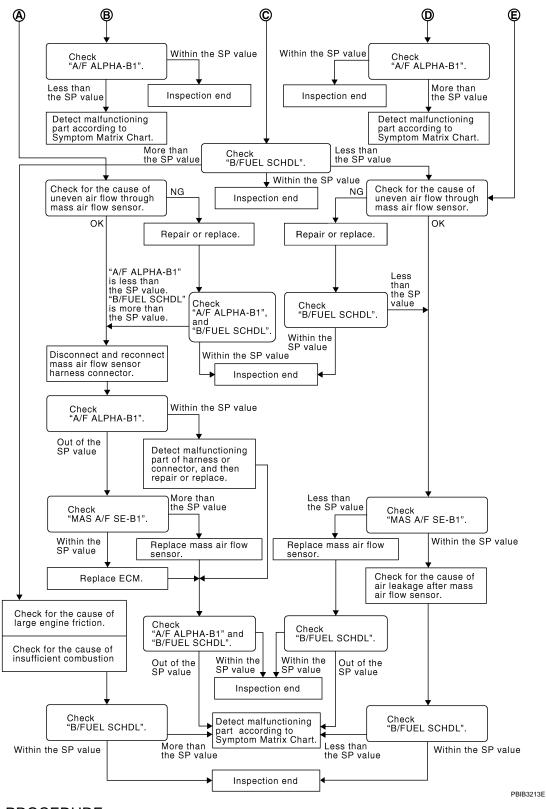
Diagnosis Procedure

INFOID:0000000001715067

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OVERALL SEQUENCE





DETAILED PROCEDURE

1.CHECK "A/F ALPHA-B1"

(E)With CONSULT-III

- Start engine.
- Confirm that the testing conditions are met. Refer to <u>EC-116, "Component Function Check"</u>.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the each indication is within the SP value.

[FOR CALIFORNIA] < COMPONENT DIAGNOSIS >

NOTE:

Check "A/F ALPHA-B1" for approximately 1 minute because they may fluctuate. It is NG if the indication is out of the SP value even a little.

Is the measurement value within the SP value?

>> GO TO 17. YES

NO-1 >> Less than the SP value: GO TO 2.

NO-2 >> More than the SP value: GO TO 3.

2.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 4.

NO >> More than the SP value: GO TO 19.

3.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 6.

NO-1 >> More than the SP value: GO TO 6.

NO-2 >> Less than the SP value: GO TO 25.

4.CHECK "A/F ALPHA-B1"

- Stop the engine.
- Disconnect PCV hose, and then plug it. 2.
- Start engine. 3.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 5.

NO >> GO TO 6.

5. CHANGE ENGINE OIL

- Stop the engine.
- 2. Change engine oil.

NOTE:

This symptom may occur when a large amount of gasoline is mixed with engine oil because of driving conditions (such as when engine oil temperature does not rise enough since a journey distance is too short during winter). The symptom will not be detected after changing engine oil or changing driving condition.

>> INSPECTION END

$\mathbf{6}.$ CHECK FUEL PRESSURE

Check fuel pressure. (Refer to EC-486, "Inspection".)

Is the inspection result normal?

YES >> GO TO 9.

NO-1 >> Fuel pressure is too high: Replace "fuel filter and fuel pump assembly" and then GO TO 8.

NO-2 >> Fuel pressure is too low: GO TO 7.

.DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging

Is the inspection result normal?

YES >> Replace "fuel filter and fuel pump assembly" and then GO TO 8.

NO >> Repair or replace and then GO TO 8.

 $oldsymbol{8}.$ CHECK "A/F ALPHA-B1"

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

- Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> GO TO 9.

9.PERFORM POWER BALANCE TEST

- Perform "POWER BALANCE" in "ACTIVE TEST" mode.
- Make sure that the each cylinder produces a momentary engine speed drop.

Is the inspection result normal?

YES >> GO TO 12.

NO >> GO TO 10.

10. DETECT MALFUNCTIONING PART

Check the following.

- Ignition coil and its circuit (Refer to EC-422, "Component Function Check".)
- Fuel injector and its circuit (Refer to EC-416, "Component Function Check".)
- Intake air leakage
- Low compression pressure (Refer to EM-23, "Inspection".)

Is the inspection result normal?

YES >> Replace fuel injector and then GO TO 11.

NO >> Repair or replace malfunctioning part and then GO TO 11.

11. CHECK "A/F ALPHA-B1"

- Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> GO TO 12.

12.CHECK A/F SENSOR 1 FUNCTION

Perform all DTC CONFIRMATION PROCEDURE related with A/F sensor 1.

- For DTC P0130, refer to <u>EC-173, "DTC Logic"</u>.
 For DTC P0131, refer to <u>EC-177, "DTC Logic"</u>.
- For DTC P0132, refer to <u>EC-180, "DTC Logic"</u>.
- For DTC P0133, refer to EC-183, "DTC Logic".
- For DTC P2A00, refer to EC-400, "DTC Logic"

Is any DTC detected?

YES >> GO TO 15.

>> GO TO 13. NO

13. CHECK A/F SENSOR 1 CIRCUIT

Perform DIAGNOSTIC PROCEDURE according to corresponding DTC.

>> GO TO 14.

14.CHECK "A/F ALPHA-B1"

- 1. Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the each indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

>> GO TO 15. NO

15. DISCONNECT AND RECONNECT ECM HARNESS CONNECTOR

Stop the engine.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Disconnect ECM harness connector. Check pin terminal and connector for damage, and then reconnect it. >> GO TO 16. 16. CHECK "A/F ALPHA-B1" EC Start engine. Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Detect malfunctioning part according to <a>EC-475, "Symptom Table".

17 CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

>> INSPECTION END

NO-1 >> More than the SP value: GO TO 18.

NO-2 >> Less than the SP value: GO TO 25.

18.DETECT MALFUNCTIONING PART

Check for the cause of large engine friction. Refer to the following.

Engine oil level is too high

Engine oil viscosity

- Belt tension of power steering, alternator, A/C compressor, etc. is excessive
- Noise from engine
- Noise from transmission, etc.
- 2. Check for the cause of insufficient combustion. Refer to the following.
- Valve clearance malfunction
- Intake valve timing control function malfunction
- Camshaft sprocket installation malfunction, etc.

>> Repair or replace malfunctioning part, and then GO TO 30.

19. CHECK INTAKE SYSTEM

Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.

- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system

Is the inspection result normal?

YES >> GO TO 21.

NO >> Repair or replace malfunctioning part, and then GO TO 20.

20.CHECK "A/F ALPHA-B1", AND "B/FUEL SCHDL"

Select "A/F ALPHA-B1" and "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the each indication is within the SP value.

Is the measurement value within the SP value?

>> INSPECTION END

NO >> "B/FUEL SCHDL" is more, "A/F ALPHA-B1" is less than the SP value: GO TO 21.

21. DISCONNECT AND RECONNECT MASS AIR FLOW SENSOR HARNESS CONNECTOR

- Stop the engine.
- Disconnect mass air flow sensor harness connector. Check pin terminal and connector for damage and then reconnect it again.

>> GO TO 22.

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[FOR CALIFORNIA]

22.CHECK "A/F ALPHA-B1"

- 1. Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> Detect malfunctioning part of mass air flow sensor circuit and repair it. Refer to <u>EC-145</u>, "<u>DTC Logic</u>". Then GO TO 29.

NO >> GO TO 23.

23. CHECK "MAS A/F SE-B1"

Select "MAS A/F SE-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 24.

NO >> More than the SP value: Replace mass air flow sensor, and then GO TO 29.

24.REPLACE ECM

- 1. Replace ECM.
- Go to EC-25, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> GO TO 29.

25. CHECK INTAKE SYSTEM

Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.

- · Crushed air ducts
- Malfunctioning seal of air cleaner element
- · Uneven dirt of air cleaner element
- · Improper specification of intake air system

Is the inspection result normal?

YES >> GO TO 27.

NO >> Repair or replace malfunctioning part, and then GO TO 26.

26.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Less than the SP value: GO TO 27.

27.CHECK "MAS A/F SE-B1"

Select "MAS A/F SE-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 28.

NO >> Less than the SP value: Replace mass air flow sensor, and then GO TO 30.

28. CHECK INTAKE SYSTEM

Check for the cause of air leak after the mass air flow sensor. Refer to the following.

- · Disconnection, looseness, and cracks in air duct
- Looseness of oil filler cap
- · Disconnection of oil level gauge
- Open stuck, breakage, hose disconnection, or cracks of PCV valve
- Disconnection or cracks of EVAP purge hose, open stuck of EVAP canister purge volume control solenoid valve
- Malfunctioning seal of rocker cover gasket
- Disconnection, looseness, or cracks of hoses, such as vacuum hose, connecting to intake air system parts

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

• Malfunctioning seal of intake air system, etc.

>> GO TO 30.

29.CHECK "A/F ALPHA-B1" AND "B/FUEL SCHDL"

Select "A/F ALPHA-B1" and "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Detect malfunctioning part according to EC-475, "Symptom Table".

30. CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and then make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Detect malfunctioning part according to EC-475, "Symptom Table".

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POWER SUPPLY AND GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000001715068

1.INSPECTION START

Start engine.

Is engine running?

YES >> GO TO 8. NO >> GO TO 2.

2. CHECK ECM POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch OFF and then ON.
- 2. Check the voltage between ECM harness connector and ground.

EC	CM	Ground	Voltage
Connector	Connector Terminal		voltage
E16	93	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R harness connector E14
- 15A fuse (No. 64)
- · Harness for open or short between ECM and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK GROUND CONNECTION-I

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace ground connection.

${f 5.}$ CHECK ECM GROUND CIRCUIT FOR OPEN AND SHORT-I

- 1. Disconnect ECM harness connectors.
- 2. Check the continuity between ECM harness connector and ground.

ECM		Ground	Continuity	
Connector	Terminal	Ground	Continuity	
F7	12			
Г/	16	- Ground		
	107		Cround Evision	Existed
E16	108		Existed	
L10	111			
	112			

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

POWER SUPPLY AND GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F121, E7
- Harness for open or short between ECM and ground

EC

>> Repair open circuit or short to power in harness or connectors.

7. CHECK ECM POWER SUPPLY CIRCUIT-II

- 1. Reconnect ECM harness connectors.
- 2. Turn ignition switch ON.
- 3. Check the voltage between IPDM E/R harness connector and ground.

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IPDN	/I E/R	Ground	Voltage
Connector Terminal		Orodria	Voltage
E15	47	Ground	Battery voltage

Is the inspection result normal?

YES >> Go to EC-422, "Diagnosis Procedure".

NO >> GO TO 8.

8.CHECK ECM POWER SUPPLY CIRCUIT-III

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Check the voltage between ECM harness connector and ground.

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ECM		Ground	Voltage
Connector	Terminal	Ground	voltage
E16	105	Ground	After turning ignition switch OFF, battery voltage will exist for a few seconds, then drop approximately 0V.

Is the inspection result normal?

YES >> GO TO 14.

NO-1 >> Battery voltage does not exist: GO TO 9.

NO-2 >> Battery voltage exists for more than a few seconds: GO TO 11.

9. CHECK ECM POWER SUPPLY CIRCUIT-IV

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Check the voltage between ECM harness connector and ground.

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EC	CM	Ground	Voltage	
Connector Terminal		Giodila	voltage	
F7	24	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 11.

10.CHECK ECM POWER SUPPLY CIRCUIT-V

- 1. Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector E15.
- 3. Check the continuity between ECM harness connector and IPDM E/R harness connector.

ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E16	105	E15	48	Existed

4. Also check harness for short to ground and short to power.

POWER SUPPLY AND GROUND CIRCUIT

[FOR CALIFORNIA]

< COMPONENT DIAGNOSIS >

Is the inspection result normal?
YES >> GO TO 17.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

11. CHECK ECM POWER SUPPLY CIRCUIT-VI

- 1. Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector E15.
- 3. Check the continuity between ECM harness connector and IPDM E/R harness connector.

ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F7	24	E15	51	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 13. NO >> GO TO 12.

12. DETECT MALFUNCTIONING PART

Check the following.

- Harness or connectors F121, E7
- Harness for open or short between ECM and IPDM E/R

>> Repair open circuit or short to ground or short power in harness or connectors.

13. CHECK 20A FUSE

- 1. Disconnect 20A fuse (No. 62) from IPDM E/R.
- 2. Check 20A fuse.

Is the inspection result normal?

YES >> GO TO 17.

NO >> Replace 20A fuse.

14. CHECK GROUND CONNECTION-II

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Repair or replace ground connection.

15. CHECK ECM GROUND CIRCUIT FOR OPEN AND SHORT-II

- 1. Disconnect ECM harness connector.
- 2. Check the continuity between ECM harness connector and ground.

ECM		Ground	Continuity
Connector	Connector Terminal		
F7	12		Existed
ГΙ	16	Ground	
	107		
E16	108		
LIU	111		
	112		

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 17.

POWER SUPPLY AND GROUND CIRCUIT		
< COMPONENT DIAGNOSIS >	[FOR CALIFORNIA]	
NO >> GO TO 16.		۸
16. DETECT MALFUNCTIONING PART	_	Α
Check the following. • Harness or connectors F121, E7 • Harness for open or short between ECM and ground		EC
>> Repair open circuit or short to power in harness or connectors. 17.CHECK INTERMITTENT INCIDENT		С
Refer to GI-41, "Intermittent Incident".		D
Is the inspection result normal? YES >> Replace IPDM E/R.		D
NO >> Repair open circuit or short to power in harness or connectors.		Е
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[FOR CALIFORNIA]

U1000, U1001 CAN COMM CIRCUIT

Description INFOID:0000000001715069

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic INFOID:000000001715070

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
U1000	CAN communication line	When ECM is not transmitting or receiving CAN communication signal of OBD (emission related diagnosis) for 2 seconds or more.	Harness or connectors (CAN communication line is open or
U1001		When ECM is not transmitting or receiving CAN communication signal other than OBD (emission related diagnosis) for 2 seconds or more.	

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 3 seconds.
- Check DTC.

Is DTC detected?

YES >> EC-128, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

Go to LAN-14, "Trouble Diagnosis Flow Chart".

INFOID:0000000001715071

[FOR CALIFORNIA]

P0011 IVT CONTROL

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0011 is displayed with DTC P0075, first perform the trouble diagnosis for EC-333, "DTC Logic".

DTC No.	Trouble diagnosis name	Detecting condition	Possible cause
P0011	Intake valve timing control performance	There is a gap between angle of target and phase-control angle degree.	 Crankshaft position sensor (POS) Camshaft position sensor (PHASE) Intake valve control solenoid valve Accumulation of debris to the signal pick-up portion of the camshaft Timing chain installation Foreign matter caught in the oil groove for intake valve timing control

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is between 10V and 16V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE-I

(P)With CONSULT-III

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Maintain the following conditions for at least 6 consecutive seconds. Hold the accelerator pedal as steady as possible.

VHCL SPEED SE	100 - 120 km/h (63 - 75 mph)
ENG SPEED	1,700 - 2,000 rpm
COOLAN TEMP/S	More than 60°C (140°F)
B/FUEL SCHDL	More than 3.5 msec
Shift lever	D position

CAUTION:

Always drive at a safe speed.

- 4. Stop vehicle with engine running and let engine idle for 10 seconds.
- Check 1st trip DTC.

■With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-130, "Diagnosis Procedure"

NO >> GO TO 3.

3.perform dtc confirmation procedure-ii

(P)With CONSULT-III

1. Maintain the following conditions for at least 20 consecutive seconds.

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< COMPONENT DIAGNOSIS >

ENG SPEED	1,200 - 3,175 rpm (A constant rotation is maintained.)
COOLAN TEMP/S	More than 70°C (221°F)
Shift lever	1st or 2nd position
Driving location uphill	Driving vehicle uphill (Increased engine load will help maintain the driving conditions required for this test.)

CAUTION:

Always drive at a safe speed.

2. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-130, "Diagnosis Procedure"

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715076

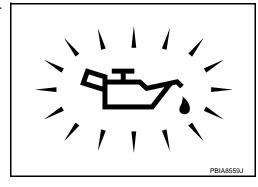
1. CHECK OIL PRESSURE WARNING LAMP

- 1. Start engine.
- 2. Check oil pressure warning lamp and confirm it is not illuminated.

Is oil pressure warning lamp illuminated?

YES >> Go to <u>LU-5</u>, "Inspection".

NO >> GO TO 2.



2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Refer to EC-131. "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace intake valve timing control solenoid valve.

3. CHECK CRANKSHAFT POSITION SENSOR (POS)

Refer to EC-255, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace crankshaft position sensor (POS).

4.CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-258, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace camshaft position sensor (PHASE).

CHECK CAMSHAFT (INTAKE)

Check the following.

P0011 IVT CONTROL

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

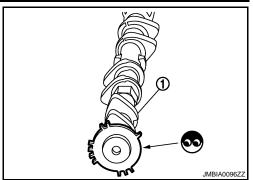
- Accumulation of debris to the signal plate of camshaft (1) rear end
- · Chipping signal plate of camshaft rear end

Is the inspection result normal?

YES >> GO TO 6.

NO >> Remove debris and clean the signal plate of camshaft rear end or replace camshaft.





6.CHECK TIMING CHAIN INSTALLATION

Check service records for any recent repairs that may cause timing chain misaligned.

Are there any service records that may cause timing chain misaligned?

>> Check timing chain installation. Refer to EM-69, "Removal and Installation".

NO >> GO TO 7.

7.CHECK LUBRICATION CIRCUIT

Refer to EM-52, "Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Clean lubrication line.

8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001715077

1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- Turn ignition switch OFF.
- 2. Disconnect intake valve timing control solenoid valve harness connector.
- Check resistance between intake valve timing control solenoid valve terminals as follows.

Terminals	Resistance
1 and 2	7.0 - 7.5Ω [at 20°C (68°F)]
1 or 2 and ground	${}^{\infty\Omega}$ (Continuity should not exist)

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace intake valve timing control solenoid valve.

2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

Remove intake valve timing control solenoid valve.

2. Provide 12V DC between intake valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Make sure that the plunger moves as shown in the figure.

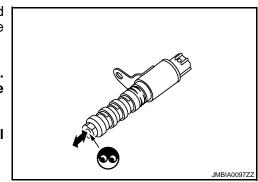
CAUTION:

Do not apply 12V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

Is the inspection result normal?



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P0011 IVT CONTROL

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

YES >> INSPECTION END

NO >> Replace intake valve timing control solenoid valve.

P0031, P0032 A/F SENSOR 1 HEATER

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P0031, P0032 A/F SENSOR 1 HEATER

Description INFOID:0000000001715078

SYSTEM DESCRIPTION

		i.	
Sensor	Input Signal to ECM	ECM function	Actuator
Camshaft position sensor (PHASE) Crankshaft position sensor (POS)	Engine speed	Air fuel ratio (A/F) sensor 1 heater control	Air fuel ratio (A/F) sensor 1 heater
Mass air flow sensor	Amount of intake air	neater control	Ticater

The ECM performs ON/OFF duty control of the A/F sensor 1 heater corresponding to the engine operating condition to keep the temperature of A/F sensor 1 element at the specified range.

DTC Logic INFOID:0000000001715079

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	-
P0031	Air fuel ratio (A/F) sensor 1 heater control circuit low	The current amperage in the A/F sensor 1 heater circuit is out of the normal range. (An excessively low voltage signal is sent to ECM through the A/F sensor 1 heater.)	Harness or connectors (The A/F sensor 1 heater circuit is open or shorted.) A/F sensor 1 heater	_
P0032	Air fuel ratio (A/F) sensor 1 heater control circuit high	The current amperage in the A/F sensor 1 heater circuit is out of the normal range. (An excessively high voltage signal is sent to ECM through the A/F sensor 1 heater.)	Harness or connectors (The A/F sensor 1 heater circuit is shorted.) A/F sensor 1 heater	=

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than between 11V at

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for at least 10 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-133, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect air fuel ratio (A/F) sensor 1 harness connector.
- Turn ignition switch ON.

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INFOID:0000000001715080

P0031, P0032 A/F SENSOR 1 HEATER

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Check the voltage between A/F sensor 1 harness connector and ground.

A/F sensor 1		Ground	Voltage
Connector	Terminal	Giodila	voltage
F28	4	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

${f 3.}$ DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F123, E6
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

4.CHECK A/F SENSOR 1 HEATER OUTPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F s	A/F sensor 1		ECM	
Connector	Terminal	Connector	Terminal	Continuity
F28	3	F7	4	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK A/F SENSOR 1 HEATER

Refer to EC-135, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

O.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

.CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

>> INSPECTION END

P0031, P0032 A/F SENSOR 1 HEATER

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Component Inspection

INFOID:0000000001715081

1.CHECK AIR FUEL RATIO (A/F) SENSOR 1

- 1. Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.
- 3. Check resistance between A/F sensor 1 terminals as follows.

Terminals	Resistance
3 and 4	1.98 - 2.66 Ω [at 25°C (77°F)]
3 and 1, 2	∞Ω
4 and 1, 2	(Continuity should not exist)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Heated Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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[FOR CALIFORNIA]

P0037, P0038 HO2S2 HEATER

Description INFOID:000000001715082

SYSTEM DESCRIPTION

Sensor	Input signal to ECM	ECM function	Actuator	
Camshaft position sensor (PHASE) Crankshaft position sensor (POS)	Engine speed	Heated oxygen sensor 2		
Engine coolant temperature sensor	Engine coolant temperature	heater control	Heated oxygen sensor 2 heater	
Mass air flow sensor	Amount of intake air			

The ECM performs ON/OFF control of the heated oxygen sensor 2 heater corresponding to the engine speed, amount of intake air and engine coolant temperature.

OPERATION

Engine speed rpm	Heated oxygen sensor 2 heater
Above 3,600	OFF
 Below 3,600 rpm after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	ON

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0037	Heated oxygen sensor 2 heater control circuit low	The current amperage in the heated oxygen sensor 2 heater circuit is out of the normal range. (An excessively low voltage signal is sent to ECM through the heated oxygen sensor 2 heater.)	 Harness or connectors (The heated oxygen sensor 2 heater circuit is open or shorted.) Heated oxygen sensor 2 heater
P0038	Heated oxygen sensor 2 heater control circuit high	The current amperage in the heated oxygen sensor 2 heater circuit is out of the normal range. (An excessively high voltage signal is sent to ECM through the heated oxygen sensor 2 heater.)	 Harness or connectors (The heated oxygen sensor 2 heater circuit is shorted.) Heated oxygen sensor 2 heater

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check 1st trip DTC.

Is 1st tip DTC detected?

YES >> Go to EC-137, "Diagnosis Procedure".

NO >> INSPECTION END

P0037, P0038 HO2S2 HEATER

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Diagnosis Procedure

INFOID:0000000001715084

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK HO2S2 POWER SUPPLY CIRCUIT

- Disconnect heated oxygen sensor 2 harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between HO2S2 harness connector and ground.

HO2S2		Ground	Voltage
Connector	Terminal	Oround	voltage
F31	2	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F123, E6
- IPDM E/R connector E14
- 15A fuse (No. 63)
- Harness for open or short between heated oxygen sensor 2 and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

f 4.CHECK HO2S2 OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector. 2.
- Check the continuity between HO2S2 harness connector and ECM harness connector.

НС	HO2S2		ECM	
Connector	Terminal	Connector	Terminal	Continuity
F31	3	F7	13	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK HEATED OXYGEN SENSOR 2 HEATER

Refer to EC-138, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 6.

$oldsymbol{6}$.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

 Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

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P0037, P0038 HO2S2 HEATER

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

 Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

7.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001715085

1. CHECK HEATED OXYGEN SENSOR 2 HEATER

- 1. Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 harness connector.
- 3. Check resistance between HO2S2 terminals as follows.

Terminals	Resistance
2 and 3	3.3 - 4.4 Ω [at 25°C (77°F)]
1 and 2, 3, 4	Ω^{∞}
4 and 1, 2, 3	(Continuity should not exist)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

P0043, P0044 HO2S3 HEATER

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P0043, P0044 HO2S3 HEATER

Description INFOID:000000001715086

SYSTEM DESCRIPTION

Sensor	Input signal to ECM	ECM function	Actuator
Camshaft position sensor (PHASE)	Engine speed		
Crankshaft position sensor (POS)	Engine speed	Heated oxygen sensor 3 heater control	Heated oxygen sensor 3 heater
Engine coolant temperature sensor	Engine coolant temperature		
Mass air flow sensor	Amount of intake air		

The ECM performs ON/OFF control of the heated oxygen sensor 3 heater corresponding to the engine speed, amount of intake air and engine coolant temperature.

OPERATION

Engine speed	Heated oxygen sensor 3 heater
Above 3,600 rpm	OFF
 Below 3,600 rpm after the following conditions are met. Engine: After warming up Driving for 3 minutes at a speed of 80 km/h (50 MPH) or more (Keep the vehicle speed as steady as possible during the cruising.) 	ON

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0043	Heated oxygen sensor 3 heater control circuit low	The current amperage in the heated oxygen sensor 3 heater circuit is out of the normal range. (An excessively low voltage signal is sent to ECM through the heated oxygen sensor 3 heater.)	Harness or connectors (The heated oxygen sensor 3 heater circuit is open or shorted.) Heated oxygen sensor 3 heater	
P0044	Heated oxygen sensor 3 heater control circuit high	The current amperage in the heated oxygen sensor 3 heater circuit is out of the normal range. (An excessively high voltage signal is sent to ECM through the heated oxygen sensor 3 heater.)	Harness or connectors (The heated oxygen sensor 3 heater circuit is shorted.) Heated oxygen sensor 3 heater	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is between 10.5V and 16V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.
 NOTE:

Keep the vehicle speed as steady as possible during the cruising.

4. Check 1st trip DTC.

Revision: 2008 January EC-139 2008 Rogue

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P0043, P0044 HO2S3 HEATER

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Is 1st tip DTC detected?

YES >> Go to EC-140, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715088

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK HO2S3 POWER SUPPLY CIRCUIT

- 1. Disconnect heated oxygen sensor 3 harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between HO2S3 harness connector and ground.

HO2S3		Ground	Voltage
Connector	Terminal	Ground	voltage
E50	2	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between heated oxygen sensor 3 and fuse
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK HO2S3 OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check harness continuity between HO2S3 harness connector and ECM harness connector.

HO2S3		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E50	3	F7	17	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6. NO >> GO TO 5.

DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between heated oxygen sensor 3 and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK HEATED OXYGEN SENSOR 3 HEATER

Refer to EC-141, "Component Inspection".

P0043, P0044 HO2S3 HEATER

[FOR CALIFORNIA] < COMPONENT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

7. REPLACE HEATED OXYGEN SENSOR $_3$

Replace heated oxygen sensor 3.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

8.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK HEATED OXYGEN SENSOR 3 HEATER

- Turn ignition switch OFF.
- Disconnect heated oxygen sensor 3 harness connector.
- Check resistance between HO2S3 terminals as follows.

Terminal	Resistance
2 and 3	3.4 - 4.4 Ω [at 25°C (77°F)]
1 and 2, 3, 4	Ω^∞
4 and 1, 2, 3	(Continuity should not exist)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.REPLACE HEATED OXYGEN SENSOR $_3$

Replace heated oxygen sensor 3.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

EC-141

>> INSPECTION END

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INFOID:0000000001715089

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2008 Rogue

P0075 IVT CONTROL SOLENOID VALVE

Description INFOID:000000001715090

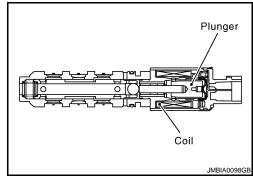
Intake valve timing control solenoid valve is activated by ON/OFF pulse duty (ratio) signals from the ECM.

The intake valve timing control solenoid valve changes the oil amount and direction of flow through intake valve timing control unit or stops oil flow.

The longer pulse width advances valve angle.

The shorter pulse width retards valve angle.

When ON and OFF pulse widths become equal, the solenoid valve stops oil pressure flow to fix the intake valve angle at the control position.



DTC Logic

INFOID:0000000001715091

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0075	Intake valve timing control solenoid valve circuit	An improper voltage is sent to the ECM through intake valve timing control solenoid valve.	Harness or connectors (Intake valve timing control solenoid valve circuit is open or shorted.) Intake valve timing control solenoid valve

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 5 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-142, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715092

1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect intake valve timing control solenoid valve harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between intake valve timing control solenoid valve harness connector and ground.

Intake valve timing control solenoid valve		Ground	Voltage
Connector	Terminal		
F45	2	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

P0075 IVT CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

2.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between intake valve timing control solenoid valve and IPDM E/R

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>> Repair open circuit or short to ground or short to power in harness or connectors.

3.check intake valve timing control solenoid valve output signal circuit for open AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between intake valve timing control solenoid valve harness connector and ECM harness connector.

	timing control oid valve	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F45	1	F8	78	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

f 4.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Refer to EC-143, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace intake valve timing control solenoid valve.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-41. "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001715093

1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- Turn ignition switch OFF.
- 2. Disconnect intake valve timing control solenoid valve harness connector.
- 3. Check resistance between intake valve timing control solenoid valve terminals as follows.

Terminals	Resistance
1 and 2	7.0 - 7.5Ω [at 20°C (68°F)]
1 or 2 and ground	${}^{\infty}\Omega$ (Continuity should not exist)

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace intake valve timing control solenoid valve.

2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

Remove intake valve timing control solenoid valve.

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P0075 IVT CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

2. Provide 12V DC between intake valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Make sure that the plunger moves as shown in the figure.

CAUTION:

Do not apply 12V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

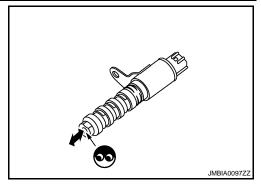
NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace intake valve timing control solenoid valve.



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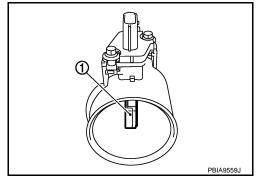
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P0101 MAF SENSOR

Description INFOID:000000001715094

The mass air flow sensor (1) is placed in the stream of intake air. It measures the intake flow rate by measuring a part of the entire intake flow. The mass air flow sensor controls the temperature of the hot wire to a certain amount. The heat generated by the hot wire is reduced as the intake air flows around it. The more air, the greater the heat loss.

Therefore, the electric current supplied to hot wire is changed to maintain the temperature of the hot wire as air flow increases. The ECM detects the air flow by means of this current change.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause	
		A)	A high voltage from the sensor is sent to ECM under light load driving condition.	Harness or connectors (The sensor circuit is open or shorted.) Mass air flow sensor EVAP control system pressure sensor	
P0101	Mass air flow sensor circuit range/performance	В)	A low voltage from the sensor is sent to ECM under heavy load driving condition.	Harness or connectors (The sensor circuit is open or shorted.) Intake air leaks Mass air flow sensor EVAP control system pressure sensor Intake air temperature sensor	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

If engine will not start or stops soon, wait at least 10 seconds with engine stopped (Ignition switch ON) instead of running engine at idle speed.

>> GO TO 2.

2.perform dtc confirmation procedure for malfunction a

- 1. Start engine and warm it up to normal operating temperature.
- Run engine for at least 10 seconds at idle speed.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-147, "Diagnosis Procedure".

NO-1 >> With CONSULT-III: GO TO 3.

NO-2 >> Without CONSULT-III: GO TO 5.

3. CHECK MASS AIR FLOW SENSOR FUNCTION

- 1. Turn ignition switch ON.
- Start engine and warm it up to normal operating temperature.
 If engine cannot be started, go to <u>EC-147</u>, "<u>Diagnosis Procedure</u>".

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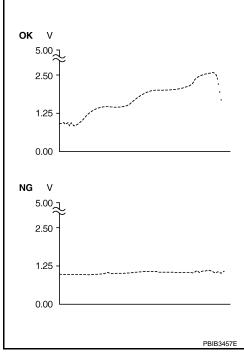
< COMPONENT DIAGNOSIS >

- Select "DATA MONITOR" mode with CONSULT-III.
- 4. Check the voltage of "MAS A/F SE-B1" with "DATA MONITOR".
- 5. Increases engine speed to about 4,000 rpm.
- Monitor the linear voltage rise in response to engine speed increases.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Go to EC-147, "Diagnosis Procedure".



4. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B

1. Maintain the following conditions for at least 10 consecutive seconds.

ENG SPEED	More than 2,000 rpm
THRTL SEN 1-B1	More than 3V
THRTL SEN 2-B1	More than 3V
Shift lever	Suitable position
Driving location	Driving vehicle uphill (Increased engine load) will help maintain the driving conditions required for this test.

CAUTION:

Always drive vehicle at a safe speed.

2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-147, "Diagnosis Procedure".

NO >> INSPECTION END

${f 5.}$ PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

Perform component function check. Refer to EC-146, "Component Function Check".

NOTE:

Use component function check to check the overall function of the mass air flow sensor circuit. During this check, a DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-147, "Diagnosis Procedure".

Component Function Check

INFOID:0000000001715096

1. PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

With GST

- 1. Start engine and warm it up to normal operating temperature.
- Select Service \$01 with GST.

P0101 MAF SENSOR

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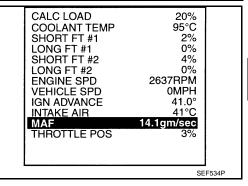
[FOR CALIFORNIA]

- Check the mass air flow sensor signal with Service \$01.
- Check for linear mass air flow sensor signal value rise in response to increases to about 4,000 rpm in engine speed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-147, "Diagnosis Procedure".



Diagnosis Procedure

INFOID:0000000001715097

1.INSPECTION START

Confirm the detected malfunction (A or B). Refer to EC-145, "DTC Logic".

Which malfunction is detected?

Α >> GO TO 3.

В >> GO TO 2.

2.check intake system

Check the following for connection.

- Air duct
- Vacuum hoses
- Intake air passage between air duct and intake manifold

Is the inspection result normal?

YES >> GO TO 3.

NO >> Reconnect the parts.

3.check ground connection

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace ground connection.

$oldsymbol{4}.$ CHECK MAF SENSOR POWER SUPPLY CIRCUIT

- Disconnect mass air flow (MAF) sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between MAF sensor harness connector and ground.

MAF	sensor	Ground	Voltage	
Connector	Terminal	Oround	Voltage	
E18	5	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

DETECT MALFUNCTIONING PART

Check the following.

- Harness for open or short between mass air flow sensor and ECM
- Harness for open or short between mass air flow sensor and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK MAF SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

Turn ignition switch OFF.

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- Disconnect ECM harness connector.
- 3. Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF	sensor	E	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E18	4	F7	56	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

7.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- Harness for open or short between mass air flow sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK MAF SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF	sensor	E	Continuity	
Connector	Connector Terminal		Terminal	Continuity
E18	3	F8	58	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 9.

9. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- Harness for open or short between mass air flow sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

10. CHECK INTAKE AIR TEMPERATURE SENSOR

Refer to EC-159, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace mass air flow sensor (with intake air temperature sensor).

11. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-292, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 12.

NO >> Replace EVAP control system pressure sensor.

12. CHECK MASS AIR FLOW SENSOR

Refer to EC-149, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace mass air flow sensor.

13. CHECK INTERMITTENT INCIDENT

[FOR CALIFORNIA]

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001715098

1.CHECK MASS AIR FLOW SENSOR-I

(E) With CONSULT-III

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT-III and select "DATA MONITOR" mode.
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
MAS AVE SE-BI	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Without CONSULT-III

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- Start engine and warm it up to normal operating temperature.
- Check the voltage between ECM harness connector terminals under the following conditions.

	ECM			
Connector	+	_	Condition	Voltage
Connector	Terminal	Terminal		
	58 (MAF sensor signal)	56 or (Sensor gound)	Ignition switch ON (Engine stopped.)	Approx. 0.4V
			Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
F8			2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

2.CHECK FOR THE CAUSE OF UNEVEN AIR FLOW THROUGH MASS AIR FLOW SENSOR

- Turn ignition switch OFF.
- Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.
- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system parts

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.CHECK MASS AIR FLOW SENSOR-II

(P) With CONSULT-III

- Repair or replace malfunctioning part.
- Start engine and warm it up to normal operating temperature.

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- 3. Connect CONSULT-III and select "DATA MONITOR" mode.
- Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
MAS A/F SE-BT	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Without CONSULT-III

- Repair or replace malfunctioning part.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Check the voltage between ECM harness connector terminals under the following conditions.

	ECM			
Connector	+	_	Condition	Voltage
Connector	Terminal	Terminal		
	58 (MAF sensor signal)	56	Ignition switch ON (Engine stopped.)	Approx. 0.4V
			Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
F8		,	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4.CHECK MASS AIR FLOW SENSOR-III

(P)With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT-III and select "DATA MONITOR" mode.
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
MA2 A/L 2E-B1	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Without CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the voltage between ECM harness connector terminals under the following conditions.

P0101 MAF SENSOR

[FOR CALIFORNIA]

	ECM			
Connector -	+ -		Condition	Voltage
	Terminal	Terminal		
F8	58 (MAF sensor signal)	58 56	Ignition switch ON (Engine stopped.)	Approx. 0.4V
			Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
		,	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Clean or replace mass air flow sensor.

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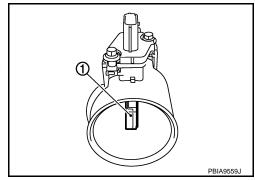
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P0102, P0103 MAF SENSOR

Description INFOID:00000000184949494

The mass air flow sensor (1) is placed in the stream of intake air. It measures the intake flow rate by measuring a part of the entire intake flow. The mass air flow sensor controls the temperature of the hot wire to a certain amount. The heat generated by the hot wire is reduced as the intake air flows around it. The more air, the greater the heat loss.

Therefore, the electric current supplied to hot wire is changed to maintain the temperature of the hot wire as air flow increases. The ECM detects the air flow by means of this current change.



DTC Logic

INFOID:0000000001715100

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0102	Mass air flow sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.) Intake air leaks Mass air flow sensor
P0103	Mass air flow sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.) Mass air flow sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

Which DTC is detected?

P0102 >> GO TO 2.

P0103 >> GO TO 3.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0102

- Start engine and wait at least 5 seconds.
- Check DTC.

Is DTC detected?

YES >> Go to EC-153, "Diagnosis Procedure".

NO >> INSPECTION END

3.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0103-I

- 1. Turn ignition switch ON and wait at least 5 seconds.
- Check DTC.

Is DTC detected?

YES >> Go to EC-153, "Diagnosis Procedure".

NO >> GO TO 4.

4.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0103-II

- 1. Start engine and wait at least 5 seconds.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-153, "Diagnosis Procedure".

NO >> INSPECTION END

P0102, P0103 MAF SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Diagnosis Procedure

INFOID:0000000001715101

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1. INSPECTION START

Confirm the detected DTC.

Which DTC is detected?

P0102 >> GO TO 2.

P0103 >> GO TO 3.

2. CHECK INTAKE SYSTEM

Check the following for connection.

- Air duct
- Vacuum hoses
- Intake air passage between air duct to intake manifold

Is the inspection result normal?

YES >> GO TO 3.

NO >> Reconnect the parts.

3.check ground connection

1. Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace ground connection.

f 4.CHECK MAF SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect mass air flow (MAF) sensor harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between MAF sensor harness connector and ground.

MAF	MAF sensor		Ground Voltage	
Connector	Terminal	Oround	voltage	
E18	5	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

${f 5.}$ DETECT MALFUNCTIONING PART

Check the following.

- Harness for open or short between mass air flow sensor and ECM
- Harness for open or short between mass air flow sensor and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK MAF SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF	MAF sensor ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E18	4	F8	56	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8.

Revision: 2008 January

NO >> GO TO 7.

7. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- Harness for open or short between mass air flow sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK MAF SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E18	3	F8	58	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 9.

9. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6. F123
- Harness for open or short between mass air flow sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

10. CHECK MASS AIR FLOW SENSOR

Refer to EC-154, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace mass air flow sensor.

11. CHECK INTERMITTENT INCIDENT

Refer to GI-41. "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001849495

1. CHECK MASS AIR FLOW SENSOR-I

(P)With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT-III and select "DATA MONITOR" mode.
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
MAS A/F SE-B1	Ignition switch ON (Engine stopped.)	Approx. 0.4V
	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

P0102, P0103 MAF SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Without CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the voltage between ECM harness connector terminals under the following conditions.

ECM				
Connector + Terminal	_	Condition Voltage		
	Terminal			
58 F8 (MAF sensor signal)		MAF sensor (Sensor	Ignition switch ON (Engine stopped.)	Approx. 0.4V
	58		Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
	`		2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 2.

2.check for the cause of uneven air flow through mass air flow sensor

- Turn ignition switch OFF.
- 2. Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.
- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system parts

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.CHECK MASS AIR FLOW SENSOR-II

(P)With CONSULT-III

- 1. Repair or replace malfunctioning part.
- 2. Start engine and warm it up to normal operating temperature.
- Connect CONSULT-III and select "DATA MONITOR" mode.
- Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
MAS A/F SE-B1	Ignition switch ON (Engine stopped.)	Approx. 0.4V
	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Without CONSULT-III

- 1. Repair or replace malfunctioning part.
- 2. Start engine and warm it up to normal operating temperature.
- Check the voltage between ECM harness connector terminals under the following conditions.

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ECM					
Connector + Terminal		_	Condition	Voltage	
		Terminal			
		58 56 MAF sensor (Sensor signal) gound)	Ignition switch ON (Engine stopped.)	Approx. 0.4V	
	58		Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V	
,	(MAF sensor signal)		2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V	
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*	

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK MASS AIR FLOW SENSOR-III

(P)With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT-III and select "DATA MONITOR" mode.
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
MAS A/F SE-B1	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

- Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the voltage between ECM harness connector terminals under the following conditions.

	ECM			
Connector + Terminal Te		_	Condition	Voltage
		Terminal		
		58 56 (MAF sensor (Sensor signal) gound)	Ignition switch ON (Engine stopped.)	Approx. 0.4V
	58		Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
,	(MAF sensor signal)		2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Clean or replace mass air flow sensor.

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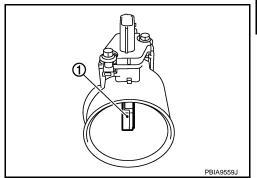
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P0112, P0113 IAT SENSOR

Description INFOID:0000000001715103

The intake air temperature sensor is built-into mass air flow sensor (1). The sensor detects intake air temperature and transmits a signal to the ECM.

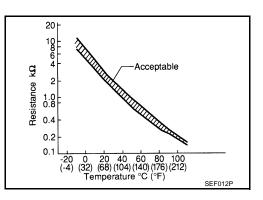
The temperature sensing unit uses a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.



<Reference data>

Intake air temperature °C (°F)	Voltage* V	Resistance kΩ
25 (77)	3.3	1.800 - 2.200
80 (176)	1.2	0.283 - 0.359

^{*:} These data are reference values and are measured between ECM terminals 50 (Intake air temperature sensor) and 58 (Sensor ground).



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0112	Intake air temperature sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0113	Intake air temperature sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	Intake air temperature sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 5 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-157, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44. "Circuit Inspection".

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INFOID:0000000001715104

EC-157 Revision: 2008 January 2008 Rogue

[FOR CALIFORNIA]

< COMPONENT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK INTAKE AIR TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect mass air flow sensor (with intake air temperature sensor) harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between mass air flow sensor harness connector and ground.

MAF	sensor	Ground	Voltage
Connector	Terminal	Oround	voltage
E18	2	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- · Harness for open or short between mass air flow sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK INTAKE AIR TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between mass air flow sensor harness connector and ECM harness connector.

MAF sensor		E	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E18	1	F8	56	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6. F123
- Harness for open or short between mass air flow sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK INTAKE AIR TEMPERATURE SENSOR

Refer to EC-159, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace mass air flow sensor (with intake air temperature sensor).

7.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0112, P0113 IAT SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Component Inspection

INFOID:0000000001715106

1. CHECK INTAKE AIR TEMPERATURE SENSOR

- Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector.
- Check resistance between mass air flow sensor terminals as follows.

Terminals	Condition	Resistance kΩ	
1 and 2	Intake air temperature °C (°F)	25 (77)	1.800 - 2.200

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mass air flow sensor (with intake air temperature sensor). EC

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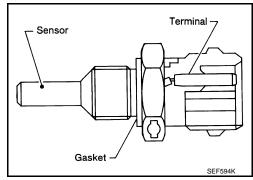
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P0117, P0118 ECT SENSOR

Description INFOID:000000001715107

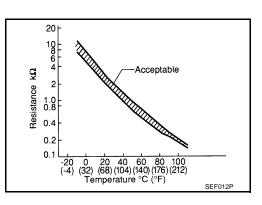
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



<Reference data>

Engine coolant temperature °C (°F)	Voltage* V	Resistance kΩ
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.37 - 2.63
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260

^{*:} These data are reference values and are measured between ECM terminals 46 (Engine coolant temperature sensor) and 52 (Sensor ground).



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble Diagnosis Name	DTC Detecting Condition	Possible Cause
P0117	Engine coolant temperature sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0118	Engine coolant temperature sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-160, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

1. Turn ignition switch OFF.

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P0117, P0118 ECT SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

2. Check gr	ound connect	ion E21. Re	fer to Ground Ir	nspection in <u>G</u>	GI-44, "Circuit Inspection".	
Is the inspect		mal?				Α
	O TO 2.				-	
_	Repair or repla	-		=		EC
			IPPLY CIRCUIT			
			ature (ECT) ser	nsor harness	connector.	
	ion switch ON		ensor harness o	connector and	daround	С
o. Onook an	o vollago boti	10011 201 0	ondor namedo (. ground.	
ECT s	sensor	_		_		D
Connector	Terminal	Ground	Voltage			D
F80	1	Ground	Approx. 5V	_		
Is the inspect	ion result nor	mal?		_		Е
YES >> 0	O TO 3.					
_	•		•	•	in harness or connectors.	_
3.CHECK E	CT SENSOR	GROUND C	IRCUIT FOR C	PEN AND SI	HORT	F
1. Turn ignit	ion switch Of	F.				
	ct ECM harne				ad FOM harmana anno atau	G
3. Check the	e continuity b	etween ECT	sensor narnes	s connector a	and ECM harness connector.	
ECT 6	sensor		ECM		•	
Connector	Terminal	Connector	Terminal	Continuity		Н
F80	2	F8	52	Existed		
					•	ı
Is the inspect		•	ound and short	to power.		
-	60 TO 4.	<u>IIai:</u>				
		rcuit or shor	t to ground or s	hort to power	in harness or connectors.	J
4.CHECK EI	NGINE COOL	ANT TEMP	ERATURE SEN	ISOR		
Refer to EC-1	61. "Compon	ent Inspection	on".			K
Is the inspect		-				1 \
-	O TO 5.					
NO >> R						
_	teplace engin		mperature sens	or.		L
5.CHECK IN	teplace engin		•	or.		L
_	Replace engin	T INCIDENT	•	Or.		L
5.CHECK IN	Replace engin	T INCIDENT	•	or.		L
Refer to GI-4	Replace engin	T INCIDENT	•	or.		L
Refer to GI-4	Replace engin ITERMITTEN 1, "Intermitter NSPECTION	T INCIDENT t Incident". END	•	or.	INFOID:000000001715110	L M
5.CHECK IN Refer to GI-4 >> If Componer	Replace engin ITERMITTEN 1, "Intermitter NSPECTION at Inspection	T INCIDENT t Incident". END on	•		INFOID:000000001715110	
5.CHECK IN Refer to GI-4 >> II Componer 1.CHECK EI	Replace engin ITERMITTEN 1, "Intermitter NSPECTION at Inspection	T INCIDENT It Incident". END ON ANT TEMP	<u>, </u>		INFOID:000000001715110	
5.CHECK IN Refer to GI-4 >> If Componer 1.CHECK EI 1. Turn ignit 2. Disconne	Replace engin ITERMITTEN 1, "Intermitter NSPECTION IT Inspection NGINE COOL Tion switch Offect engine cool	T INCIDENT It Incident". END In ANT TEMP FE. Islant tempera	ERATURE SEN	ISOR		
5.CHECK IN Refer to GI-4 >> If Componer 1.CHECK EI 1. Turn ignit 2. Disconne	Replace engin ITERMITTEN 1, "Intermitter NSPECTION IT Inspection NGINE COOL ion switch Of	T INCIDENT It Incident". END In ANT TEMP FE. Islant tempera	ERATURE SEN	ISOR		

P0117, P0118 ECT SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

4. Check resistance between engine coolant temperature sensor terminals by heating with hot water as shown in the figure.

Terminals	Condition			Resistance		
			20 (68)	2.37 - 2.63	kΩ	
1 and 2	Temperature	°C (°F)	50 (122)	0.68 - 1.00	kΩ	
			90 (194)	0.236 - 0.260	kΩ	

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Is the inspection result normal?

YES >> INSPECTION END

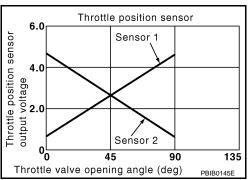
NO >> Replace engine coolant temperature sensor.

P0122, P0123 TP SENSOR

Description INFOID:0000000001715111

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic INFOID:0000000001715112

DTC DETECTION LOGIC

NOTE:

If DTC P0122 or P0123 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-333, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0122	Throttle position sensor 2 circuit low input	An excessively low voltage from the TP sensor 2 is sent to ECM.	Harness or connectors (TP sensor 2 circuit is open or shorted.)
P0123	Throttle position sensor 2 circuit high input	An excessively high voltage from the TP sensor 2 is sent to ECM.	Electric throttle control actuator (TP sensor 2)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2 .PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-163, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2 .CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY CIRCUIT

- Disconnect electric throttle control actuator harness connector.
- Turn ignition switch ON.

EC-163 Revision: 2008 January 2008 Rogue

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INFOID:0000000001715113

< COMPONENT DIAGNOSIS >

3. Check the voltage between electric throttle control actuator harness connector and ground.

Electric throttle	control actuator	Ground	Voltage	
Connector	Terminal	Giouna	voltage	
F29	1	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3.check throttle position sensor 2 ground circuit for open and short

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle	control actuator	ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F29	4	F8	36	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK THROTTLE POSITION SENSOR 2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle	control actuator	E	CM	Continuity
Connector	Terminal	Connector Terminal		Continuity
F29	3	F8	38	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK THROTTLE POSITION SENSOR

Refer to EC-165, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- 2. Go to EC-165, "Special Repair Requirement".

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0122, P0123 TP SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Component Inspection

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1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set shift lever to D position.
- 6. Check the voltage between ECM harness connector terminals.

	ECM			Condition		
+ -		-	Voltage			
Connector	Terminal	Connector	Terminal			
F0	37 (TP sensor 1 signal)	F0	36		Fully released Fully depressed	More than 0.36V Less than 4.75V
F8	38 (TP sensor 2 signal)	F8	(Sensor ground)	Accelerator pedal	Fully released Fully depressed	Less than 4.75V More than 0.36V

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.replace electric throttle control actuator

- 1. Replace electric throttle control actuator.
- 2. Go to EC-165, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000001715115

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-27. "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

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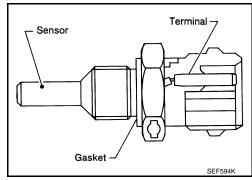
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P0125 ECT SENSOR

Description INFOID:000000001849492

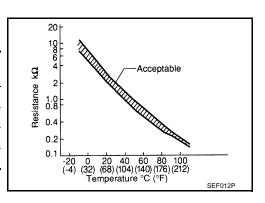
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



<Reference data>

Engine coolant temperature °C (°F)	Voltage* V	Resistance kΩ
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.37 - 2.63
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260

^{*:} These data are reference values and are measured between ECM terminals 46 (Engine coolant temperature sensor) and 52 (Sensor ground).



INFOID:0000000001715117

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0125 is displayed with P0117 or P0118, first perform the trouble diagnosis for DTC P0117 or P0118. Refer to EC-160, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0125	Insufficient engine coolant temperature for closed loop fuel control	 Voltage sent to ECM from the sensor is not practical, even when some time has passed after starting the engine. Engine coolant temperature is insufficient for closed loop fuel control. 	Harness or connectors (High resistance in the circuit) Engine coolant temperature sensor Thermostat

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. CHECK ENGINE COOLANT TEMPERATURE SENSOR FUNCTION

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-III.
- 3. Check that "COOLAN TEMP/S" is above 10°C (50°F).

With GST

Follow the procedure "With CONSULT-III" above.

Is it above 10°C (50°F)?

Revision: 2008 January EC-166 2008 Rogue

P0125 ECT SENSOR

< COMPONENT DIAGNOSIS >	[FOR CALIFORNIA]	
YES >> INSPECTION END NO >> GO TO 3.		٨
3. PERFORM DTC CONFIRMATION PROCEDURE		Α
(P) With CONSULT-III		-0
1. Start engine and run it for 65 minutes at idle speed.		EC
2. Check 1st tip DTC. If "COOLAN TEMP/S" increases to more than 10°C (50°F) within 65 minutes, st	top engine because the	
test result will be OK.		С
CAUTION: Be careful not to overheat engine.		
With GST		D
Follow the procedure "With CONSULT-III" above. <u>Is 1st trip DTC detected?</u>		
YES >> EC-167, "Diagnosis Procedure"		Е
NO >> INSPECTION END		
Diagnosis Procedure	INFOID:000000001715118	г
1.check ground connection		F
1. Turn ignition switch OFF.		
2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Insp	<u>pection"</u> .	G
Is the inspection result normal? YES >> GO TO 2.		
NO >> Repair or replace ground connection.		Н
2. CHECK ENGINE COOLANT TEMPERATURE SENSOR		
Refer to EC-167, "Component Inspection".		1
Is the inspection result normal?		
YES >> GO TO 3. NO >> Replace engine coolant temperature sensor.		J
3. CHECK THERMOSTAT OPERATION		
When the engine is cold [lower than 70°C (158°F)] condition, grasp lower radiator hos	se and confirm the engine	K
coolant does not flow. Is the inspection result normal?		
YES >> GO TO 4.		
NO >> Repair or replace thermostat. Refer to CO-25, "Removal and Installation	<u>"</u>	_
4.CHECK INTERMITTENT INCIDENT		
Refer to GI-41, "Intermittent Incident".		M
>> INSPECTION END		h :
Component Inspection	INFOID:000000001849502	Ν
1. CHECK ENGINE COOLANT TEMPERATURE SENSOR		0
1. Turn ignition switch OFF.		
 Disconnect engine coolant temperature sensor harness connector. Remove engine coolant temperature sensor. 		
5. Remove engine coolant temperature sensor.		Р

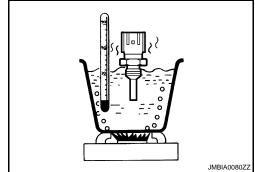
P0125 ECT SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

4. Check resistance between engine coolant temperature sensor terminals by heating with hot water as shown in the figure.

Terminals		Resistance			
			20 (68)	2.37 - 2.63 kΩ	.2
1 and 2	Temperature	°C (°F)	50 (122)	0.68 - 1.00 k	Ω
			90 (194)	0.236 - 0.260	kΩ



Is the inspection result normal?

YES >> INSPECTION END

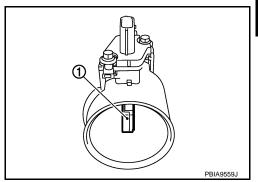
NO >> Replace engine coolant temperature sensor.

P0127 IAT SENSOR

Description INFOID:0000000001849493

The intake air temperature sensor is built-into mass air flow sensor (1). The sensor detects intake air temperature and transmits a signal to the ECM.

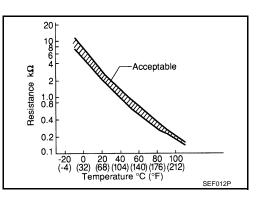
The temperature sensing unit uses a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.



<Reference data>

Intake air temperature °C (°F)	Voltage* V	Resistance $k\Omega$
25 (77)	3.3	1.800 - 2.200
80 (176)	1.2	0.283 - 0.359

^{*:} These data are reference values and are measured between ECM terminals 50 (Intake air temperature sensor) and 58 (Sensor ground).



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0127	Intake air temperature too high	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signal from engine coolant temperature sensor.	Harness or connectors (The sensor circuit is open or shorted) Intake air temperature sensor	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

This test may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT-III

- Wait until engine coolant temperature is less than 90°C (194°F)
- Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-III.
- Check the engine coolant temperature.
- If the engine coolant temperature is not less than 90°C (194°F), turn ignition switch OFF and cool down engine.

NOTE:

Perform the following steps before engine coolant temperature is above 90°C (194°F).

EC-169 Revision: 2008 January 2008 Rogue

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P0127 IAT SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Start engine.

3. Hold vehicle speed at more than 70 km/h (43 MPH) for 100 consecutive seconds.

CAUTION:

Always drive vehicle at a safe speed.

4. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-170, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715122

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK INTAKE AIR TEMPERATURE SENSOR

Refer to EC-170, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace mass air flow sensor (with intake air temperature sensor).

3. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001849496

1. CHECK INTAKE AIR TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- Disconnect mass air flow sensor harness connector.
- 3. Check resistance between mass air flow sensor terminals as follows.

Terminals	Condition	Resistance k Ω	
1 and 2	Intake air temperature °C (°F)	25 (77)	1.800 - 2.200

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mass air flow sensor (with intake air temperature sensor).

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P0128 THERMOSTAT FUNCTION

DTC Logic INFOID:0000000002942177

DTC DETECTION LOGIC

NOTE:

If DTC P0128 is displayed with DTC PP0300, P0301, P0302, P0303 or P0304, first perform the trouble diagnosis for DTC P0300, P0301, P0302, P0303, P0304. Refer to EC-244, "DTC Logic".

Engine coolant temperature has not risen enough to open the thermostat even though the engine has run long

This is due to a leak in the seal or the thermostat stuck open.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0128	Thermostat function	The engine coolant temperature does not reach to specified temperature even though the engine has run long enough.	Thermostat Leakage from sealing portion of thermostat Engine coolant temperature sensor	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

- For best results, perform at ambient temperature of -10°C (14°F) or higher.
- For best results, perform at engine coolant temperature of -10°C (14°F) to 52°C (126°F).
- Before performing the following procedure, do not fill with the fuel.

2.PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- Turn A/C switch OFF.
- Turn blower fan switch OFF.

>> GO TO 2.

- Turn ignition switch ON.
- Select "COOLAN TEMP/S" in "DATA MONITOR" mode with CONSULT-III.
- Check the indication of "COOLAN TEMP/S"

If it is below 52°C (126°F), go to following step.

If it is above 52°C (126°F), cool down the engine to less than 52°C (126°F). Then go to next steps.

6. Start engine and let it idle for at least 30 minutes.

If "COOLAN TEMP/S" increases to more than 71°C (160°F) within 30 minutes, turn ignition switch OFF because the test result will be OK.

Check 1st trip DTC.

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-171, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-172, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace engine coolant temperature sensor.

$\mathbf{2}.$ CHECK THERMOSTAT

Refer to CO-25, "Removal and Installation".

EC-171 Revision: 2008 January 2008 Rogue

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P0128 THERMOSTAT FUNCTION

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Is the inspection result normal?

YES >> INSPECTION END NO >> Replace thermostat.

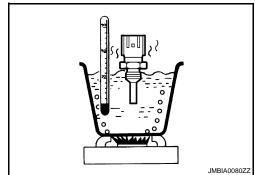
Component Inspection

INFOID:0000000001849497

1.CHECK ENGINE COOLANT TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect engine coolant temperature sensor harness connector.
- 3. Remove engine coolant temperature sensor.
- 4. Check resistance between engine coolant temperature sensor terminals by heating with hot water as shown in the figure.

Terminals		Resistance			
			20 (68)	2.37 - 2.63	kΩ
1 and 2	Temperature	°C (°F)	50 (122)	0.68 - 1.00	kΩ
			90 (194)	0.236 - 0.260	kΩ



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor.

P0130 A/F SENSOR 1

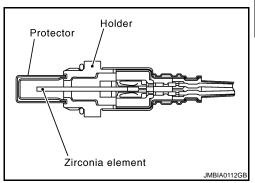
Description INFOID:0000000001715127

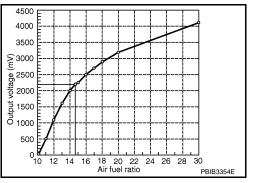
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800°C (1,472°F).





DTC Logic INFOID:0000000001715128

DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal fluctuates according to fuel feedback control.

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible Cause
P0130	Air fuel ratio (A/F) sensor 1 circuit		The A/F signal computed by ECM from the A/F sensor 1 signal is constantly in the range other than approx. 2.2V.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.)
CIrcuit	B)	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 2.2V.	A/F sensor 1	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

- Start engine and warm it up to normal operating temperature.
- Let it idle for 2 minutes.
- 3. Check 1st trip DTC.

Is 1st trip DTC detected?

>> Go to EC-175, "Diagnosis Procedure".

NO-1 >> With CONSULT-III: GO TO 3.

NO-2 >> Without CONSULT-III: GO TO 7.

EC-173 Revision: 2008 January 2008 Rogue

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3.check air fuel ratio (A/F) sensor 1 function

- 1. Select "A/F SEN1 (B1)" in "DATA MONITOR" mode with CONSULT-III.
- 2. Check "A/F SEN1 (B1)" indication.

Does the indication fluctuates around 2.2 V?

YES >> GO TO 4.

NO >> Go to EC-175, "Diagnosis Procedure".

f 4. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-I

- 1. Select "A/F SEN1 (B1) P1276" of "A/F SEN1" in "DTC WORK SUPPORT" mode with CONSULT-III.
- 2. Touch "START".
- 3. When the following conditions are met, "TESTING" will be displayed on the CONSULT-III screen.

ENG SPEED	1,750 - 2,600 rpm
VHCL SPEED SE	More than 64 km/h (40 mph)
B/FUEL SCHDL	1.0 - 8.0 msec
Shift lever	D position

If "TESTING" is not displayed after 20 seconds, retry from step 2.

CAUTION:

Always drive vehicle at a safe speed.

Is "TESTING" displayed on CONSULT-III screen?

YES >> GO TO 5.

NO >> Check A/F sensor 1 function again. GO TO 3.

${f 5}$ PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-II

Release accelerator pedal fully.

NOTE:

Never apply brake during releasing the accelerator pedal.

Which does "TESTING" change to?

COMPLETED>>GO TO 6.

OUT OF CONDITION>>Retry DTC CONFIRMATION PROCEDURE. GO TO 4.

6.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-III

Touch "SELF-DIAG RESULT"

Which is displayed on CONSULT-III screen?

OK >> INSPECTION END

NG >> Go to EC-175, "Diagnosis Procedure".

7.PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

Perform Component Function Check, Refer to EC-174, "Component Function Check".

NOTE:

Use component function check to check the overall function of the A/F sensor 1 circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-175, "Diagnosis Procedure".

Component Function Check

1. PERFORM COMPONENT FUNCTION CHECK

With GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Drive the vehicle at a speed of 80 km/h (50 MPH) for a few minutes in the suitable gear position.
- Set D position, then release the accelerator pedal fully until the vehicle speed decreases to 50 km/h (31 MPH).

CAUTION:

P0130 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Always	drive	vehicle	at a	safe	speed.

NOTE:

Never apply brake during releasing the accelerator pedal.

- 4. Repeat steps 2 to 3 for five times.
- 5. Stop the vehicle and turn ignition switch OFF.
- 6. Wait at least 10 seconds and restart engine.
- 7. Repeat steps 2 to 3 for five times.
- 8. Stop the vehicle and connect GST to the vehicle.
- 9. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-175, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect A/F sensor 1 harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between A/F sensor 1 harness connector and ground.

A/F ser	nsor 1	Ground	Voltage	
Connector Terminal		Oround	vollage	
F28	4	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

f 4.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sensor 1		ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
F28	1	F8	45	Existed	
1 20	2	10	49	LXISIEU	

Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

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A/F sensor 1 ECM		M	Ground	Continuity	
Connector	Terminal	Connector	Terminal	Giodila	Continuity
F28	1	F8	45	Ground	Not existed
1 20	2	10	49	Giodila	Not existed

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace.

6. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

P0131 A/F SENSOR 1

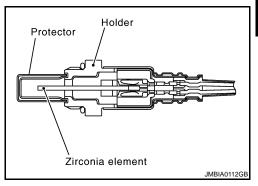
Description INFOID:0000000001849479

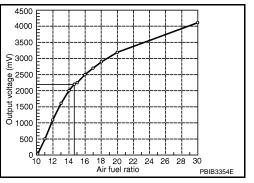
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800°C (1,472°F).





DTC Logic INFOID:0000000001715132

DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal is not inordinately low.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P0131	Air fuel ratio (A/F) sensor 1 circuit low voltage	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 0V.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.) A/F sensor 1

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V at idle.

>> GO TO 2.

2.CHECK A/F SENSOR FUNCTION

(P)With CONSULT-III

- Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" in "DATA MONITOR" mode with CONSULT-III.
- Check "A/F SEN1 (B1)" indication.

Follow the procedure "With CONSULT-III" above.

Is the indication constantly approx. 0V?

>> Go to EC-178, "Diagnosis Procedure".

EC-177 Revision: 2008 January 2008 Rogue

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< COMPONENT DIAGNOSIS >

NO >> GO TO 3.

3. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

1. Turn ignition switch OFF, wait at least 10 seconds and then restart engine.

Drive and accelerate vehicle to more than 40 km/h (25 MPH) within 20 seconds after restarting engine.

CAUTION:

Always drive vehicle at a safe speed.

3. Maintain the following conditions for about 20 consecutive seconds.

ENG SPEED	1,000 - 3,200 rpm
VHCL SPEED SE	More than 40 km/h (25 mph)
B/FUEL SCHDL	1.5 - 9.0 msec
Shift lever	Suitable position

NOTE:

- Keep the accelerator pedal as steady as possible during the cruising.
- If this procedure is not completed within 1 minute after restarting engine at step 1, return to step
- 4. Check 1st trip DTC.

@With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-178, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001849480

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Disconnect A/F sensor 1 harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between A/F sensor 1 harness connector and ground.

A/F sei	nsor 1	Ground	Voltage	
Connector Terminal		Giodila	vollage	
F28	4	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

P0131 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

4. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sensor 1		ECM		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
F28	1	F8	45	Existed	
1 20	1 20	2	10	49	LXISIEU

4. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F sensor 1		ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Ground Continuity	
F28	1	F8	45	Ground	Not existed
1 20	2	10	49	Giodila	NOT EXISTED

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace.

O.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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P0132 A/F SENSOR 1

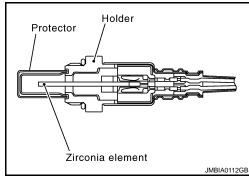
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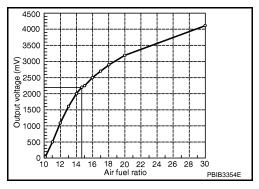
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800°C (1,472°F).





DTC Logic INFOID:000000001715135

DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal is not inordinately high.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P0132	Air fuel ratio (A/F) sensor 1 circuit high voltage	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 5V.	 Harness or connectors (The A/F sensor 1 circuit is open or shorted.) A/F sensor 1

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V at idle.

>> GO TO 2.

2. CHECK A/F SENSOR FUNCTION

(P)With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "A/F SEN1 (B1)" indication.

®With GST

Follow the procedure "With CONSULT-III" above.

Is the indication constantly approx. 5 V?

YES >> Go to EC-181, "Diagnosis Procedure".

P0132 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

NO >> GO TO 3.

3.perform dtc confirmation procedure

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(P)With CONSULT-III

- Turn ignition switch OFF, wait at least 10 seconds and then restart engine.
- Drive and accelerate vehicle to more than 40 km/h (25 MPH) within 20 seconds after restarting engine.

CAUTION:

Always drive vehicle at a safe speed.

3. Maintain the following conditions for about 20 consecutive seconds.

ENG SPEED	1,000 - 3,200 rpm
VHCL SPEED SE	More than 40 km/h (25 mph)
B/FUEL SCHDL	1.5 - 9.0 msec
Shift lever	Suitable position

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NOTE:

- Keep the accelerator pedal as steady as possible during the cruising.
- If this procedure is not completed within 1 minute after restarting engine at step 1, return to step
- 4. Check 1st trip DTC.

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC is detected?

YES >> Go to EC-181, "Diagnosis Procedure".

NO >> INSPECTION END

INFOID:0000000001849482

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect A/F sensor 1 harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between A/F sensor 1 harness connector and ground.

A/F ser	nsor 1	Ground	Voltage	
Connector Terminal		Ground	voltage	
F28	4	Ground	Battery voltage	

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Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

EC-181 Revision: 2008 January 2008 Rogue

4. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sensor 1		EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F28	1	F8	45	Existed
1 20	2	10	49	LAISIEU

4. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F sensor 1		ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Giodila	Continuity
F28	1	F8	45	Ground	Not existed
1 20	2	1-0	49	Giodila	NOT EXISTED

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace.

O. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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P0133 A/F SENSOR 1

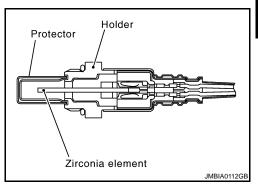
Description INFOID:000000001849483

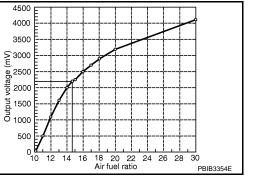
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800°C (1,472°F).





DTC Logic

DTC DETECTION LOGIC

To judge the malfunction of A/F sensor 1, this diagnosis measures response time of the A/F signal computed by ECM from the A/F sensor 1 signal. The time is compensated by engine operating (speed and load), fuel feedback control constant, and the A/F sensor 1 temperature index. Judgment is based on whether the compensated time (the A/F signal cycling time index) is inordinately long or not.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause	
P0133	Air fuel ratio (A/F) sensor 1 circuit slow response	The response of the A/F signal computed by ECM from A/F sensor 1 signal takes more than the specified time.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.) A/F sensor 1 A/F sensor 1 A/F sensor 1 heater Fuel pressure Fuel injector Intake air leaks Exhaust gas leaks PCV Mass air flow sensor	L N

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 5.

Revision: 2008 January EC-183 2008 Rogue

2.PERFORM DTC CONFIRMATION PROCEDURE-I

(II) With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1minute under no load.
- Let engine idle for 1 minute.
- 5. Select A/F SEN1(B1) P1278/P1279" of "A/F SEN1" in "DTC WORK SUPPORT" mode with CONSULT-III.
- 6. Touch "START".

Is "COMPLETED" displayed on COUSULT-III?

YES >> GO TO 3 NO >> GO TO 4.

3.PERFORM DTC CONFIRMATION PROCEDURE-II

Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III?

OK >> INSPECTION END

NG >> Go to EC-185, "Diagnosis Procedure".

4. PERFORM DTC CONFIRMATION PROCEDURE

- 1. After perform the following procedure, "TESTING" will be displayed on the CONSULT-III screen.
- Increase the engine speed up to 4,000 to 5,000 rpm and keep it for 10 seconds.
- Fully release accelerator pedal and then let engine idle for about 10 seconds.

If "TESTING" is not displayed after 10 seconds, refer to EC-116, "Component Function Check".

- Wait for about 20 seconds at idle at under the condition that "TESTING" is displayed on the CONSULT-III screen.
- Make sure that "TESTING" changes to "COMPLETED".
 - If "TESTING" changed to "OUT OF CONDITION", refer to EC-116, "Component Function Check".
- Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III?

OK >> INSPECTION END

NG >> Go to EC-185, "Diagnosis Procedure".

5. CHECK AIR-FUEL RATIO SELF-LEARNING VALUE

- 1. Start engine and warm it up to normal operating temperature.
- 2. Select Service \$01 with GST.
- 3. Calculate the total value of "Short term fuel trim" and "Long term fuel trim" indications.

Is the total percentage within $\pm 15\%$?

YES >> GO TO 7. NO >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- · Intake air leaks
- Exhaust gas leaks
- Incorrect fuel pressure
- Lack of fuel
- Fuel injector
- Incorrect PCV hose connection
- PCV valve
- · Mass air flow sensor

>> Repair or replace malfunctioning part.

7. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.

P0133 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

- Let engine idle for 1 minute.
- Increase the engine speed up to 4,000 to 5,000 rpm and keep it for 10 seconds.
- Fully release accelerator pedal and then let engine idle for about 1 minute.
- Check 1st trip DTC detected?.

Is 1st trip DTC detected?

YES >> Go to EC-185, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715139

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

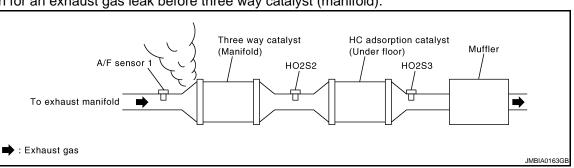
2.RETIGHTEN A/F SENSOR 1

Loosen and retighten the A/F sensor 1. Refer to EM-32, "Removal and Installation".

>> GO TO 3.

3. CHECK EXHAUST GAS LEAK

Start engine and run it at idle. Listen for an exhaust gas leak before three way catalyst (manifold).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 4.

4. CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 5.

$oldsymbol{5}.$ CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to EC-29, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 or P172 detected? Is it difficult to start engine?

>> Perform trouble diagnosis for DTC P0171 or P0172. Refer to EC-227, "DTC Logic" or EC-231, YES "DTC Logic".

NO >> GO TO 6.

Revision: 2008 January

$oldsymbol{6}$.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

Disconnect A/F sensor 1 harness connector.

EC-185

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< COMPONENT DIAGNOSIS >

- 2. Turn ignition switch ON.
- 3. Check the voltage between A/F sensor 1 harness connector and ground.

A/F ser	nsor 1	Ground	Voltage	
Connector Terminal		Ciodila	voltage	
F28	4	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

7. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

$8.\mathsf{CHECK}$ A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sensor 1		ECM		Continuity
Connector	Terminal	Connector Termina		Continuity
F28	1	F8	45	Existed
1 20	2	1.0	49	LAISIEU

4. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F sensor 1		ECM		Ground	Continuity
Connector	Terminal	Connector	Connector Terminal		Continuity
F28	1	F8	45	Ground	Not existed
1 20	2	1-0	49	Giodila	NOT EXISTED

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9.CHECK AIR FUEL RATIO (A/F) SENSOR 1 HEATER

Refer to EC-135, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 13.

10.CHECK MASS AIR FLOW SENSOR

Check mass air flow sensor.

Refer to EC-149, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace mass air flow sensor.

11. CHECK PCV VALVE

P0133 A/F SENSOR 1	
< COMPONENT DIAGNOSIS > [FOR CALIFORNIA]	
Refer to EC-433, "Component Inspection".	
Is the inspection result normal?	Α
YES >> GO TO 12. NO >> Repair or replace PCV valve.	
12. CHECK INTERMITTENT INCIDENT	EC
Perform GI-41, "Intermittent Incident".	
Is the inspection result normal?	С
YES >> GO TO 13.	
NO >> Repair or replace.	
13. REPLACE AIR FUEL RATIO (A/F) SENSOR 1	D
Replace air fuel ratio (A/F) sensor 1. CAUTION:	
• Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a	Е
hard surface such as a concrete floor; use a new one.Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread	
Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant	
(commercial service tool).	
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P0137 H02S2

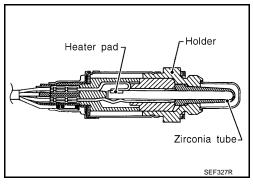
Description INFOID:000000001715140

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas on each bank.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

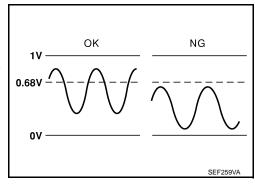
Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



DTC Logic

DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the maximum voltage of the sensor is sufficiently high during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0137	Heated oxygen sensor 2 circuit low voltage	The maximum voltage from the sensor is not reached to the specified voltage.	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector Intake air leaks

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 5.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30 °C (32 to 86 °F).

>> GO TO 3.

3. PERFORM DTC CONFIRMATION PROCEDURE

P0137 H02S2

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

 Turn ignition switch ON and select "DATA MONITOR" mode with CONS 	ULT-	-
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- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).

If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches to 70°C (158°F).

- 7. Open engine hood.
- 8. Select "HO2S2 (B1) P1147" of "HO2S2" in "DTC WORK SUPPORT" mode with CONSULT-III.
- Start engine and following the instruction of CONSULT-III.

NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

10. Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III screen?

OK >> INSPECTION END

NG >> Go to EC-190, "Diagnosis Procedure".

CAN NOT BE DIAGNOSED>>GO TO 4.

f 4.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

- Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- 2. Perform DTC CONFIRMATION PROCEDURE again.

>> GO TO 3.

5. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to <a>EC-189, <a>"Component Function Check".

NOTE:

Use component function check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-190, "Diagnosis Procedure".

Component Function Check

1.PERFORM COMPONENT FUNCTION CHECK-I

Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector terminals under the following condition.

	ECM		ECM	Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connectors under the following condition.

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ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voltage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

3.perform component function check-iii

Check the voltage between ECM harness connector and ground under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voitage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-190, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001715143

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- 1. Clear the mixture ratio self-learning value. Refer to EC-29, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- 2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171. Refer to <u>EC-227</u>, "DTC Logic".

NO >> GO TO 3.

3.CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Disconnect heated oxygen sensor 2 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	:S2	EC	Continuity	
Connector	Terminal	Connector	Continuity	
F31	1	F8	35	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

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НО	2S2		ECM	Co	ntinuity	
Connector	Terminal	Connecto	or Termin	nal		
F31	4	F8	33	E	xisted	
2. Check t	he continu	ity between	HO2S2 h	arness c	onnector c	or ECM harness connector and ground.
HO2	.S2	EC	M			_
Connector	Terminal	Connector	Terminal	Ground	Continuity	
F31	4	F8	33	Ground	Not existed	_ t
Is the inspe YES >> NO >> 5. CHECK	ction result GO TO 5. Repair op HEATED C	en circuit or DXYGEN SI	short to g	ground or	short to p	ower in harness or connectors.
•	ction result GO TO 7. GO TO 6.	t normal?		. 2		
Replace hea	ated oxyge	en sensor 2.	<u>-</u>		<u>-</u>	

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK HEATED OXYGEN SENSOR 2

(I) With CONSULT-III

- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load. 4.
- 5. Let engine idle for 1 minute.
- Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)" as the monitor item with CONSULT-III.

EC-191 Revision: 2008 January 2008 Rogue

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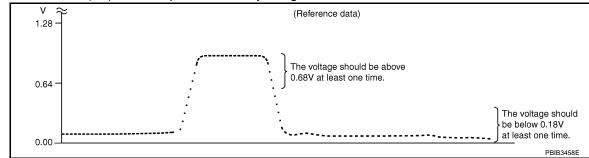
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Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S2 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S2 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3.CHECK HEATED OXYGEN SENSOR 2-I

⋈Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground under the following condition.

ECM					
Connector	+ -		Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground under the following condition.

ECM					
Connector	+ -		Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground under the following condition.

P0137 H02S2

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

ECM					
Connector	+ -		Condition	Voltage	
	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

6. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

 Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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P0138 HO2S2

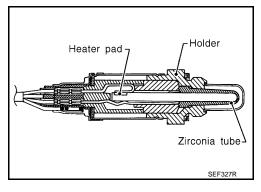
Description INFOID:000000001879788

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas on each bank.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



DTC Logic

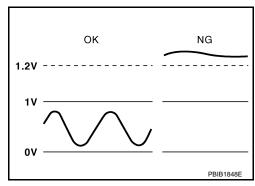
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DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time.

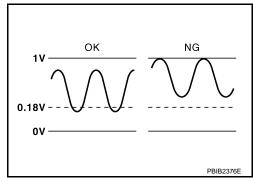
MALFUNCTION A

To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the voltage is unusually high during the various driving condition such as fuel-cut.



MALFUNCTION B

To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the minimum voltage of sensor is sufficiently low during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name		DTC detecting condition	Possible cause
		A)	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2
P0138	Heated oxygen sensor 2 circuit high voltage	B)	The minimum voltage from the sensor is not reached to the specified voltage.	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector

DTC CONFIRMATION PROCEDURE

[FOR CALIFORNIA]

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

- Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Check 1st trip DTC.

Is 1st trip DTC detected?

>> Go to EC-196, "Diagnosis Procedure". YES

NO-1 >> With CONSULT-III: GO TO 3.

NO-2 >> Without CONSULT-III: GO TO 5.

3.perform dtc confirmation procedure for malfunction b

NOTE:

For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30 °C (32 to 86 °F).

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).

If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches to 70°C (158°F).

- Open engine hood.
- Select "HO2S2 (B1) P1146" of "HO2S2" in "DTC WORK SUPPORT" mode with CONSULT-III.
- Start engine and following the instruction of CONSULT-III.

NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

10. Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III

OK >> INSPECTION END

NG >> Go to EC-196, "Diagnosis Procedure".

CAN NOT BE DIAGNOSED>>GO TO 4.

f 4 .PERFORM DTC CONFIRMATION PROCEDURE FOR MALUNCTION B AGAIN

- Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- Perform DTC CONFIRMATION PROCEDURE again.

>> GO TO 3.

$oldsymbol{5}$.PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

Perform component function check. Refer to EC-196, "Diagnosis Procedure".

NOTE:

Use component function check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-196, "Diagnosis Procedure".

Component Function Check

1.PERFORM COMPONENT FUNCTION CHECK-I

Without CONSULT-III

Start engine and warm it up to the normal operating temperature.

EC-195 Revision: 2008 January 2008 Rogue

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< COMPONENT DIAGNOSIS >

- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector terminals under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	vollage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connectors under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voltage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

3. PERFORM COMPONENT FUNCTION CHECK-III

Check the voltage between ECM harness connector and ground under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voltage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-196, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001715148

1. INSPECTION START

Confirm the detected malfunction (A or B). Refer to EC-194, "DTC Logic".

Which malfunction is detected?

A >> GO TO 2.

B >> GO TO 9.

2.check ground connection

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace ground connection.

3. CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

1. Disconnect heated oxygen sensor 2 harness connector.

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- 2. Disconnect ECM harness connector.
- 3. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	:S2	EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F31	1	F8	35	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4.CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	S2	ECM		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
F31	4	F8	33	Existed	

2. Check the continuity between HO2S2 harness connector or ECM harness connector and ground.

HO2	.S2	EC	М	Ground	Continuity
Connector	Terminal	Connector Terminal		Ground	Continuity
F31	4	F8	33	Ground	Not existed

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

$\mathbf{5}.$ CHECK HO2S2 CONNECTOR FOR WATER

Check connectors for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace harness or connectors.

6.CHECK HEATED OXYGEN SENSOR 2

Refer to EC-199, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

7.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

8.CHECK INTERMITTENT INCIDENT

Revision: 2008 January EC-197 2008 Rogue

Refer to GI-44, "Circuit Inspection".

>> INSPECTION END

9. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace ground connection.

10.clear the mixture ratio self-learning value

- Clear the mixture ratio self-learning value. Refer to <u>EC-29</u>, "MIXTURE RATIO SELF-LEARNING VALUE <u>CLEAR</u>: Special Repair Requirement".
- 2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0172. Refer to EC-231, "DTC Logic".

NO >> GO TO 11.

11. CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	.S2	EC	M	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F31	1	F8	35	Existed

5. Also check harness for short to ground and short to power.

<u>Is the inspection result normal?</u>

YES >> GO TO 12.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

12. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	:S2	ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F31	4	F8	33	Existed

2. Check the continuity between HO2S2 harness connector or ECM harness connector and ground.

HO2	:S2	EC	M	Ground	Continuity
Connector	Terminal	Connector Terminal		Giodila	Continuity
F31	4	F8	33	Ground	Not existed

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

13. CHECK HEATED OXYGEN SENSOR 2

Refer to EC-199, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO >> GO TO 14.

14.replace heated oxygen sensor 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.

>> INSPECTION END

15. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1.INSPECTION START

Do vou have CONSULT-III?

Do you have CONSULT-III?

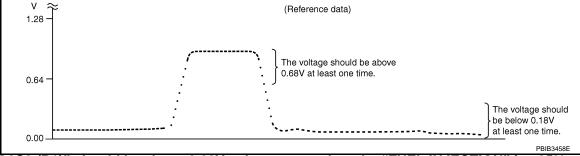
YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK HEATED OXYGEN SENSOR $_2$

With CONSULT-III

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III. 1.
- Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)" as the monitor item with CONSULT-III.
- Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S2 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S2 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3.check heated oxygen sensor 2-1

Without CONSULT-III

- Start engine and warm it up to the normal operating temperature. 1.
- Turn ignition switch OFF and wait at least 10 seconds. 2.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- Check the voltage between ECM harness connector and ground under the following condition.

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2008 Rogue

Revision: 2008 January

	ECM				
Connector	+	_	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground under the following condition.

	ECM				
Connector	+	_	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground under the following condition.

	ECM				
Connector	+	-	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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P0139 HO2S2

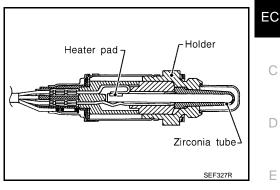
Description INFOID:0000000001879790

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas on each bank.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

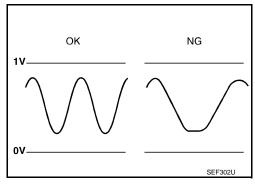
Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



DTC Logic INFOID:0000000001715151

DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (mamifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the switching response of the sensor's voltage is faster than specified during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0139	Heated oxygen sensor 2 circuit slow response	It takes more time for the sensor to respond be- tween rich and lean than the specified time.	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector Intake air leaks

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 5.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 3.

3.PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- Start engine and warm it up to the normal operating temperature.

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< COMPONENT DIAGNOSIS >

- 3. Start engine and warm it up to the normal operating temperature.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Open engine hood.
- 7. Select "HO2S2 (B1) P0139" of "HO2S2" in "DTC WORK SUPPORT" mode with CONSULT-III.
- 8. Start engine and following the instruction of CONSULT-III.

NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

9. Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III?

OK >> INSPECTION END

NG >> GO TO 4.

CAN NOT BE DIAGNOSED>>GO TO 4.

4. PERFORM THE RESULT OF DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- Perform DTC CONFIRMATION PROCEDURE again.

>> GO TO 3.

5. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-202, "Component Function Check".

NOTE:

Use Component Function Check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-203, "Diagnosis Procedure".

Component Function Check

INFOID:0000000001879793

1. PERFORM COMPONENT FUNCTION CHECK-I

⋈Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector terminals under the following condition.

E	CM	E	CM	Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voltage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	A change of voltage should be more than 0.30V for 1 second during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connectors under the following condition.

E	CM	E	CM	Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voltage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	A change of voltage should be more than 0.30V for 1 second during this procedure.	

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Is the inspection result normal?

>> INSPECTION END

NO >> GO TO 3.

3.perform component function check-iii

Check the voltage between ECM harness connector and ground under the following condition.

Е	СМ	Е	CM	Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	vollage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	A change of voltage should be more than 0.30V for 1 second during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-203, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- 1. Clear the mixture ratio self-learning value. Refer to <u>EC-29</u>, "MIXTURE RATIO SELF-LEARNING VALUE <u>CLEAR</u>: Special Repair Requirement".
- Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 or P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171 or P0172. Refer to <u>EC-227, "DTC Logic"</u> or <u>EC-231, "DTC Logic"</u>.

NO >> GO TO 3.

${f 3.}$ CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Disconnect heated oxygen sensor 2 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2S2		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F31	1	F8	35	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

f 4 .CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2S2		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F31	4	F8	33	Existed

< COMPONENT DIAGNOSIS >

2. Check the continuity between HO2S2 harness connector or ECM harness connector and ground.

HO2S2		ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Giodila	Continuity
F31	4	F8	33	Ground	Not existed

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

$\mathbf{5}$.CHECK HEATED OXYGEN SENSOR 2

Refer to EC-204, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 6.

6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001879791

1. INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

2.CHECK HEATED OXYGEN SENSOR 2

(P)With CONSULT-III

- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)" as the monitor item with CONSULT-III.

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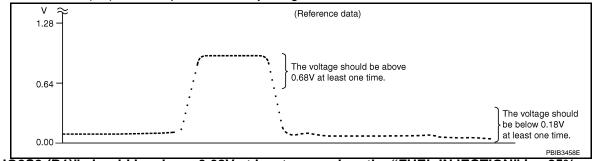
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Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S2 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S2 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3. CHECK HEATED OXYGEN SENSOR 2-1

Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground under the following condition.

	ECM			
Connector	+	_	Condition	Voltage
Connector	Terminal	Terminal		
F8	33 (HO2S2 signal)	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground under the following condition.

	ECM			
Connector	+	-	Condition	Voltage
Connector	Terminal	Terminal		
F8	33 (HO2S2 signal)	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground under the following condition.

	ECM			
Connector	+	_	Condition	Voltage
Connector	Terminal	Terminal		
F8	33 (HO2S2 signal)	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

6. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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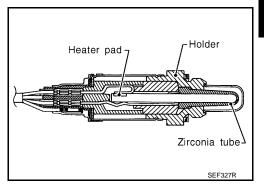
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P0143 H02S3

Description

The heated oxygen sensor 3, after HC adsorption catalyst (Under floor), monitors the oxygen level in the exhaust gas on each bank. This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

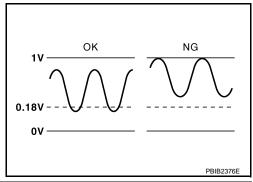
Under normal conditions the heated oxygen sensor 3 is not used for engine control operation.



DTC Logic

DTC DETECTION LOGIC

The heated oxygen sensor 3 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 3, ECM monitors whether the minimum voltage of sensor is sufficiently low during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0143	Heated oxygen sensor 3 circuit high voltage	The minimum voltage from the sensor is not reached to the specified voltage.	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 3 Fuel pressure Fuel injector

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure

- 1. Start engine and warm it up to the normal operating temperature.
- Repeat the following procedure 3 times.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws. NOTE:

- Keep the vehicle speed as steady as possible during the cruising.
- Never raise engine speed above 3,600 rpm in this step.
- Release accelerator pedal fully and stop vehicle with engine running.

NOTE:

Never turn ignition switch OFF.

Check 1st trip DTC.

Is 1st tip DTC detected?

Revision: 2008 January EC-207 2008 Rogue

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

YES >> Go to EC-208, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715157

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.clear the mixture ratio self-learning value

- Clear the mixture ratio self-learning value. Refer to <u>EC-29</u>, "MIXTURE RATIO SELF-LEARNING VALUE <u>CLEAR</u>: <u>Special Repair Requirement</u>".
- 2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0172. Refer to EC-232, "Diagnosis Procedure".

NO >> GO TO 3.

3.CHECK HO2S3 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 3 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S3 harness connector and ECM harness connector.

HO2S3		EC	Continuity	
Connector	Terminal	Connector Terminal		Continuity
E50	1	F8	35	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between heated oxygen sensor 3 and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK HO2S3 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between HO2S3 harness connector and ECM harness connector.

HO2S3		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E50	4	F8	34	Existed

2. Check the continuity between HO2S3 harness connector or ECM harness connector and ground.

HO2	.S3	ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Giodila	Continuity
E50	4	F8	34	Ground	Not existed

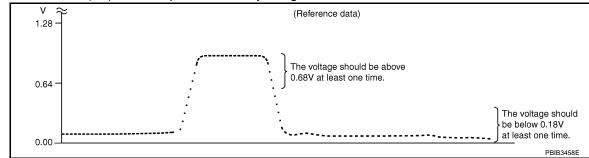
3. Also check harness for short to power.

Is the inspection result normal?

P0143 HO2S3

< COMPONENT DIAGNOSIS >	[FOR CALIFORNIA]
YES >> GO TO 7. NO >> GO TO 6.	A
6. DETECT MALFUNCTIONING PART	, ,
Check the following.	EC
 Harness connectors E7, F121 Harness for open or short between heated oxygen sensor 3 and ECM 	20
Trainings for open of effort between fleated exygen concer o and bem	
>> Repair open circuit or short to ground or short to power in harness or co	onnectors.
7. CHECK HEATED OXYGEN SENSOR 3	
Refer to EC-209, "Component Inspection".	D
Is the inspection result normal?	
YES >> GO TO 9. NO >> GO TO 8.	E
8. REPLACE HEATED OXYGEN SENSOR 3	
Replace heated oxygen sensor 3.	F
CAUTION:Discard any heated oxygen sensor which has been dropped from a height	
in) onto a hard surface such as a concrete floor; use a new one.	•
 Before installing new heated oxygen sensor, clean exhaust system thread Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and a 	
cant (commercial service tool).	oproved anti-seize lubri-
	Н
>> INSPECTION END	
9. CHECK INTERMITTENT INCIDENT	ı
Refer to GI-41, "Intermittent Incident".	
>> INSPECTION END	1
	J
Component Inspection	INFOID:000000001715158
1.INSPECTION START	K
Do you have CONSULT-III?	
Do you have CONSULT-III?	L
YES >> GO TO 2. NO >> GO TO 3.	
2.CHECK HEATED OXYGEN SENSOR 3	M
(F) With CONSULT-III	
CAUTION:	
Always drive vehicle in safe manner according to traffic conditions and obey a 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.	all traffic laws.
2. Start engine and warm it up to the normal operating temperature.	
3. Turn ignition switch OFF and wait at least 10 seconds.4. Start the engine and drive vehicle at a speed of 80 km/h (50 MPH) or more for a	ot least 3 consecutive min-
utes.	it ieast o coriscoutive IIIIII-
NOTE:	P
Keep the vehicle speed as steady as possible during the cruising.5. Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S3 (B1)	·
CONSULT-III.	

Check "HO2S3 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S3 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S3 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3.CHECK HEATED OXYGEN SENSOR 3-I

Without CONSULT-III

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

- 1. Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start the engine and drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

NOTE:

Keep the vehicle speed as steady as possible during the cruising.

4. Check the voltage between ECM harness connector terminals under the following condition.

E	CM	ECM		Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	34 (HO2S3 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4.CHECK HEATED OXYGEN SENSOR 3-II

- Keep vehicle at idling for 10 minutes.
- 2. Check the voltage between ECM harness connector and ground under the following condition.

ECM		ECM		Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	34 (HO2S3 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 3-III

Check the voltage between ECM harness connector and ground under the following condition.

P0143 HO2S3

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

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ECM		ECM			O Eff	
Connector	Terminal	Connector	Terminal	Condition	Voltage	
F8	34 (HO2S3 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	
the insp	ection resu	ult normal?				
		TION END				
	> GO TO 6		N OFNO	ND 0		
		D OXYGE		DR 3		
eplace h AUTION		jen sensor	3.			
Discard	any heate				height of more than 0.5 m (19.7	
				crete floor; use a new one.	n threads using Oxygen Sensor	
Thread	Cleaner [c	ommercia	I service		i threads using Oxygen Sensor i] and approved anti-seize lubri-	
cant (co	mmercial	service to	ol).	·		
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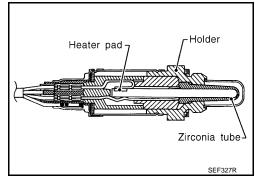
Revision: 2008 January EC-211 2008 Rogue

P0144 H02S3

Description INFOID:000000001880219

The heated oxygen sensor 3, after HC adsorption catalyst (Under floor), monitors the oxygen level in the exhaust gas on each bank. This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

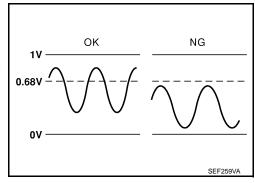
Under normal conditions the heated oxygen sensor 3 is not used for engine control operation.



DTC Logic INFOID:000000001715160

DTC DETECTION LOGIC

The heated oxygen sensor 3 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 3, ECM monitors whether the maximum voltage of the sensor is sufficiently high during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0144	Heated oxygen sensor 3 circuit low voltage	The maximum voltage from the sensor is not reached to the specified voltage.	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 3 Fuel pressure Fuel injector Intake air leaks

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Repeat the following procedure 3 times.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.
 CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws. NOTE:

- Keep the vehicle speed as steady as possible during the cruising.
- Never raise engine speed above 3,600 rpm in this step.
- Release accelerator pedal fully and stop vehicle with engine running.

NOTE:

P0144 HO2S3

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

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Never turn	ianition	Switch	UFF.

3. Check 1st trip DTC.

Is 1st tip DTC detected?

YES >> Go to EC-213, "Diagnosis Procedure".

NO >> INSPECTION END

INFOID:0000000001715161

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Diagnosis Procedure

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- 1. Clear the mixture ratio self-learning value. Refer to EC-29, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- 2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 or P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171 or P0172. Refer to <u>EC-227, "DTC Logic"</u> or <u>EC-231, "DTC Logic"</u>.

NO >> GO TO 3.

3.CHECK HO2S3 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 3 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S3 harness connector and ECM harness connector.

НО	2S3	E	Continuity		
Connector	Terminal	Connector Terminal		Continuity	
E50	1	F8	35	Existed	

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between heated oxygen sensor 3 and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

5.check H02S3 input signal circuit for open and short

Check the continuity between HO2S3 harness connector and ECM harness connector.

НО	2S3	E	Continuity	
Connector	Terminal	Connector Terminal		Continuity
E50	4	F8	34	Existed

Check the continuity between HO2S3 harness connector or ECM harness connector and ground.

НО	2S3	Е	СМ	Ground	Continuity
Connector	Terminal	Connector Terminal		Giodila	Continuity
E50	4	F8	34	Ground	Not existed

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between heated oxygen sensor 3 and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

7.CHECK HEATED OXYGEN SENSOR $_3$

Refer to EC-214, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9. NO >> GO TO 8.

8. REPLACE HEATED OXYGEN SENSOR 3

Replace heated oxygen sensor 3.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001880220

1. INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

2.CHECK HEATED OXYGEN SENSOR $_{ m 3}$

(P)With CONSULT-III

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start the engine and drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

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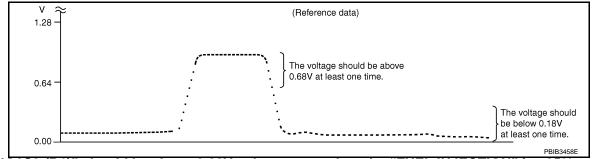
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Keep the vehicle speed as steady as possible during the cruising.

- 5. Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S3 (B1)" as the monitor item with CONSULT-III.
- 6. Check "HO2S3 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S3 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S3 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3.check heated oxygen sensor 3-1

Without CONSULT-III

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- Start the engine and drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

NOTE:

Keep the vehicle speed as steady as possible during the cruising.

4. Check the voltage between ECM harness connector terminals under the following condition.

ECM		ECM		Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	34 (HO2S3 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 3-II

- Keep vehicle at idling for 10 minutes.
- 2. Check the voltage between ECM harness connector and ground under the following condition.

ECM		ECM		Condition	Voltago
Connector	Terminal	Connector	Terminal	Condition	Voltage
F8	34 (HO2S3 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 3-III

Check the voltage between ECM harness connector and ground under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	vollage	
F8	34 (HO2S3 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

6.REPLACE HEATED OXYGEN SENSOR 3

Replace heated oxygen sensor 3.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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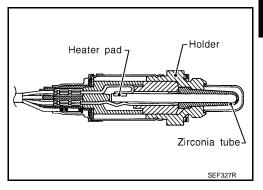
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P0145 H02S3

Description INFOID:000000001880221

The heated oxygen sensor 3, after HC adsorption catalyst (Under floor), monitors the oxygen level in the exhaust gas on each bank. This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

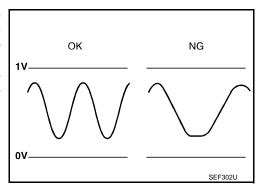
Under normal conditions the heated oxygen sensor 3 is not used for engine control operation.



DTC Logic

DTC DETECTION LOGIC

The heated oxygen sensor 3 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 3, ECM monitors whether the switching response of the sensor's voltage is faster than specified during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0145	Heated oxygen sensor 3 circuit slow response	It takes more time for the sensor to respond be- tween rich and lean than the specified time.	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 3 Fuel pressure Fuel injector Intake air leaks

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Repeat the following procedure 3 times.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws. NOTE:

- Keep the vehicle speed as steady as possible during the cruising.
- Never raise engine speed above 3,600 rpm in this step.
- Release accelerator pedal fully and stop vehicle with engine running.

NOTE:

[FOR CALIFORNIA]

< COMPONENT DIAGNOSIS >

Never turn ignition switch OFF.

3. Check 1st trip DTC.

Is 1st tip DTC detected?

YES >> Go to EC-218, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715165

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to <u>EC-29</u>, "MIXTURE RATIO SELF-LEARNING VALUE <u>CLEAR</u>: Special Repair Requirement".
- 2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 or P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171 or P0172. Refer to <u>EC-227, "DTC Logic"</u> or <u>EC-231, "DTC Logic"</u>.

NO >> GO TO 3.

3.CHECK HO2S3 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 3 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S3 harness connector and ECM harness connector.

НО	2S3	E	Continuity	
Connector	Terminal	Connector Termina		Continuity
E50	1	F8	35	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between heated oxygen sensor 3 and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK HO2S3 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between HO2S3 harness connector and ECM harness connector.

НО	2S3	E	Continuity	
Connector	Terminal	Connector Terminal		Continuity
E50	4	F8	34	Existed

Check the continuity between HO2S3 harness connector or ECM harness connector and ground.

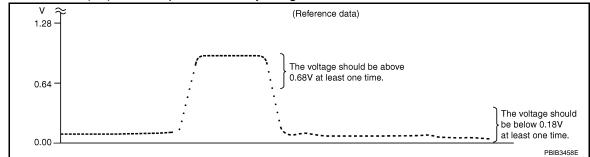
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Connector	Terminal	Connector	Terminal	Ground	Continuity	
E50	4	F8	34	Ground	Not existed	
		ess for short	to power.			
-		ılt normal?				
	> GO TO 7 > GO TO 6					
6.DETEC	T MALFUI	NCTIONING	PART			
Check the	following.					
• Harness			reen heated	l ovvaen se	nsor 3 and ECM	
- Harriess	ioi openio	i Short Detw	een neated	i oxygeii se	ISOI S AND LOW	
>>	> Repair o	pen circuit o	or short to g	round or sh	ort to power in harnes	s or connectors.
7. check	HEATED	OXYGEN S	SENSOR 3			
Refer to <u>E</u>	C-219, "Co	mponent In	spection".			
Is the inspe						
	> GO TO 9 > GO TO 8					
_		ED OXYGEN	N SENSOR	3		
CAUTION:						
	any heate					eight of more than 0.5 m (19.7
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in) onto Before in Thread (any heate a hard su nstalling Cleaner [c	rface such new heated	as a concr d oxygen s service to	ete floor; usensor, cle	se a new one. an exhaust system t	
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- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start the engine and drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

NOTE:

Keep the vehicle speed as steady as possible during the cruising.

- 5. Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S3 (B1)" as the monitor item with CONSULT-III.
- Check "HO2S3 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S3 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S3 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3.CHECK HEATED OXYGEN SENSOR 3-I

®Without CONSULT-III

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

- 1. Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start the engine and drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

NOTE:

Keep the vehicle speed as steady as possible during the cruising.

4. Check the voltage between ECM harness connector terminals under the following condition.

ECM		ECM		Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	34 (HO2S3 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 3-II

- Keep vehicle at idling for 10 minutes.
- Check the voltage between ECM harness connector and ground under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voltage	
F8	34 (HO2S3 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 3-III

P0145 HO2S3

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Check the voltage between ECM harness connector and ground under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	Voltage	
F8	34 (HO2S3 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

6.REPLACE HEATED OXYGEN SENSOR 3

Replace heated oxygen sensor 3.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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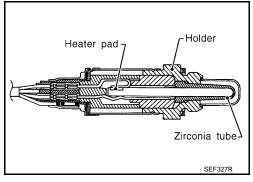
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P0146 HO2S3

Description INFOID:000000001880223

The heated oxygen sensor 3, after HC adsorption catalyst (Under floor), monitors the oxygen level in the exhaust gas on each bank. This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

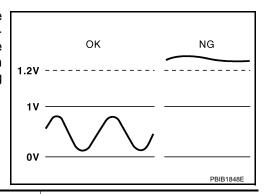
Under normal conditions the heated oxygen sensor 3 is not used for engine control operation.



DTC Logic

DTC DETECTION LOGIC

The heated oxygen sensor 3 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 3, ECM monitors whether the voltage is unusually high during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0146	Heated oxygen sensor 3 circuit no activity detected	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 3

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to the normal operating temperature.
- Repeat the following procedure 3 times.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws. NOTE:

- Keep the vehicle speed as steady as possible during the cruising.
- Never raise engine speed above 3,600 rpm in this step.
- Release accelerator pedal fully and stop vehicle with engine running.

NOTE:

Never turn ignition switch OFF.

3. Check 1st trip DTC.

Is 1st tip DTC detected?

YES >> Go to EC-223, "Diagnosis Procedure".

NO >> INSPECTION END

[FOR CALIFORNIA]

Diagnosis Procedure

INFOID:0000000001715169

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1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK HO2S3 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 3 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S3 harness connector and ECM harness connector.

НО	2S3	E	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E50	1	F8	35	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between heated oxygen sensor 3 and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

4.CHECK HO2S3 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between HO2S3 harness connector and ECM harness connector.

НО	2S3	E	Continuity	
Connector Terminal		Connector	Terminal	Continuity
E50	4	F8	34	Existed

2. Check the continuity between HO2S3 harness connector or ECM harness connector and ground.

НО	2S3	E	CM	Ground	Continuity
Connector	onnector Terminal Connector Terminal		Terminal	Oround	Continuity
E50	E50 4		34	Ground	Not existed

Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 6. NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

Revision: 2008 January

- Harness connectors E7, F121
- Harness for open or short between heated oxygen sensor 3 and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

[FOR CALIFORNIA]

INFOID:0000000001880224

6. CHECK HO2S3 CONNECTOR FOR WATER

Check connectors for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace harness or connectors.

7.CHECK HEATED OXYGEN SENSOR $_{ m 3}$

Refer to EC-224, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9. NO >> GO TO 8.

8.REPLACE HEATED OXYGEN SENSOR $_3$

Replace heated oxygen sensor 3.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41. "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

2.CHECK HEATED OXYGEN SENSOR $_{3}$

(P)With CONSULT-III

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Start the engine and drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

NOTE:

Keep the vehicle speed as steady as possible during the cruising.

5. Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S3 (B1)" as the monitor item with CONSULT-III.

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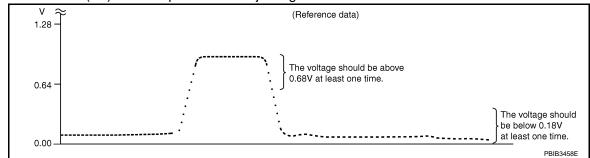
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Check "HO2S3 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S3 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S3 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3.CHECK HEATED OXYGEN SENSOR 3-I

Without CONSULT-III

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- Start the engine and drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

NOTE:

Keep the vehicle speed as steady as possible during the cruising.

4. Check the voltage between ECM harness connector terminals under the following condition.

ECM		ECM		Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	34 (HO2S3 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 3-II

- 1. Keep vehicle at idling for 10 minutes.
- Check the voltage between ECM harness connector and ground under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voltage	
F8	34 (HO2S3 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 3-III

Check the voltage between ECM harness connector and ground under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voltage	
F8	34 (HO2S3 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

6. REPLACE HEATED OXYGEN SENSOR 3

Replace heated oxygen sensor 3.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P0171 FUEL INJECTION SYSTEM FUNCTION

DTC Logic INFOID:0000000001715171

DTC DETECTION LOGIC

With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the A/F sensors 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios.

In case the amount of the compensation value is extremely large (The actual mixture ratio is too lean.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input signal to ECM	ECM function	Actuator
A/F sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)	Fuel injection control	Fuel injector

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0171	Fuel injection system too lean	 Fuel injection system does not operate properly. The amount of mixture ratio compensation is too large. (The mixture ratio is too lean.) 	Intake air leaks A/F sensor 1 Fuel injector Exhaust gas leaks Incorrect fuel pressure Lack of fuel Mass air flow sensor Incorrect PCV hose connection

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE-I

- Clear the mixture ratio self-learning value. Refer to EC-29, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- Start engine.

Is it difficult to start engine?

YES >> GO TO 3.

NO >> GO TO 4.

3. RESTART ENGINE

If it is difficult to start engine, the fuel injection system has a malfunction, too.

Crank engine while depressing accelerator pedal.

Does engine start?

YES >> Go to EC-228, "Diagnosis Procedure".

>> Check exhaust and intake air leak visually. NO

4.PERFORM DTC CONFIRMATION PROCEDURE-II

- Start engine and let it idle for at least 10 minutes.
- Check 1st trip DTC.

Is 1st trip DTC detected?

>> Go to EC-228, "Diagnosis Procedure". YES

NO >> GO TO 5.

5.PERFORM DTC CONFIRMATION PROCEDURE-III

Turn ignition switch OFF and wait at least 10 seconds.

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

2. Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for 10 minutes. Refer to the table below.

Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

Engine speed	Engine speed in the freeze frame data $\pm400~\text{rpm}$
Vehicle speed	Vehicle speed in the freeze frame data \pm 10 km/h (6 MPH)
Engine coolant temperature (T) condition	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).
Engine coolant temperature (1) condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).

3. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-228, "Diagnosis Procedure".

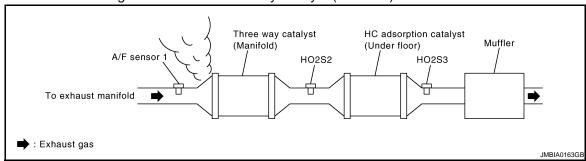
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715172

1. CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before three way catalyst (manifold).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 2.

2.CHECK FOR INTAKE AIR LEAK

- 1. Listen for an intake air leak after the mass air flow sensor.
- 2. Check PCV hose connection.

Intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 3.

3. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect corresponding A/F sensor 1 harness connector.
- Disconnect ECM harness connector.
- 4. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F s	sensor 1	I	Continuity	
Connector Terminal		Connector	Terminal	Continuity
F27	1	F8	45	Existed
1.21	2	1.0	49	LAISIEU

5. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

A/F se	ensor 1		ECM		
Connector	Terminal	Connector	Terminal	Ground	Continuity
F27 -	1 2	F8	45 49	Ground	Not existed
. Also ch	neck harne:	ss for short	t to power.		<u> </u>
	ection resul				
	 GO TO 4. Repair on 		or short to are	und or s	hort to power in harness or connectors.
	FUEL PRE		or short to gre	oria or 3	nort to power in namess of connectors.
			o. Refer to <u>E</u>	C-486 "I	Inspection"
					d check fuel pressure. Refer to <u>EC-486, "Inspection"</u> .
	•		y 350 kPa (3.	.57 kg/c	m², 51 psi)
-	ection resul				
_	> GO TO 6. > GO TO 5.				
_	T MALFUN		G PART		
			for clogging.		-
	ection resul		.or ologging.		
YES >>	> Replace "	fuel filter a	nd fuel pump	assemb	ly".
_	> Repair or	•			
CHECK	MASS AIR	R FLOW SE	ENSOR		
	NSULT-III				
	all removed "MASS AIF		n "DATA MON	NITOR" n	node with CONSULT-III.
	- 4.0 g·m/s		idling		
	- 10.0 g·m/	/sec: at	2,500 rpm		
With GS	S T all removed	1 narte			
			signal in Serv	vice \$01	with GST.
4.0	4.0				
	- 4.0 g·m/s		idling		
	- 10.0 g·m		2,500 rpm	0	
	surement v > GO TO 7.		the specifica	tion !	
_	Check co	nnectors fo			loose connections in the mass air flow sensor circuit or
7	•	· · · · · · · · · · · · · · · · · · ·	C-145, "DTC	Logic".	
.CHECK	FUNCTIO	N OF FUE	L INJECTOR		
With CO					
 Start e Perforr 		RAI ANC	=" in "ΔCTI\/F	TFQT"	mode with CONSULT-III.
					y engine speed drop.
		-			
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Without CONSULT-III 1. Let engine idle.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Listen to each fuel injector operating sound.

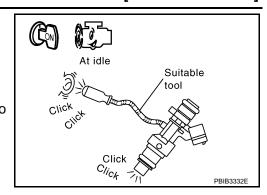
Clicking noise should be heard.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Perform trouble diagnosis for FUEL INJECTOR, refer to

EC-416, "Component Function Check".



8. CHECK FUEL INJECTOR

- Turn ignition switch OFF.
- Confirm that the engine is cooled down and there are no fire hazards near the vehicle.
- Disconnect all fuel injector harness connectors.
- Remove fuel tube assembly. Refer to EM-42, "Removal and Installation". Keep fuel hose and all fuel injectors connected to fuel tube.
- 5. Disconnect all ignition coil harness connectors.
- 6. Prepare pans or saucers under each fuel injector.
- 7. Crank engine for about 3 seconds.

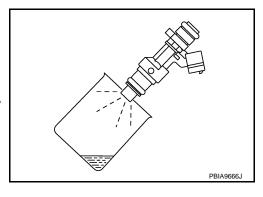
Fuel should be sprayed evenly for each fuel injector.

Is the inspection result normal?

YES >> GO TO 9.

NO

>> Replace fuel injectors from which fuel does not spray out. Always replace O-ring with new ones.



9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P0172 FUEL INJECTION SYSTEM FUNCTION

DTC Logic

DTC DETECTION LOGIC

With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the A/F sensors 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios.

In case the amount of the compensation value is extremely large (The actual mixture ratio is too rich.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input signal to ECM	ECM function	Actuator
A/F sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)	Fuel injection control	Fuel injector

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0172	Fuel injection system too rich	Fuel injection system does not operate properly. The amount of mixture ratio compensation is too large. (The mixture ratio is too rich.)	 A/F sensor 1 Fuel injector Exhaust gas leaks Incorrect fuel pressure Mass air flow sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE-I

- Clear the mixture ratio self-learning value. Refer to <u>EC-29</u>, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- 2. Start engine.

Is it difficult to start engine?

YES >> GO TO 3.

NO >> GO TO 4.

${f 3.}$ RESTART ENGINE

If it is difficult to start engine, the fuel injection system has a malfunction, too.

Crank engine while depressing accelerator pedal.

Does engine start?

YES >> Go to EC-232, "Diagnosis Procedure".

NO >> Remove spark plugs and check for fouling, etc.

4.PERFORM DTC CONFIRMATION PROCEDURE-II

Start engine and let it idle for at least 10 minutes.

Is 1st trip DTC detected?

YES >> Go to EC-232, "Diagnosis Procedure".

NO >> GO TO 5.

5. PERFORM DTC CONFIRMATION PROCEDURE-III

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for 10 minutes. Refer to the table below.

Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Engine speed	Engine speed in the freeze frame data $\pm400~\text{rpm}$
Vehicle speed	Vehicle speed in the freeze frame data \pm 10 km/h (6 MPH)
Engine coolant temperature (T) condition	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).
Engine coolait temperature (1) condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).

3. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-232, "Diagnosis Procedure".

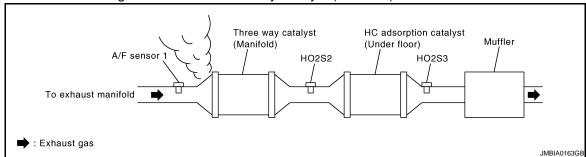
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715174

1. CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before three way catalyst (manifold).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 2.

2.CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 3.

3.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect corresponding A/F sensor 1 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F	sensor 1	ECM		Continuity
Connector Terminal		Connector	Terminal	Continuity
F27	1	F8	45	Existed
1 21	2	10	49	LAISIEU

5. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F s	ensor 1	I	ECM	Ground	Continuity
Connector	ector Terminal Connector		Terminal	Ground	Continuity
F27	1	F8	45	Ground	Not existed
	2	10	49	Ground	NOT EXISTED

6. Also check harness for short to power.

[FOR CALIFORNIA] < COMPONENT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK FUEL PRESSURE

- Release fuel pressure to zero. Refer to EC-486, "Inspection".
- Install fuel pressure gauge kit [SST (J-44321)] and check fuel pressure. Refer to EC-486, "Inspection". 2.

At idling: Approximately 350 kPa (3.57 kg/cm², 51 psi)

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging.

Is the inspection result normal?

YES >> Replace "fuel filter and fuel pump assembly".

NO >> Repair or replace

O.CHECK MASS AIR FLOW SENSOR

(P)With CONSULT-III

- 1. Install all removed parts.
- Check "MASS AIR FLOW" in "DATA MONITOR" mode with CONSULT-III.

1.0 - 4.0 g·m/sec: at idling

4.0 - 10.0 g·m/sec: at 2,500 rpm

With GST

- 1. Install all removed parts.
- 2. Check mass air flow sensor signal in "Service \$01" with GST.

1.0 - 4.0 q·m/sec: at idling

4.0 - 10.0 g·m/sec: at 2,500 rpm

Is the measurement value within the specification?

YES >> GO TO 7.

NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or grounds. Refer to EC-145, "DTC Logic".

7.CHECK FUNCTION OF FUEL INJECTOR

(P)With CONSULT-III

- 1. Start engine.
- 2. Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- Make sure that each circuit produces a momentary engine speed drop.

⊗Without CONSULT-III

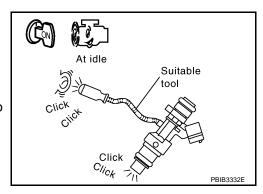
- 1. Let engine idle.
- Listen to each fuel injector operating sound.

Clicking noise should be heard.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Perform trouble diagnosis for FUEL INJECTOR, refer to EC-416, "Component Function Check".



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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

8.CHECK FUEL INJECTOR

- Remove fuel injector assembly. Refer to <u>EM-42</u>, "<u>Removal and Installation</u>". Keep fuel hose and all fuel injectors connected to fuel tube.
- 2. Confirm that the engine is cooled down and there are no fire hazards near the vehicle.
- 3. Disconnect all fuel injector harness connectors.
- 4. Disconnect all ignition coil harness connectors.
- 5. Prepare pans or saucers under each fuel injectors.
- 6. Crank engine for about 3 seconds.

 Make sure fuel does not drip from fuel injector.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace the fuel injectors from which fuel is dripping. Always replace O-ring with new one.

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

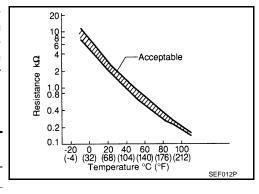
P0181 FTT SENSOR

Description INFOID:0000000001715175

The fuel tank temperature sensor is used to detect the fuel temperature inside the fuel tank. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the fuel temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.

<Reference data>

Fluid temperature °C (°F)	Voltage* V	Resistance kΩ
20 (68)	3.5	2.3 - 2.7
50 (122)	2.2	0.79 - 0.90



^{*:} These data are reference values and are measured between ECM terminals 95 (Fuel tank temperature sensor) and 104 (Sensor ground).

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0181	Fuel tank temperature sensor circuit range/per-formance	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signals from engine coolant temperature sensor and intake air temperature sensor.	L The sensor circuit is open or sported)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE-I

- 1. Turn ignition switch and wait at least 10 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-236, "Diagnosis Procedure".

NO >> GO TO 3.

3.CHECK ENGINE COOLANT TEMPERATURE

(P)With CONSULT-III

- 1. Select "COOLAN TEMP/S" in "DATA MONITOR" mode with CONSULT-III.
- Check "COOLAN TEMP/S" value.

With GST

Follow the procedure "With CONSULT-III" above.

"COOLAN TEMP/S" less than 60°C (140°F)?

YES >> INSPECTION END

NO >> GO TO 4.

4. PERFORM DTC CONFIRMATION PROCEDURE-II

(P)With CONSULT-III

Cool engine down until "COOLAN TEMP/S" is less than 60°C (140°F).

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< COMPONENT DIAGNOSIS >

- Wait at least 10 seconds.
- 3. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-236, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715177

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK FUEL TANK TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between "fuel level sensor unit and fuel pump" harness connector and ground.

Fuel level sensor u	nit and fuel pump	Ground	Voltage
Connector	Terminal	Glound	voltage
B40	2	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M11, B1
- Harness connectors M77, E105
- Harness for open or short between ECM and "fuel level sensor unit and fuel pump"

>> Repair open circuit or short to ground or short to power in harness or connector.

4. CHECK FUEL TANK TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Check the continuity between "fuel level sensor unit and fuel pump" harness connector and ECM harness connector.

Fuel level sensor unit and fuel pump		ECM		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
B40	1	E16	104	Existed	

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6. NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1, M11
- Harness connectors M77, E105

P0181 FTT SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

• Harness for open or short between "fuel level sensor unit and fuel pump" and ECM

>> Repair open circuit or short to ground or short to power in harness or connector.

6. CHECK FUEL TANK TEMPERATURE SENSOR

Refer to EC-237, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace "fuel level sensor unit and fuel pump".

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK FUEL TANK TEMPERATURE SENSOR

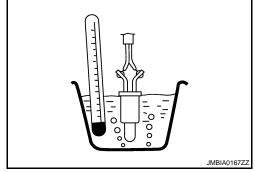
- 1. Turn ignition switch OFF.
- 2. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 3. Remove fuel level sensor unit.
- 4. Check resistance between "fuel level sensor unit and fuel pump" terminals by heating with hot water as shown in the figure.

Terminals	Condition			Resistan	се
1 and 2	Temperature °C (°F)		20 (68)	2.3 - 2.7	kΩ
i aliu z	remperature	0(1)	50 (122)	0.79 - 0.90	kΩ

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace "fuel level sensor unit and fuel pump".



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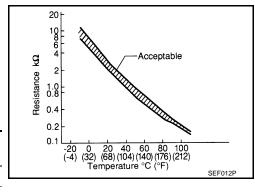
P0182, P0183 FTT SENSOR

Description INFOID:000000001880257

The fuel tank temperature sensor is used to detect the fuel temperature inside the fuel tank. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the fuel temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.

<Reference data>

Fluid temperature °C (°F)	Voltage* V	Resistance kΩ
20 (68)	3.5	2.3 - 2.7
50 (122)	2.2	0.79 - 0.90



^{*:} These data are reference values and are measured between ECM terminals 95 (Fuel tank temperature sensor) and 104 (Sensor ground).

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0182	Fuel tank temperature sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0183	Fuel tank temperature sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	Fuel tank temperature sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-238, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001880259

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK FUEL TANK TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- Turn ignition switch ON.

P0182, P0183 FTT SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

4. Check the voltage between "fuel level sensor unit and fuel pump" harness connector and ground.

Fuel level sensor unit and fuel pump		Ground	Voltage
Connector	Connector Terminal		voltage
B40	2	Ground	Approx. 5V

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Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

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3. DETECT MALFUNCTIONING PART

Check the following.

Harness connectors M11, B1

- Harness connectors M77, E105
- Harness for open or short between ECM and "fuel level sensor unit and fuel pump"

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>> Repair open circuit or short to ground or short to power in harness or connector.

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f 4.CHECK FUEL TANK TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Check the continuity between "fuel level sensor unit and fuel pump" harness connector and ECM harness connector.

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Fuel level sensor unit and fuel pump		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
B40	1	E16	104	Existed

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3. Also check harness for short to ground and short to power.

Is the inspection result normal?

>> GO TO 5.

YES >> GO TO 6.

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5. DETECT MALFUNCTIONING PART

Check the following.

NO

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- Harness connectors B1, M11
- Harness connectors M77, E105
- Harness for open or short between "fuel level sensor unit and fuel pump" and ECM

>> Repair open circuit or short to ground or short to power in harness or connector.

6.CHECK FUEL TANK TEMPERATURE SENSOR

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Refer to EC-239, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

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NO >> Replace "fuel level sensor unit and fuel pump".

.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

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>> INSPECTION END

Component Inspection

INFOID:0000000001880258

1. CHECK FUEL TANK TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 3. Remove fuel level sensor unit.

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P0182, P0183 FTT SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

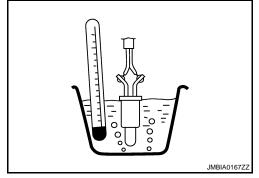
4. Check resistance between "fuel level sensor unit and fuel pump" terminals by heating with hot water as shown in the figure.

Terminals	Condition	Resistance	
1 and 2	Temperature °C (°F)	20 (68)	2.3 - 2.7 kΩ
i anu z	remperature C(1)	50 (122)	0.79 - 0.90 kΩ

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace "fuel level sensor unit and fuel pump".

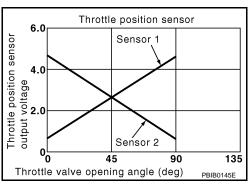


P0222, P0223 TP SENSOR

Description INFOID:000000001880260

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic INFOID:000000001715184

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0222	Throttle position sensor 1 circuit low input	An excessively low voltage from the TP sensor 1 is sent to ECM.	Harness or connectors (TP sensor 1 circuit is open or shorted.
P0223	Throttle position sensor 1 circuit high input	An excessively high voltage from the TP sensor 1 is sent to ECM.	Electric throttle control actuator (TP sensor 1)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-241, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK THROTTLE POSITION SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Disconnect electric throttle control actuator harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between electric throttle control actuator harness connector and ground.

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< COMPONENT DIAGNOSIS >

Electric throttle of	control actuator	Ground	Voltage
Connector	Terminal	Giodila	voltage
F29	1	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3.check throttle position sensor 1 ground circuit for open and short

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F29	4	F8	36	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK THROTTLE POSITION SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

 Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F29	2	F8	37	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK THROTTLE POSITION SENSOR

Refer to EC-243, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6.replace electric throttle control actuator

- 1. Replace electric throttle control actuator.
- Go to <u>EC-243</u>, "Special Repair Requirement".

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0222, P0223 TP SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Component Inspection

INFOID:0000000001880261

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1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set shift lever to D position.
- 6. Check the voltage between ECM harness connector terminals.

ECM						
+ -		-	Condition		Voltage	
Connector	Terminal	Connector	Terminal			
F0	37 (TP sensor 1 signal)	F0	36		Fully released Fully depressed	More than 0.36V Less than 4.75V
F8	38 (TP sensor 2 signal)	F8	(Sensor ground)	Accelerator pedal	Fully released Fully depressed	Less than 4.75V More than 0.36V

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.replace electric throttle control actuator

- 1. Replace electric throttle control actuator.
- Go to <u>EC-243</u>, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000001880262

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-27. "THROTTLE VALVE CLOSED POSITION LEARNING : Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

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[FOR CALIFORNIA]

P0300, P0301, P0302, P0303, P0304 MISFIRE

DTC Logic

DTC DETECTION LOGIC

When a misfire occurs, engine speed will fluctuate. If the engine speed fluctuates enough to cause the crank-shaft position (CKP) sensor (POS) signal to vary, ECM can determine that a misfire is occurring.

Sensor	Input signal to ECM	ECM function
Crankshaft position sensor (POS)	Engine speed	On board diagnosis of misfire

The misfire detection logic consists of the following two conditions.

1. One Trip Detection Logic (Three Way Catalyst Damage)

On the 1st trip that a misfire condition occurs that can damage the three way catalyst (TWC) due to over-heating, the MIL will blink.

When a misfire condition occurs, the ECM monitors the CKP sensor signal every 200 engine revolutions for a change.

When the misfire condition decreases to a level that will not damage the TWC, the MIL will turn off.

If another misfire condition occurs that can damage the TWC on a second trip, the MIL will blink.

When the misfire condition decreases to a level that will not damage the TWC, the MIL will remain on.

If another misfire condition occurs that can damage the TWC, the MIL will begin to blink again.

Two Trip Detection Logic (Exhaust quality deterioration)

For misfire conditions that will not damage the TWC (but will affect vehicle emissions), the MIL will only light when the misfire is detected on a second trip. During this condition, the ECM monitors the CKP sensor signal every 1,000 engine revolutions.

A misfire malfunction can be detected on any one cylinder or on multiple cylinders.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0300	Multiple cylinder misfire detected	Multiple cylinder misfire.	Improper spark plug
P0301	No.1 cylinder misfire detected	No. 1 cylinder misfires.	Insufficient compression Incorrect fuel pressure
P0302	No. 2 cylinder misfire detected	No. 2 cylinder misfires.	The fuel injector circuit is open or shorted
P0303	No. 3 cylinder misfire detected	No. 3 cylinder misfires.	Fuel injector Intake air leak
P0304	No. 4 cylinder misfire detected	No. 4 cylinder misfires.	The ignition signal circuit is open or shorted Lack of fuel Signal plate A/F sensor 1 Incorrect PCV hose connection

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE-I

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Restart engine and let it idle for about 15 minutes.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-245, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform dtc confirmation procedure-ii

1. Turn ignition switch OFF and wait at least 10 seconds.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for a certain time. Refer to the table below.

Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws when driving.

Engine speed	Engine speed in the freeze frame data ± 400 rpm
Vehicle speed in the freeze frame data \pm 10 km/h (6 MPH)	
Engine coolant temperature (T)	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).
condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).

The time to driving varies according to the engine speed in the freeze frame data.

Engine speed	Time
Around 1,000 rpm	Approximately 10 minutes
Around 2,000 rpm	Approximately 5 minutes
More than 3,000 rpm	Approximately 3.5 minutes

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-245, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK FOR INTAKE AIR LEAK AND PCV HOSE

- Start engine and run it at idle speed.
- Listen for the sound of the intake air leak.
- Check PCV hose connection.

Is intake air leak detected?

YES >> Discover air leak location and repair.

NO >> GO TO 2.

2.CHECK FOR EXHAUST SYSTEM CLOGGING

Stop engine and visually check exhaust tube, three way catalyst and muffler for dents.

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 3.

YES-2 >> Without CONSULT-III: GO TO 4.

NO >> Repair or replace malfunctioning part.

3.PERFORM POWER BALANCE TEST

(II) With CONSULT-III

- 1. Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- Make sure that each circuit produces a momentary engine speed drop.

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 4.

4. CHECK FUNCTION OF FUEL INJECTOR

Start engine and let engine idle.

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[FOR CALIFORNIA]

Listen to each fuel injector operating sound.

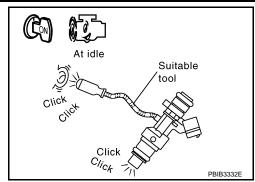
Clicking noise should be heard.

Is the inspection result normal?

YES >> GO TO 5.

NO

>> Perform trouble diagnosis for FUEL INJECTOR, refer to EC-417. "Component Inspection".



$\mathbf{5}$. CHECK FUNCTION OF IGNITION COIL-I

Do the following procedure in the place where ventilation is good without the combustible.

- Turn ignition switch OFF.
- Remove fuel pump fuse in IPDM E/R to release fuel pressure.

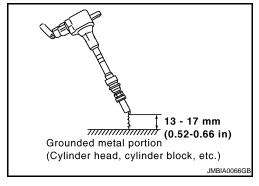
Do not use CONSULT-III to release fuel pressure, or fuel pressure applies again during the following procedure.

- Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- Turn ignition switch OFF.
- 6. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 7. Remove ignition coil and spark plug of the cylinder to be checked.
- 8. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- Connect spark plug and harness connector to ignition coil.
- 10. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 -0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- 11. Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal por-

Spark should be generated.

CAUTION:

 Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.



It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken.

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 6.

6. CHECK FUNCTION OF IGNITION COIL-II

- Turn ignition switch OFF.
- Disconnect spark plug and connect a known-good spark plug.
- Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

Is the inspection result normal?

YES >> GO TO 7.

>> Check ignition coil, power transistor and their circuits. Refer to EC-422, "Component Function NO Check".

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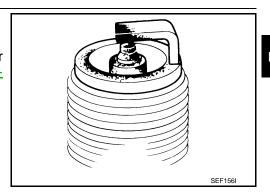
7. CHECK SPARK PLUG

Check the initial spark plug for fouling, etc.

Is the inspection result normal?

YES >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-18, "Removal and Installation".

NO >> Repair or clean spark plug. Then GO TO 8.



8. CHECK FUNCTION OF IGNITION COIL-III

- Reconnect the initial spark plugs.
- 2. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

Spark should be generated.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-18, "Removal and Installation".

9. CHECK COMPRESSION PRESSURE

Check compression pressure. Refer to EM-23, "Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Check pistons, piston rings, valves, valve seats and cylinder head gaskets.

10. CHECK FUEL PRESSURE

- Install all removed parts.
- Release fuel pressure to zero. Refer to EC-486, "Inspection".
- Install fuel pressure gauge kit [SST (J-44321)] and check fuel pressure. Refer to EC-486, "Inspection".

At idling: Approximately 350 kPa (3.57 kg/cm², 51 psi)

Is the inspection result normal?

YES >> GO TO 12.

NO >> GO TO 11.

11. DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging.

Is the inspection result normal?

>> Replace "fuel filter and fuel pump assembly". YES

NO >> Repair or replace.

12.CHECK IGNITION TIMING

Check the following items. Refer to EC-22, "BASIC INSPECTION: Special Repair Requirement".

Items	Specifications
Target idle speed	700 ± 50 rpm (in P or N position)
Ignition timing	15 ± 5°BTDC (in P or N position)

Is the inspection result normal?

YES >> GO TO 13.

NO >> Follow the EC-22, "BASIC INSPECTION: Special Repair Requirement".

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13. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect corresponding A/F sensor 1 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F se	ensor 1	E	ECM	
Connector	Terminal	Connector	Terminal	Continuity
F27	1	F8	45	Existed
Γ21	2	го	49	Existed

5. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F se	ensor 1	ECM				Ground	Continuity
Connector	Terminal	Connector	Terminal	Giodila	Continuity		
F27	1	F8	45	Ground	Not existed		
ΓΖΙ	2	ГО	49	Giodila	Not existed		

6. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 14.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

14. CHECK A/F SENSOR 1 HEATER

Refer to EC-135, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace A/F sensor 1.

15. CHECK MASS AIR FLOW SENSOR

(P)With CONSULT-III

Check "MASS AIR FLOW" in "DATA MONITOR" mode with CONSULT-III.

1.0 - 4.0 g·m/sec : at idling 4.0 - 10.0 g·m/sec : at 2,500 rpm

■With GST

Check mass air flow sensor signal in Service \$01 with GST.

1.0 - 4.0 g·m/sec : at idling 4.0 - 10.0 g·m/sec : at 2,500 rpm

Is the measurement value within the specification?

YES >> GO TO 16.

NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or ground. Refer to <u>EC-145</u>, "<u>DTC Logic"</u>.

16. CHECK SYMPTOM TABLE

Check items on the rough idle symptom in EC-475, "Symptom Table".

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or replace.

17. ERASE THE 1ST TRIP DTC

Some tests may cause a 1st trip DTC to be set.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

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Erase the 1st trip DTC from the ECM memory after performing the tests. Refer to EC-92, "Diagnosis Description".

>> GO TO 18. 18. CHECK INTERMITTENT INCIDENT EC Refer to GI-41, "Intermittent Incident". С >> INSPECTION END D Е F G Н J Κ L M Ν 0 Р

P0327, P0328 KS

Description INFOID:000000001715190

The knock sensor is attached to the cylinder block. It senses engine knocking using a piezoelectric element. A knocking vibration from the cylinder block is sensed as vibrational pressure. This pressure is converted into a voltage signal and sent to the ECM.

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detected condition	Possible cause
P0327	Knock sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0328	Knock sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and run it for at least 5 seconds at idle speed.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-250, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715192

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK KNOCK SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect knock sensor harness connector and disconnect ECM harness connector.
- Check the continuity between knock sensor harness connector and ECM harness connector.

Knock sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F16	2	F8	67	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

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${f 3.}$ CHECK KNOCK SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between knock sensor harness connector and ECM harness connector.

Knock sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F16	1	F8	61	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK KNOCK SENSOR

Refer to EC-251, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace knock sensor.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK KNOCK SENSOR

- 1. Turn ignition switch OFF.
- Disconnect knock sensor harness connector.
- 3. Check resistance between knock sensor terminals as follows.

NOTE:

It is necessary to use an ohmmeter which can measure more than 10 $\text{M}\Omega.$

Terminals	Resistance	
1 and 2	Approx. 532 - 588 kΩ [at 20°C (68°F)]	

CAUTION:

Do not use any knock sensors that have been dropped or physically damaged. Use only new ones.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace knock sensor.

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P0335 CKP SENSOR (POS)

Description INFOID:000000001715194

The crankshaft position sensor (POS) is located on the oil pan facing the gear teeth (cogs) of the signal plate. It detects the fluctuation of the engine revolution.

The sensor consists of a permanent magnet and Hall IC.

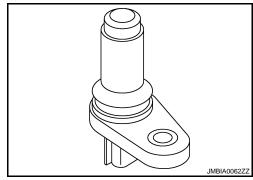
When the engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

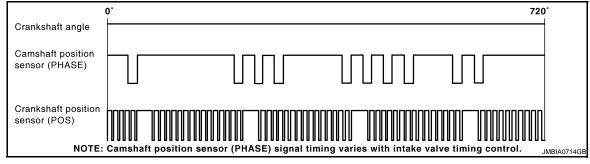
The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor changes.

The ECM receives the voltage signal and detects the fluctuation of the engine revolution.

ECM receives the signals as shown in the figure.





DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0335	Crankshaft position sensor (POS) circuit	 The crankshaft position sensor (POS) signal is not detected by the ECM during the first few seconds of engine cranking. The proper pulse signal from the crankshaft position sensor (POS) is not sent to ECM while the engine is running. The crankshaft position sensor (POS) signal is not in the normal pattern during engine running. 	Harness or connectors [Crankshaft position sensor (POS) circuit is open or shorted.] (Refrigerant pressure sensor circuit is shorted.) (Accelerator pedal position sensor circuit is shorted.) (EVAP control system pressure sensor circuit is shorted.) (Tumble control valve position sensor circuit is shorted.) Crankshaft position sensor (POS) Refrigerant pressure sensor Accelerator pedal position sensor EVAP control system pressure sensor Tumble control valve position sensor Signal plate

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V with ignition switch ON.

>> GO TO 2.

P0335 CKP SENSOR (POS)

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

$\overline{2}$.PERFORM DTC CONFIRMATION PROCEDURE

Start engine and let it idle for at least 5 seconds. If engine does not start, crank engine for at least 2 seconds.

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-253, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

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1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.check crankshaft position (ckp) sensor (pos) power supply circuit-i

- Disconnect crankshaft position (CKP) sensor (POS) harness connector.
- Turn ignition switch ON. 2.
- Check the voltage between CKP sensor (POS) harness connector and ground.

CKP sensor (POS)		Ground	Voltage	
Connector	Terminal	Ground	voltage	
F20	1	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 3.

3.check crankshaft position (ckp) sensor (pos) power supply circuit-ii

- Turn ignition switch ON.
- Disconnect ECM harness connector. 2.
- Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

CKP sensor (POS)		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F20	1	F8	76	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit.

4. CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
72		Tumble control valve position sensor	F41	1	
F8	12	Refrigerant pressure sensor	E49	3	
76		CKP sensor (POS)	F20	1	
E16 87		APP sensor	E110	5	
	91	EVAP control system pressure sensor	B47	3	

Is the inspection result normal?

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P0335 CKP SENSOR (POS)

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YES >> GO TO 5.

NO >> Repair short to ground or short to power in harness or connectors.

5. CHECK COMPONENTS

Check the following.

- Refrigerant pressure sensor (Refer to EC-434, "Diagnosis Procedure".)
- EVAP control system pressure sensor (Refer to EC-292, "Component Inspection".)
- Tumble control valve position sensor (Refer to EC-365, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace malfunctioning components.

6. CHECK APP SENSOR

Refer to EC-395, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 12.

NO >> GO TO 7.

7. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- Go to <u>EC-27</u>, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> INSPECTION END

8.CHECK CKP SENSOR (POS) GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

CKP sensor (POS)		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F20	2	F8	60	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9.CHECK CKP SENSOR (POS) INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect ECM harness connector.
- Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

CKP sensor (POS)		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F20	3	F8	65	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

10. CHECK CRANKSHAFT POSITION SENSOR (POS)

Refer to EC-255, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace crankshaft position sensor (POS).

P0335 CKP SENSOR (POS)

< COMPONENT DIAGNOSIS >

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11. CHECK GEAR TOOTH

Visually check for chipping signal plate gear tooth.

Is the inspection result normal?

YES >> GO TO 12.

NO >> Replace the signal plate.

12. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

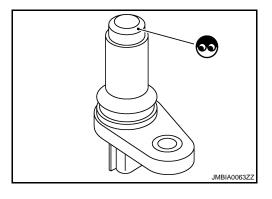
${\bf 1.} {\sf CHECK} \; {\sf CRANKSHAFT} \; {\sf POSITION} \; {\sf SENSOR} \; ({\sf POS}) {\sf -I}$

- 1. Turn ignition switch OFF.
- 2. Loosen the fixing bolt of the sensor.
- 3. Disconnect crankshaft position sensor (POS) harness connector.
- 4. Remove the sensor.
- 5. Visually check the sensor for chipping.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace crankshaft position sensor (POS).



2. CHECK CRANKSHAFT POSITION SENSOR (POS)-II

Check resistance between crankshaft position sensor (POS) terminals as follows.

Terminals (Polarity)	Resistance Ω [at 25°C (77°F)]
1 (+) - 2 (-)	
1 (+) - 3 (-)	Except 0 or ∞
2 (+) - 3 (-)	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace crankshaft position sensor (POS).

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P0340 CMP SENSOR (PHASE)

Description INFOID:000000001715198

The camshaft position sensor (PHASE) senses the retraction of camshaft (INT) to identify a particular cylinder. The camshaft position sensor (PHASE) senses the piston position.

When the crankshaft position sensor (POS) system becomes inoperative, the camshaft position sensor (PHASE) provides various controls of engine parts instead, utilizing timing of cylinder identification signals.

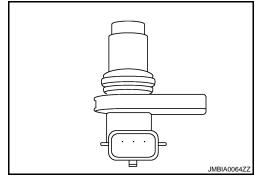
The sensor consists of a permanent magnet and Hall IC.

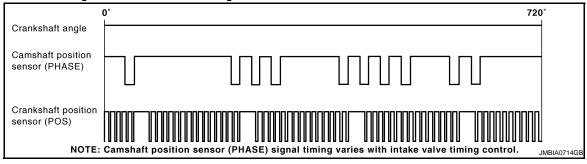
When engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor changes.

ECM receives the signals as shown in the figure.





DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0340 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-333, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0340	Camshaft position sensor (PHASE) circuit	 The cylinder No. signal is not sent to ECM for the first few seconds during engine cranking. The cylinder No. signal is not sent to ECM during engine running. The cylinder No. signal is not in the normal pattern during engine running. 	Harness or connectors (The sensor circuit is open or shorted) Camshaft position sensor (PHASE) Camshaft (INT) Starter motor (Refer to STR-5, "System Diagram".) Starting system circuit (Refer to STR-5, "System Diagram".) Dead (Weak) battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V with ignition switch ON.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE-I

1. Start engine and let it idle for at least 5 seconds.

P0340 CMP SENSOR (PHASE)

< COMPONENT DIAGNOSIS >

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If engine does not start, crank engine for at least 2 seconds.

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-257, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform dtc confirmation procedure-i

Maintaining engine speed at more than 800 rpm for at least 5 seconds.

2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-257, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

CHECK STARTING SYSTEM

Turn ignition switch to START position.

Does the engine turn over? Does the starter motor operate?

YES >> GO TO 2.

NO >> Check starting system.

2.CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace ground connection.

3.check camshaft position (cmp) sensor (phase) power supply circuit

- Disconnect camshaft position (CMP) sensor (PHASE) harness connector.
- Turn ignition switch ON. 2.
- Check the voltage between CMP sensor (PHASE) harness connector and ground.

CMP senso	r (PHASE)	Ground	Voltage	
Connector	Terminal	Giodila		
F26	1	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

f 4.CHECK CMP SENSOR (PHASE) GROUND CIRCUIT FOR OPEN AND SHORT

Turn ignition switch OFF.

Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

CMP sensor (PHASE)		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F26	2	F8	64	Existed

Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK CMP SENSOR (PHASE) INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect ECM harness connector.
- Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

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CMP sensor (PHASE)		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F268	3	F13	69	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-258, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace camshaft position sensor (PHASE).

7.CHECK CAMSHAFT (INT)

Check the following.

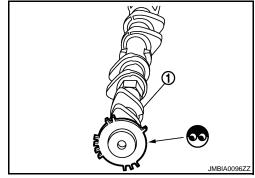
- Accumulation of debris to the signal plate of camshaft (1) rear end
- · Chipping signal plate of camshaft rear end

Is the inspection result normal?

YES >> GO TO 8.

NO

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft.



8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

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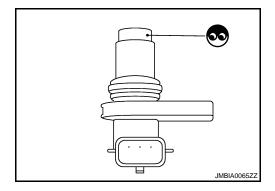
1. CHECK CAMSHAFT POSITION SENSOR (PHASE)-I

- Turn ignition switch OFF.
- 2. Loosen the fixing bolt of the sensor.
- 3. Disconnect camshaft position sensor (PHASE) harness connector.
- 4. Remove the sensor.
- 5. Visually check the sensor for chipping.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace camshaft position sensor (PHASE).



2. CHECK CAMSHAFT POSITION SENSOR (PHASE)-II

Check resistance camshaft position sensor (PHASE) terminals as follows.

P0340 CMP SENSOR (PHASE)

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Terminals (Polarity)	Resistance
1 (+) - 2 (-)	
1 (+) - 3 (-)	Except 0 or ∞ Ω [at 25°C (77°F)]
2 (+) - 3 (-)	

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Is the inspection result normal?

YES	>> INSPECTION END
-----	-------------------

NO >> Replace camshaft position sensor (PHASE).

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P0420 THREE WAY CATALYST FUNCTION

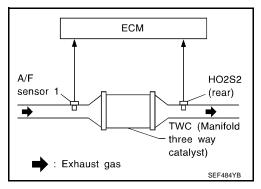
DTC Logic INFOID:000000001715202

DTC DETECTION LOGIC

The ECM monitors the switching frequency ratio of air fuel ratio (A/F) sensor 1 and heated oxygen sensor 2.

A three way catalyst (manifold) with high oxygen storage capacity will indicate a low switching frequency of heated oxygen sensor 2. As oxygen storage capacity decreases, the heated oxygen sensor 2 switching frequency will increase.

When the frequency ratio of A/F sensor 1 and heated oxygen sensor 2 approaches a specified limit value, the three way catalyst (manifold) malfunction is diagnosed.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0420	Catalyst system efficiency below threshold	 Three way catalyst (manifold) does not operate properly. Three way catalyst (manifold) does not have enough oxygen storage capacity. 	 Three way catalyst (manifold) Exhaust tube Intake air leaks Fuel injector Fuel injector leaks Spark plug Improper ignition timing

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Do not hold engine speed for more than the specified minutes below.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

CAUTION

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

(P)With CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Repeat the following procedure 3 times.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

NOTE

Keep the vehicle speed as steady as possible during the cruising.

- Stop vehicle with engine running.

NOTE:

Never turn ignition switch OFF.

- 3. Select "DTC & SRT CONFIRMATION" then "SRT WORK SUPPORT" mode with CONSULT-III.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more until "INCMP" of "CATALYST" changes to "CMPLT" NOTE:
 - Keep the vehicle speed as steady as possible during the cruising.
 - It will take at most 3 minutes until "INCMP" of "CATALYST" changes to "CMPLT".
- 5. Check 1 st trip DTC.

With GST

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Repeat the following procedure 3 times.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

P0420 THREE WAY CATALYST FUNCTION

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

NOTE:

Keep the vehicle speed as steady as possible during the cruising.

Stop vehicle with engine running.

NOTE:

Never turn ignition switch OFF.

3. Check 1 st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-261, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK EXHAUST SYSTEM

Visually check exhaust tubes and muffler for dent.

Is the inspection result normal?

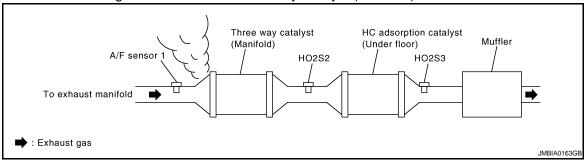
YES >> GO TO 2.

NO >> Repair or replace.

2. CHECK EXHAUST GAS LEAK

1. Start engine and run it at idle.

Listen for an exhaust gas leak before the three way catalyst (manifold).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 3.

3.CHECK INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 4.

4. CHECK IGNITION TIMING

Check the following items. Refer to EC-22, "BASIC INSPECTION: Special Repair Requirement".

Items	Specifications
Target idle speed	700 ± 50 rpm (in P or N position)
Ignition timing	$15\pm5^{\circ}$ BTDC (in P or N position)

Is the inspection result normal?

YES >> GO TO 5.

NO >> Follow the EC-22, "BASIC INSPECTION: Special Repair Requirement".

5. CHECK FUEL INJECTOR

- 1. Stop engine and then turn ignition switch ON.
- 2. Check the voltage between ECM harness connector and ground.

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ECM		Ground	Voltage
Connector	Terminal	Giodila	voltage
F7	29	Ground	Battery voltage
	30		
17	31	Giodila	
	32		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Perform <u>EC-416</u>, "<u>Diagnosis Procedure</u>".

6.CHECK FUNCTION OF IGNITION COIL-I

CAUTION:

Do the following procedure in the place where ventilation is good without the combustible.

- 1. Turn ignition switch OFF.
- 2. Remove fuel pump fuse in IPDM E/R to release fuel pressure.

NOTE:

Do not use CONSULT-III to release fuel pressure, or fuel pressure applies again during the following procedure.

- 3. Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.
- 6. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 7. Remove ignition coil and spark plug of the cylinder to be checked.
- 8. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 9. Connect spark plug and harness connector to ignition coil.
- 10. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

CAUTION:

- Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.
- It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken. NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 7.

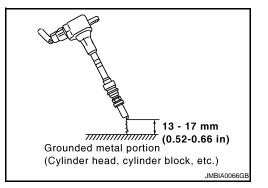
7.CHECK FUNCTION OF IGNITION COIL-II

- 1. Turn ignition switch OFF.
- Disconnect spark plug and connect a known-good spark plug.
- 3. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

Is the inspection result normal?

YES >> GO TO 8.



P0420 THREE WAY CATALYST FUNCTION

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

>> Check ignition coil, power transistor and their circuits. Refer to EC-422, "Diagnosis Procedure". NO

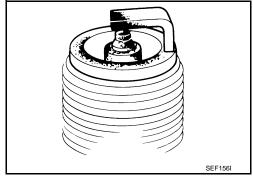
8. CHECK SPARK PLUG

Check the initial spark plug for fouling, etc.

Is the inspection result normal?

YES >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-18, "Removal and Installa-

NO >> Repair or clean spark plug. Then GO TO 9.



9. CHECK FUNCTION OF IGNITION COIL-III

- Reconnect the initial spark plugs.
- Crank engine for about three seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

Spark should be generated.

Is the inspection result normal?

YFS >> INSPECTION END

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-18, "Removal and Installation".

10. CHECK FUEL INJECTOR

- 1. Turn ignition switch OFF.
- Remove fuel injector assembly.

Refer to EM-42, "Removal and Installation".

Keep fuel hose and all fuel injectors connected to fuel tube.

- 3. Disconnect all ignition coil harness connectors.
- Reconnect all fuel injector harness connectors disconnected.
- 5. Turn ignition switch ON.

Does fuel drip from fuel injector?

YES >> GO TO 11.

NO >> Replace the fuel injector(s) from which fuel is dripping.

11. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the trouble fixed?

>> INSPECTION END YES

NO >> Replace three way catalyst assembly.

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DTC Logic

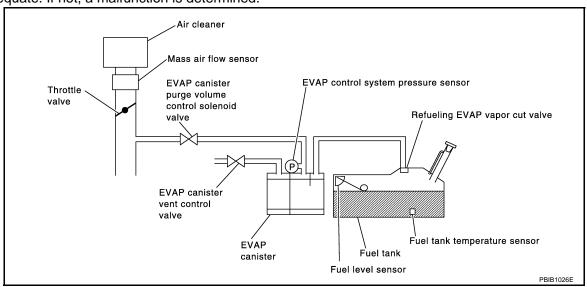
DTC DETECTION LOGIC

NOTE:

If DTC P0441 is displayed with other DTC such as P2122, P2123, P2127, P2128 or P2138, first perform trouble diagnosis for other DTC.

In this evaporative emission (EVAP) control system, purge flow occurs during non-closed throttle conditions. Purge volume is related to air intake volume. Under normal purge conditions (non-closed throttle), the EVAP canister purge volume control solenoid valve is open to admit purge flow. Purge flow exposes the EVAP control system pressure sensor to intake manifold vacuum.

Under normal conditions (non-closed throttle), sensor output voltage indicates if pressure drop and purge flow are adequate. If not, a malfunction is determined.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0441	EVAP control system incorrect purge flow	EVAP control system does not operate properly, EVAP control system has a leak between intake manifold and EVAP control system pressure sensor.	EVAP canister purge volume control solenoid valve stuck closed EVAP control system pressure sensor and the circuit Loose, disconnected or improper connection of rubber tube Blocked rubber tube Cracked EVAP canister EVAP canister purge volume control solenoid valve circuit Accelerator pedal position sensor Blocked purge port EVAP canister vent control valve

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 6.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Always	perform	test at a	a temperature	of 5°C (41°F)	or more
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>> GO TO 3.

3.PERFORM DTC CONFIRMATION PROCEDURE-I

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(II) With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and let it idle for at least 70 seconds.
- Select "PURG FLOW P0441" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CON-SULT-III.
- 5. Touch "START".

Is COMPLETED displayed on CONSULT-III screen?

YES >> GO TO 5. NO >> GO TO 4.

4.PERFORM DTC CONFIRMATION PROCEDURE-II

When the following conditions are met, "TESTING" will be displayed on the CONSULT-III screen. Maintain the conditions continuously until "TESTING" changes to "COMPLETED". (It will take at least 35 seconds.)

Selector lever	Suitable position
VHCL SPEED SE	32 - 120 km/h (20 - 75 mph)
ENG SPEED	500 - 3,800 rpm
B/FUEL SCHDL	1.0 - 10.0 msec
COOLAN TEMP/S	More than 0°C (32°F)

CAUTION:

Always drive vehicle at a safe speed.

If "TESTING" is not changed for a long time, retry from step 2.

Is "COMPLETED" displayed on CONSULT-III screen?

YES >> GO TO 5.

NO >> Perform DTC CONFIRMATION PROCEDURE again. GO TO 3.

5. PERFORM DTC CONFIRMATION PROCEDURE-III

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Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III screen?

OK >> INSPECTION END

NG >> Go to EC-266, "Diagnosis Procedure".

6. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-265, "Component Function Check".

NOTE:

Use Component Function Check to check the overall monitoring function of the EVAP control system purge flow monitoring. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-266, "Diagnosis Procedure".

Component Function Check

INFOID:0000000001715206

1.PERFORM COMPONENT FUNCTION CHECK

Without CONSULT-III

- 1. Lift up drive wheels.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF, wait at least 10 seconds.
- 4. Start engine and wait at least 70 seconds.
- 5. Set voltmeter probes to ECM harness connector terminals.

Revision: 2008 January EC-265 2008 Rogue

D:00000000001715206

ECM		ECM	
Connector	Terminal	Connector	Terminal
E16	86 (EVAP control system pressure sensor signal)	E16	96 (Sensor ground)

- 6. Check EVAP control system pressure sensor value at idle speed and note it.
- 7. Establish and maintain the following conditions for at least 1 minute.

Air conditioner switch	ON
Headlamp switch	ON
Rear window defogger switch	ON
Engine speed	Approx. 3,000 rpm
Shift lever	Any position other than P, N or R

8. Verify that EVAP control system pressure sensor value stays 0.1V less than the value at idle speed (measured at step 6) for at least 1 second.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-266, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001715207

1. CHECK EVAP CANISTER

- 1. Turn ignition switch OFF.
- 2. Check EVAP canister for cracks.

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 2.

YES-2 >> Without CONSULT-III: GO TO 3.

NO >> Replace EVAP canister.

2. CHECK PURGE FLOW

(P)With CONSULT-III

- Disconnect vacuum hose connected to EVAP canister purge volume control solenoid valve at EVAP service port and install vacuum gauge. For the location of EVAP service port, refer to EC-72, "System Diagram".
- 2. Start engine and let it idle.
- 3. Select "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III.
- 4. Rev engine up to 2,000 rpm.
- Touch "Qd" and "Qu" on CONSULT-III screen to adjust "PURG VOL CONT/V" opening and check vacuum existence.

PURG VOL CONT/V	Vacuum
100%	Existed
0%	Not existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 4.

3.CHECK PURGE FLOW

⋈ Without CONSULT-III

- Start engine and warm it up to normal operating temperature.
- Stop engine.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

- Disconnect vacuum hose connected to EVAP canister purge volume control solenoid valve at EVAP service port and install vacuum gauge. For the location of EVAP service port, refer to EC-72, "System Diagram".
- Start engine and let it idle.

Do not depress accelerator pedal even slightly.

Check vacuum gauge indication before 60 seconds passed after starting engine.

Vacuum should not exist.

Revving engine up to 2,000rpm after 100 seconds passed after starting engine.

Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 4. 4.CHECK EVAP PURGE LINE

- Turn ignition switch OFF.
- Check EVAP purge line for improper connection or disconnection. Refer to EC-72, "System Diagram".

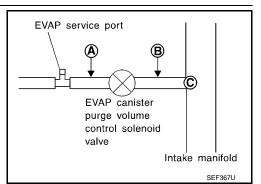
Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair EVAP purge line.

5.CHECK EVAP PURGE HOSE AND PURGE PORT

- Disconnect purge hoses connected to EVAP service port A and EVAP canister purge volume control solenoid valve **B**.
- Blow air into each hose and EVAP purge port **C**.



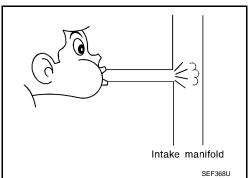
Check that air flows freely.

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 6.

YES-2 >> Without CONSULT-III: GO TO 7.

NO >> Repair or clean hoses and/or purge port.



6.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

With CONSULT-III

- Start engine.
- Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III. Check that engine speed varies according to the valve opening.

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 7. EC

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

7.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-278, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace EVAP canister purge volume control solenoid valve.

8.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- 1. Disconnect EVAP control system pressure sensor harness connector.
- Check connectors for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace EVAP control system pressure sensor.

9. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR FUNCTION

Refer to EC-293, "DTC Logic" for DTC P0452, EC-298, "DTC Logic" for DTC P0453.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace EVAP control system pressure sensor.

10.CHECK RUBBER TUBE FOR CLOGGING

- 1. Disconnect rubber tube connected to EVAP canister vent control valve.
- 2. Check the rubber tube for clogging.

Is the inspection result normal?

YES >> GO TO 11.

NO >> Clean the rubber tube using an air blower.

11. CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-284, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 12.

NO >> Replace EVAP canister vent control valve.

12.CHECK EVAP PURGE LINE

Inspect EVAP purge line (pipe and rubber tube). Check for evidence of leaks.

Refer to EC-72, "System Diagram".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace it.

13. CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 14.

14. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

[FOR CALIFORNIA]

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P0442 EVAP CONTROL SYSTEM

DTC Logic

DTC DETECTION LOGIC

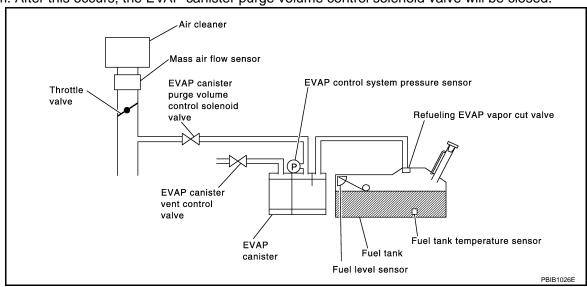
NOTE:

If DTC P0442 is displayed with DTC P0456, first perform the trouble diagnosis for DTC P0456. Refer to <u>EC-310, "DTC Logic"</u>.

This diagnosis detects leaks in the EVAP purge line using engine intake manifold vacuum.

If pressure does not increase, the ECM will check for leaks in the line between the fuel tank and EVAP canister purge volume control solenoid valve, under the following "Vacuum test" conditions.

The EVAP canister vent control valve is closed to shut the EVAP purge line off. The EVAP canister purge volume control solenoid valve will then be opened to depressurize the EVAP purge line using intake manifold vacuum. After this occurs, the EVAP canister purge volume control solenoid valve will be closed.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0442	EVAP control system small leak detected (negative pressure)	EVAP control system has a leak, EVAP control system does not operate properly.	Incorrect fuel tank vacuum relief valve Incorrect fuel filler cap used Fuel filler cap remains open or fails to close. Foreign matter caught in fuel filler cap. Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve. Foreign matter caught in EVAP canister vent control valve. EVAP canister or fuel tank leaks EVAP purge line (pipe and rubber tube) leaks EVAP purge line rubber tube bent Loose or disconnected rubber tube EVAP canister vent control valve and the circuit EVAP canister purge volume control solenoid valve and the circuit Fuel tank temperature sensor O-ring of EVAP canister vent control valve is missing or damaged EVAP canister is saturated with water EVAP control system pressure sensor Fuel level sensor and the circuit Refueling EVAP vapor cut valve ORVR system leaks	1 1 1

CAUTION

- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.
- If the fuel filler cap is not tightened properly, the MIL may come on.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Use only a genuine NISSAN rubber tube as a replacement.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

- Perform "DTC WORK SUPPORT" when the fuel level is between 1/4 and 3/4 full, and vehicle is placed on flat level surface.
- Always perform test at a temperature of 0 to 30°C (32 to 86°F).

NOTE:

Make sure that EVAP hoses are connected to EVAP canister purge volume control solenoid valve properly.

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

2.PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 4. Make sure that the following conditions are met.

COOLAN TEMP/S: 0 - 70°C (32 - 158°F) INT/A TEMP SE: 0 - 30°C (32 - 86°F)

5. Select "EVAP SML LEAK P0442/P1442" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-III.

Follow the instruction displayed.

NOTE:

If the engine speed cannot be maintained within the range displayed on the CONSULT-III screen, go to EC-22, "BASIC INSPECTION: Special Repair Requirement".

Which is displayed on CONSULT-III screen?

OK >> INSPECTION END

NG >> Go to EC-270, "Diagnosis Procedure".

3.perform component function check

With GST

NOTE:

Be sure to read the explanation of DRIVING PATTERN in <u>EC-467</u>, "How to <u>Set SRT Code"</u> before driving vehicle.

- Start engine.
- 2. Drive vehicle according to DRIVING PATTERN.
- 3. Stop vehicle.
- 4. Turn ignition switch OFF, wait at least 10 seconds and then turn ON.
- 5. Select Service \$07 with GST.

Is 1st trip DTC displayed?

YES-1 >> P0441: Go to <u>EC-266</u>, "<u>Diagnosis Procedure</u>". YES-2 >> P0442: Go to <u>EC-270</u>, "<u>Diagnosis Procedure</u>". NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715209

1.CHECK FUEL FILLER CAP DESIGN

1. Turn ignition switch OFF.

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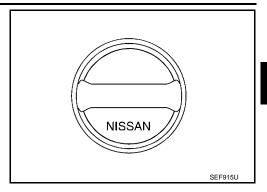
[FOR CALIFORNIA]

2. Check for genuine NISSAN fuel filler cap design.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace with genuine NISSAN fuel filler cap.



2. CHECK FUEL FILLER CAP INSTALLATION

Check that the cap is tightened properly by rotating the cap clockwise.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Open fuel filler cap, then clean cap and fuel filler neck threads using air blower. Then retighten until ratcheting sound is heard.

3. CHECK FUEL FILLER CAP FUNCTION

Check for air releasing sound while opening the fuel filler cap.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4. CHECK FUEL TANK VACUUM RELIEF VALVE

Refer to EC-274, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace fuel filler cap with a genuine one.

5.CHECK FOR EVAP LEAK

Refer to EC-72, "System Diagram".

Is there any leak in EVAP line?

YES >> Repair or replace.

NO >> GO TO 6.

6. CHECK EVAP CANISTER VENT CONTROL VALVE

Check the following.

EVAP canister vent control valve is installed properly.

Refer to EC-489, "Exploded View".

EVAP canister vent control valve.

Refer to EC-284, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace EVAP canister vent control valve and O-ring.

7.CHECK IF EVAP CANISTER SATURATED WITH WATER

 Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

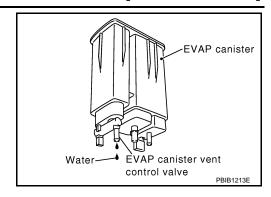
2. Does water drain from the EVAP canister?

Does water drain from the EVAP canister?

YES >> GO TO 8.

NO-1 >> With CONSULT-III: GO TO 10.

NO-2 >> Without CONSULT-III: GO TO 11.



8. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 10.

YES-2 >> Without CONSULT-III: GO TO 11.

NO >> GO TO 9.

9. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection

>> Repair hose or replace EVAP canister.

10.check evap canister purge volume control solenoid valve operation

(P)With CONSULT-III

- 1. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 2. Start engine.
- 3. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode.
- 4. Touch "Qu" on CONSULT-III screen to increase "PURG VOL CONT/V" opening to 100%.
- 5. Check vacuum hose for vacuum.

Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 13.

NO >> GO TO 12.

11. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

Without CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- Stop engine.
- 3. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 4. Start engine and let it idle for at least 80 seconds.
- 5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 13.

NO >> GO TO 12.

12. CHECK VACUUM HOSE

Check vacuum hoses for clogging or disconnection. Refer to <u>EC-72</u>, "System Diagram".

Is the inspection result normal?

< COMPONENT DIAGNOSIS >	[FOR CALIFORNIA]
YES >> GO TO 13. NO >> Repair or reconnect the hose.	Λ
13. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE	A
Refer to EC-278, "Component Inspection".	
Is the inspection result normal?	EC
YES >> GO TO 14. NO >> Replace EVAP canister purge volume control solenoid valve.	
14. CHECK FUEL TANK TEMPERATURE SENSOR	С
Refer to EC-237, "Component Inspection".	
Is the inspection result normal?	D
YES >> GO TO 15.	
NO >> Replace fuel level sensor unit. 15. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR	Е
Refer to EC-290, "DTC Logic".	
Is the inspection result normal?	F
YES >> GO TO 16.	'
NO >> Replace EVAP control system pressure sensor.	
16.CHECK EVAP PURGE LINE	G
Check EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks or Refer to <u>EC-72</u> , "System Diagram".	improper connection.
Is the inspection result normal?	Н
YES >> GO TO 17.	
NO >> Repair or reconnect the hose. 17.CLEAN EVAP PURGE LINE	I
Clean EVAP purge line (pipe and rubber tube) using air blower.	
Olean EVA parge line (pipe and rubber tube) using all blower.	J
>> GO TO 18.	
18. CHECK EVAP/ORVR LINE	K
Check EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, loose nection. For location, refer to EC-428 , "Description".	ness and improper con-
Is the inspection result normal?	L
YES >> GO TO 19. NO >> Repair or replace hoses and tubes.	
19. CHECK RECIRCULATION LINE	N
Check recirculation line between filler neck tube and fuel tank for clogging, kink,	cracks, looseness and
improper connection. <u>Is the inspection result normal?</u>	N
YES >> GO TO 20.	
NO >> Repair or replace hose, tube or filler neck tube.	C
20.CHECK REFUELING EVAP VAPOR CUT VALVE	
Refer to EC-431, "Component Inspection".	-
Is the inspection result normal? YES >> GO TO 21.	Р
NO >> Replace refueling EVAP vapor cut valve with fuel tank.	
21.check fuel level sensor	
Refer to FL-10, "2WD: Inspection" (2WD), FL-14, "AWD: Inspection" (AWD).	
Is the inspection result normal?	

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YES >> GO TO 22.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

NO >> Replace fuel level sensor unit.

22. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

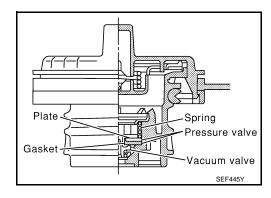
>> INSPECTION END

Component Inspection

INFOID:0000000001715210

1. CHECK FUEL FILLER CAP

- Turn ignition switch OFF.
- 2. Remove fuel filler cap.
- 3. Wipe clean valve housing.



- 4. Install fuel filler cap adapter (commercial service tool) to fuel filler cap.
- 5. Check valve opening pressure and vacuum.

Pressure: 15.3 - 20.0 kPa (0.156 - 0.204 kg/cm², 2.22 -

2.90 psi)

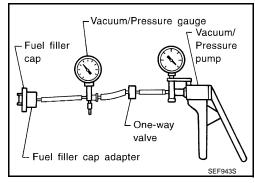
Vacuum: -6.0 to -3.3 kPa (-0.061 to -0.034 kg/cm²,

-0.87 to -0.48 psi)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.



2. REPLACE FUEL FILLER CAP

Replace fuel filler cap.

CAUTION:

Use only a genuine fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.

>> INSPECTION END

P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

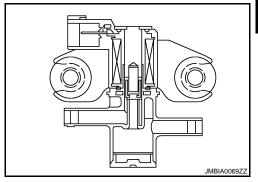
< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Description INFOID:0000000001715211

The EVAP canister purge volume control solenoid valve uses a ON/ OFF duty to control the flow rate of fuel vapor from the EVAP canister. The EVAP canister purge volume control solenoid valve is moved by ON/OFF pulses from the ECM. The longer the ON pulse, the greater the amount of fuel vapor that will flow through the valve.



DTC Logic (INFOID.000000001715212

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	G
P0443	EVAP canister purge volume control solenoid valve	The canister purge flow is detected during the specified driving conditions, even when EVAP canister purge volume control solenoid valve is completely closed.	EVAP control system pressure sensor EVAP canister purge volume control solenoid valve (The valve is stuck open.) EVAP canister vent control valve EVAP canister Hoses (Hoses are connected incorrectly or clogged.)	Н

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Always perform test at a temperature of 5°C (41°F) or more.

Do you have CONSULT-III

YES >> GO TO 2.

NO >> GO TO 3.

2.PERFORM DTC CONFIRMATION PROCEDURE

(II) With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- Select "PURG VOL CN/V P1444" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-III.
- Touch "START".
- Start engine and let it idle until "TESTING" on CONSULT-III changes to "COMPLETED". (It will take approximately 10 seconds.)

If "TESTING" is not displayed after 5 minutes, retry from step 2.

7. Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III?

OK >> INSPECTION END

NG >> Go to EC-276, "Diagnosis Procedure".

3. PERFORM DTC CONFIRMATION PROCEDURE

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P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE [FOR CALIFORNIA]

< COMPONENT DIAGNOSIS >

With GST

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and let it idle for at least 20 seconds.
- Check 1st trip DTC.

Is 1st trip DTC displayed?

>> Go to EC-276, "Diagnosis Procedure". YES

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715213

${f 1.}$ CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between EVAP canister purge volume control solenoid valve harness connector and ground.

EVAP canister purge volume control solenoid valve		Ground	Voltage
Connector	Terminal		
F32	1	Ground	Battery voltage

Is the inspection result normal?

>> GO TO 3. YES

NO >> GO TO 2.

2.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between EVAP canister purge volume control solenoid valve and IPDM E/R
- Harness for open or short between EVAP canister purge volume control solenoid valve and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3.check evap canister purge volume control solenoid valve output signal circuit FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVAP canister purge volume control solenoid valve harness connector and ECM harness connector.

EVAP canister purge volume control solenoid valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F32	2	F7	25	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- Disconnect EVAP control system pressure sensor harness connector.
- Check connectors for water.

Water should not exist.

P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

[FOR CALIFORNIA] < COMPONENT DIAGNOSIS > Is the inspection result normal? Α YES >> GO TO 5. NO >> Replace EVAP control system pressure sensor. 5. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR EC Refer to EC-292, "Component Inspection". Is the inspection result normal? YES-1 >> With CONSULT-III: GO TO 6. YES-2 >> Without CONSULT-III: GO TO 7. >> Replace EVAP control system pressure sensor. O.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE (P)With CONSULT-III 1. Turn ignition switch OFF. Е Reconnect harness connectors disconnected. Start engine. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III. Check that engine speed varies according to the valve opening. F Is the inspection result normal? >> GO TO 8. YES NO >> GO TO 7. 7.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE Refer to EC-278, "Component Inspection". Н Is the inspection result normal? YES >> GO TO 8. NO >> Replace EVAP canister purge volume control solenoid valve. 8. CHECK RUBBER TUBE FOR CLOGGING Disconnect rubber tube connected to EVAP canister vent control valve. Check the rubber tube for clogging. Is the inspection result normal? YES >> GO TO 9. NO >> Clean the rubber tube using an air blower. K 9.CHECK EVAP CANISTER VENT CONTROL VALVE Refer to EC-284, "Component Inspection". Is the inspection result normal? YES >> GO TO 10. NO >> Replace EVAP canister vent control valve. M 10.CHECK IF EVAP CANISTER SATURATED WITH WATER Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached. Ν 2. Check if water will drain from EVAP canister. Does water drain from the EVAP canister? **EVAP** canister YES >> GO TO 11. NO >> GO TO 13.

11. CHECK EVAP CANISTER

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ÈVAP canister vent

PBIB1213E

control valve

Water

P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE [FOR CALIFORNIA]

< COMPONENT DIAGNOSIS >

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES >> GO TO 13. NO >> GO TO 12.

12. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection
 - >> Repair hose or replace EVAP canister.

13. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

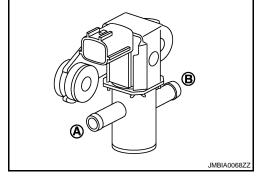
INFOID:0000000001715214

${f 1}$.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

(P)With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Turn ignition switch ON.
- 5. Select "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III.
- Touch "Qd" and "Qu" on CONSULT-III screen to adjust "PURG VOL CONT/V" opening and check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition (PURG VOL CONT/V value)	Air passage continuity between (A) and (B)
100%	Existed
0%	Not existed



Without CONSULT-III

- Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition	Air passage continuity between (A) and (B)	
12V direct current supply between terminals 1 and 2	Existed	
No supply	Not existed	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister purge volume control solenoid valve

P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID **VALVE**

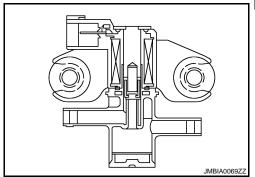
< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Description INFOID:0000000001881017

The EVAP canister purge volume control solenoid valve uses a ON/ OFF duty to control the flow rate of fuel vapor from the EVAP canister. The EVAP canister purge volume control solenoid valve is moved by ON/OFF pulses from the ECM. The longer the ON pulse, the greater the amount of fuel vapor that will flow through the valve.



DTC Logic INFOID:0000000001715216

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0444	EVAP canister purge volume control solenoid valve circuit open	An excessively low voltage signal is sent to ECM through the valve	Harness or connectors (The solenoid valve circuit is open or shorted.) EVAP canister purge volume control solenoid valve
P0445	EVAP canister purge volume control solenoid valve circuit shorted	An excessively high voltage signal is sent to ECM through the valve	Harness or connectors (The solenoid valve circuit is shorted.) EVAP canister purge volume control solenoid valve

DTC CONFIRMATION PROCEDURE

1.CONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm battery voltage is more than 11V at idle.

>> GO TO 2.

2.perform dtc confirmation procedure

- Start engine and let it idle for at least 13 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

>> Go to EC-279, "Diagnosis Procedure". YES

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- Turn ignition switch ON.
- Check the voltage between EVAP canister purge volume control solenoid valve harness connector and ground.

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INFOID:0000000001715217

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EC-279 Revision: 2008 January 2008 Rogue

P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

EVAP canister purge volume control solenoid valve		Ground	Voltage
Connector	Terminal		
F32	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between EVAP canister purge volume control solenoid valve and IPDM E/R
- Harness for open or short between EVAP canister purge volume control solenoid valve and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP canister purge volume control solenoid valve harness connector and ECM harness connector.

EVAP canister purge volume control solenoid valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F32	2	F7	25	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 4.

YES-2 >> Without CONSULT-III: GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

(P)With CONSULT-III

- 1. Reconnect all harness connectors disconnected.
- Start engine.
- Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III. Check that engine speed varies according to the valve opening.

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

5. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-281, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace EVAP canister purge volume control solenoid valve.

6. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Component Inspection

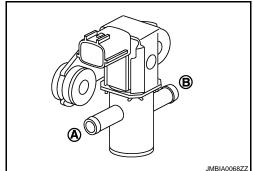
INFOID:0000000001881018

1.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

(P)With CONSULT-III

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Turn ignition switch ON.
- 5. Select "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III.
- Touch "Qd" and "Qu" on CONSULT-III screen to adjust "PURG VOL CONT/V" opening and check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition (PURG VOL CONT/V value)	Air passage continuity between (A) and (B)
100%	Existed
0%	Not existed



Without CONSULT-III

- Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition	Air passage continuity between (A) and (B)
12V direct current supply between terminals 1 and 2	Existed
No supply	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister purge volume control solenoid valve

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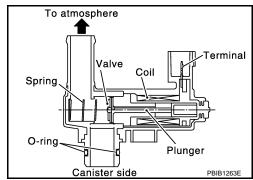
Description INFOID:000000001715219

The EVAP canister vent control valve is located on the EVAP canister and is used to seal the canister vent.

This solenoid valve responds to signals from the ECM. When the ECM sends an ON signal, the coil in the solenoid valve is energized. A plunger will then move to seal the canister vent. The ability to seal the vent is necessary for the on board diagnosis of other evaporative emission control system components.

This solenoid valve is used only for diagnosis, and usually remains opened.

When the vent is closed, under normal purge conditions, the evaporative emission control system is depressurized and allows "EVAP Control System" diagnosis.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0447	EVAP canister vent control valve circuit open	An improper voltage signal is sent to ECM through EVAP canister vent control valve.	Harness or connectors (The valve circuit is open or shorted.) EVAP canister vent control valve

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm battery voltage is more than 11V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait at least 8 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-282, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715221

1. INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK EVAP CANISTER VENT CONTROL VALVE CIRCUIT

(I) With CONSULT-III

- 1. Turn ignition switch OFF and then turn ON.
- Select "VENT CONTROL/V" in "ACTIVE TEST" mode with CONSULT-III.
- 3. Touch "ON/OFF" on CONSULT-III screen.
- Check for operating sound of the valve.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

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Clicking sound should be heard. Α Is the inspection result normal? >> GO TO 7. YES EC NO >> GO TO 3. ${f 3.}$ CHECK EVAP CANISTER VENT CONTROL VALVE POWER SUPPLY CIRCUIT 1. Turn ignition switch OFF. Disconnect EVAP canister vent control valve harness connector. 2. 3. Turn ignition switch ON. Check the voltage between EVAP canister vent control valve harness connector and ground. D EVAP canister vent control valve Voltage Ground Connector **Terminal** Е **B48** Ground Battery voltage Is the inspection result normal? YES >> GO TO 5. NO >> GO TO 4. f 4.DETECT MALFUNCTIONING PART Check the following. Harness connectors E105, M77 Harness connectors M11, B1 Н Harness connectors E69, B70 Harness for open or short between EVAP canister vent control valve and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. ${f 5.}$ CHECK EVAP CANISTER VENT CONTROL VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT Turn ignition switch OFF. Disconnect ECM harness connector. Check the continuity between EVAP canister vent control valve harness connector and ECM harness connector. EVAP canister vent control valve **ECM** Continuity Connector **Terminal** Connector Terminal B48 E16 109 Existed Also check harness for short to ground and short to power. Is the inspection result normal? YES >> GO TO 7. NO >> GO TO 6. N 6.DETECT MALFUNCTIONING PART Check the following. Harness connectors E105, M77 Harness connectors M11, B1

- Harness connectors E69, B70
- Harness for open or short between EVAP canister vent control valve and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK RUBBER TUBE FOR CLOGGING

- Disconnect rubber tube connected to EVAP canister vent control valve.
- Check the rubber tube for clogging.

Is the inspection result normal?

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

YES >> GO TO 8.

NO >> Clean the rubber tube using an air blower.

8.CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-284, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace EVAP canister vent control valve.

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001715222

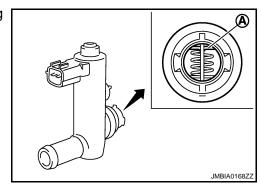
1. CHECK EVAP CANISTER VENT CONTROL VALVE-I

- 1. Turn ignition switch OFF.
- 2. Remove EVAP canister vent control valve from EVAP canister.
- 3. Check portion (A) of EVAP canister vent control valve for being rusted.

Is it rusted?

YES >> Replace EVAP canister vent control valve

NO >> GO TO 2.



2. CHECK EVAP CANISTER VENT CONTROL VALVE-II

(P)With CONSULT-III

- 1. Reconnect harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.
- 4. Check air passage continuity and operation delay time.

 Make sure new O-ring is installed properly.

Condition VENT CONTROL/V	Air passage continuity between (A) and (B)
ON	Not existed
OFF	Existed

Operation takes less than 1 second.

Without CONSULT-III

Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.

Condition	Air passage continuity between (A) and (B)
12V direct current supply between terminals (1) and (2)	Not existed
OFF	Existed

Operation takes less than 1 second.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace EVAP canister vent control valve

(B)

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

3.check evap canister vent control valve-iii

(P)With CONSULT-III

- 1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.
- 2. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.
- 3. Check air passage continuity and operation delay time.

Make sure new O-ring is installed properly.

Condition VENT CONTROL/V	Air passage continuity between (A) and (B)
ON	Not existed
OFF	Existed

Operation takes less than 1 second.

Without CONSULT-III

- 1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.
- 2. Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.

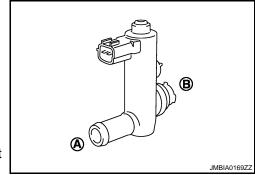
Condition	Air passage continuity between (A) and (B)
12V direct current supply between terminals (1) and (2)	Not existed
OFF	Existed

Operation takes less than 1 second.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister vent control valve



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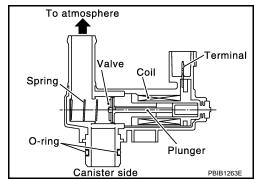
Description INFOID:000000001881035

The EVAP canister vent control valve is located on the EVAP canister and is used to seal the canister vent.

This solenoid valve responds to signals from the ECM. When the ECM sends an ON signal, the coil in the solenoid valve is energized. A plunger will then move to seal the canister vent. The ability to seal the vent is necessary for the on board diagnosis of other evaporative emission control system components.

This solenoid valve is used only for diagnosis, and usually remains opened.

When the vent is closed, under normal purge conditions, the evaporative emission control system is depressurized and allows "EVAP Control System" diagnosis.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0448	EVAP canister vent control valve close	EVAP canister vent control valve remains closed under specified driving conditions.	 EVAP canister vent control valve EVAP control system pressure sensor and the circuit Blocked rubber tube to EVAP canister vent control valve EVAP canister is saturated with water

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

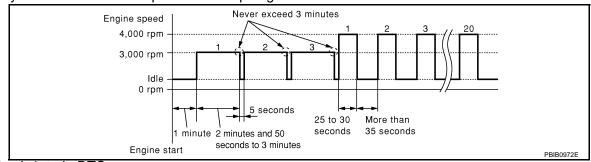
>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and let it idle for at least 1 minute.
- 4. Repeat next procedures three times.
- Increase the engine speed up to 3,000 to 3,500 rpm and keep it for 2 minutes and 50 seconds to 3 minutes.

Never exceed 3 minutes.

- Fully released accelerator pedal and keep engine idle for about 5 seconds.
- Repeat next procedure 20 times.
- Quickly increase the engine speed up to 4,000 to 4,500 rpm or more and keep it for 25 to 30 seconds.
- Fully released accelerator pedal and keep engine idle for at least 35 seconds.



6. Check 1st trip DTC.

[FOR CALIFORNIA] < COMPONENT DIAGNOSIS >

Is 1st trip DTC detected?

YES >> Go to EC-287, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK RUBBER TUBE

- Turn ignition switch OFF.
- Disconnect rubber tube connected to EVAP canister vent control valve.
- Check the rubber tube for clogging.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Clean rubber tube using an air blower.

2.CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-288. "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3.

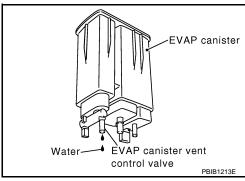
NO >> Replace EVAP canister vent control valve.

 ${f 3.}$ CHECK IF EVAP CANISTER SATURATED WITH WATER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Check if water will drain from the EVAP canister.

Does water drain from EVAP canister?

YES >> GO TO 4. NO >> GO TO 6.



4. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

 ${f 5.}$ DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection

>> Repair hose or replace EVAP canister.

6. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- Disconnect EVAP control system pressure sensor harness connector.
- 2. Check connectors for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 7.

EC-287 Revision: 2008 January 2008 Rogue

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

NO >> Replace EVAP control system pressure sensor.

7. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-292, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace EVAP control system pressure sensor.

8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001881036

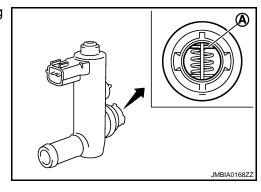
1. CHECK EVAP CANISTER VENT CONTROL VALVE-I

- 1. Turn ignition switch OFF.
- 2. Remove EVAP canister vent control valve from EVAP canister.
- 3. Check portion (A) of EVAP canister vent control valve for being rusted.

Is it rusted?

YES >> Replace EVAP canister vent control valve

NO >> GO TO 2.



2. CHECK EVAP CANISTER VENT CONTROL VALVE-II

(P)With CONSULT-III

- 1. Reconnect harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.
- 4. Check air passage continuity and operation delay time.

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Condition VENT CONTROL/V	Air passage continuity between (A) and (B)
ON	Not existed
OFF	Existed

Operation takes less than 1 second.

♥Without CONSULT-III

Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.

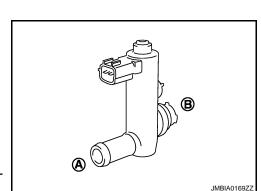
Condition	Air passage continuity between (A) and (B)
12V direct current supply between terminals (1) and (2)	Not existed
OFF	Existed

Operation takes less than 1 second.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace EVAP canister vent control valve



P0448 EVAP CANISTER VENT CONTROL VALVE

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

3.check evap canister vent control valve-iii

(P)With CONSULT-III

- 1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.
- 2. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.
- Check air passage continuity and operation delay time.
 Make sure new O-ring is installed properly.

Condition VENT CONTROL/V	Air passage continuity between (A) and (B)
ON	Not existed
OFF	Existed

Operation takes less than 1 second.

Without CONSULT-III

- 1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.
- 2. Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.

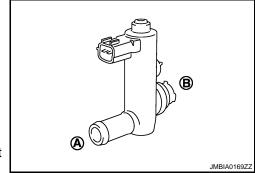
Condition	Air passage continuity between (A) and (B)
12V direct current supply between terminals (1) and (2)	Not existed
OFF	Existed

Operation takes less than 1 second.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister vent control valve



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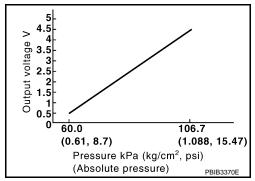
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INFOID:0000000001715228

P0451 EVAP CONTROL SYSTEM PRESSURE SENSOR

Description INFOID:000000001715227

The EVAP control system pressure sensor detects pressure in the purge line. The sensor output voltage to the ECM increases as pressure increases.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0451	EVAP control system pressure sensor performance	ECM detects a sloshing signal from the EVAP control system pressure sensor	Harness or connectors (EVAP control system pressure sensor circuit is shorted.) [Crankshaft position sensor (POS) circuit is shorted.] (Accelerator pedal position sensor circuit is shorted.) (Refrigerant pressure sensor circuit is shorted.) (Tumble control valve position sensor circuit is shorted.) EVAP control system pressure sensor Crankshaft position sensor (POS) Accelerator pedal position sensor Refrigerant pressure sensor Tumble control valve position sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and wait at least 40 seconds.

NOTE:

Do not depress accelerator pedal even slightly.

3. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-290, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715229

1. CHECK GROUND CONNECTION

1. Turn ignition switch OFF.

Revision: 2008 January EC-290 2008 Rogue

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR FOR WATER

Disconnect EVAP control system pressure sensor harness connector.

2. Check sensor harness connector for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace harness connector.

3.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT

Turn ignition switch ON.

Check the voltage between EVAP control system pressure sensor harness connector and ground.

EVAP control syste	em pressure sensor	Ground	Voltage	
Connector Terminal		Oround	voltage	
B47	3	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 4.

4. CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

E	CM	Sensor		
Connector	Terminal	Name	Connector	Terminal
	72	72 Tumble control valve position sensor Refrigerant pressure sensor		1
F8	12			3
	76	CKP sensor (POS)	F20	1
E10	87	87 APP sensor		5
L10	91	EVAP control system pressure sensor	B47	3

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair short to ground or short to power in harness or connectors.

5. CHECK COMPONENT

Check the following.

- Crankshaft position sensor (POS) (Refer to EC-255, "Component Inspection".)
- Refrigerant pressure sensor (Refer to EC-434, "Diagnosis Procedure".)
- Tumble control valve position sensor (Refer to EC-365, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace malfunctioning component.

6.CHECK APP SENSOR

Refer to EC-395, "Component Inspection".

Is the inspection result normal?

>> GO TO 9. YES

NO >> GO TO 7.

EC-291 Revision: 2008 January 2008 Rogue

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

7.replace accelerator pedal assembly

- 1. Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- 2. Go to EC-27, "ACCELERATOR PÉDAL RELEASED POSITION LEARNING : Special Repair Requirement".

>> INSPECTION END

8. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-292, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace EVAP control system pressure sensor.

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001715230

1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

- Turn ignition switch OFF.
- Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister.
 Always replace O-ring with a new one.
- 3. Install a vacuum pump to EVAP control system pressure sensor.
- Turn ignition switch ON and check output voltage between ECM harness connector terminals under the following conditions.

	ECM		Condition		
Connector	+	_	Condition [Applied vacuum kPa (kg/cm², psi)	Voltage	
Terminal	Terminal	[Applied Vacuum Kr a (Kg/cm , psi)			
	86	96	Not applied	1.8 - 4.8V	
E16	(EVAP control system pressure sensor signal)	(Sensor ground)	-26.7 (-0.272, -3.87)	2.1 to 2.5V lower than above value	

CAUTION:

- · Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-0.952 kg/cm², -13.53 psi) or pressure over 101.3 kPa (1.033 kg/cm², 14.69 psi).

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP control system pressure sensor

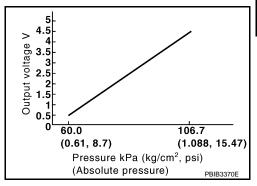
< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P0452 EVAP CONTROL SYSTEM PRESSURE SENSOR

Description INFOID:0000000001881053

The EVAP control system pressure sensor detects pressure in the purge line. The sensor output voltage to the ECM increases as pressure increases.



DTC Logic INFOID:0000000001715232

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0452	EVAP control system pressure sensor low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (EVAP control system pressure sensor circuit is open or shorted.) [Crankshaft position sensor (POS) circuit is shorted.) (Accelerator pedal position sensor circuit is shorted.) (Refrigerant pressure sensor circuit is shorted.) (Tumble control valve position sensor circuit is shorted.) EVAP control system pressure sensor Crankshaft position sensor (POS) Accelerator pedal position sensor Refrigerant pressure sensor Tumble control valve position sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

EC-293

TESTING CONDITION:

Always perform test at a temperature of 5°C (41°F) or more.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

(P) With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 4. Select "DATA MONITOR" mode with CONSULT-III.
- Make sure that "FUEL T/TMP SE" is more than 0°C (32°F).
- Start engine and wait at least 20 seconds.
- Check 1st trip DTC. 7.

With GST

- Start engine and warm it up to normal operating temperature.
- Set voltmeter probes to ECM harness connector and ground as follows.

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

ECM		ECM	
Connector	Terminal	Connector	Terminal
E16	95 (Fuel tank temperature sensor signal)	E16	104 (Sensor ground)

- 3. Make sure that the voltage is less than 4.2V.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and wait at least 20 seconds.
- 6. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-294, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715233

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK CONNECTOR

- 1. Disconnect EVAP control system pressure sensor harness connector.
- 2. Check sensor harness connector for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace harness connector.

3.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch ON.
- 2. Check the voltage between EVAP control system pressure sensor harness connector and ground.

EVAP control syste	em pressure sensor	Ground	Voltage
Connector	Connector Terminal		voltage
B47	3	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 4.

4.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT-II

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

EVAP control system pressure sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
B47	3	E16	91	Existed

Is the inspection result normal?

YES >> GO TO 6.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

NO >> GO TO 5.

${f 5.}$ DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1. M11
- Harness connectors M77, E105
- Harness for open or short between EVAP control system pressure sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor		
Connector	Terminal	Name	Connector	Terminal
	72	Tumble control valve position sensor	F41	1
F8	72	Refrigerant pressure sensor	E49	3
	76 CKP sensor (POS)		F20	1
E10	87	APP sensor	E110	5
E10 91		EVAP control system pressure sensor	B47	3

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair short to ground or short to power in harness or connectors.

.CHECK COMPONENT

Check the following.

- Crankshaft position sensor (POS) (Refer to <u>EC-255, "Component Inspection"</u>.)
- Refrigerant pressure sensor (Refer to EC-434, "Diagnosis Procedure".)
- Tumble control valve position sensor (Refer to EC-365, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace malfunctioning component.

8.CHECK APP SENSOR

Refer to EC-395, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 9.

9. REPLACE ACCELERATOR PEDAL ASSEMBLY

- Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- Go to EC-27, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> INSPECTION END

10.check evap control system pressure sensor ground circuit for open and SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

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EC-295 Revision: 2008 January

EVAP control system pressure sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
B47	1	E16	96	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 12. NO >> GO TO 11.

11. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1, M11
- Harness connectors M77, E105
- Harness for open or short between EVAP control system pressure sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

12.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

	system pressure nsor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
B47	2	E16	86	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 14. NO >> GO TO 13.

13. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1, M11
- Harness connectors B10, E29
- Harness for open or short between EVAP control system pressure sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

14. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-296, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace EVAP control system pressure sensor.

15. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001881054

1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

1. Turn ignition switch OFF.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

- 2. Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister. **Always replace O-ring with a new one.**
- 3. Install a vacuum pump to EVAP control system pressure sensor.
- 4. Turn ignition switch ON and check output voltage between ECM harness connector terminals under the following conditions.

ECM			Condition		
Connector	+ -		Condition [Applied vacuum kPa (kg/cm², psi)	Voltage	
Connector	Terminal	Terminal	(ng/oiii , poi)		
	86	96	Not applied	1.8 - 4.8V	
E16	(EVAP control system pressure sensor signal)	(Sensor ground)	-26.7 (-0.272, -3.87)	2.1 to 2.5V lower than above value	

CAUTION:

- Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-0.952 kg/cm², -13.53 psi) or pressure over 101.3 kPa (1.033 kg/cm², 14.69 psi).

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP control system pressure sensor

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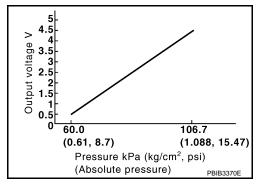
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INFOID:0000000001715236

P0453 EVAP CONTROL SYSTEM PRESSURE SENSOR

Description INFOID:000000001881058

The EVAP control system pressure sensor detects pressure in the purge line. The sensor output voltage to the ECM increases as pressure increases.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0453	EVAP control system pressure sensor high input	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors (EVAP control system pressure sensor circuit is open or shorted.) [Crankshaft position sensor (POS) circuit is shorted.] (Accelerator pedal circuit is shorted.) (Refrigerant pressure sensor circuit is shorted.) (Tumble control valve position sensor circuit is shorted.) EVAP control system pressure sensor Crankshaft position sensor (POS) Accelerator pedal position sensor Refrigerant pressure sensor Tumble control valve position sensor EVAP canister vent control valve EVAP canister Rubber hose from EVAP canister vent control valve to vehicle frame

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Always perform test at a temperature of 5°C (41°F) or more.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Select "DATA MONITOR" mode with CONSULT-III.
- 5. Make sure that "FUEL T/TMP SE" is more than 0°C (32°F).
- Start engine and wait at least 20 seconds.
- 7. Check 1st trip DTC.

< COMPONENT DIAGNOSIS >

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1. Start engine and warm it up to normal operating temperature.

Set voltmeter probes to ECM harness connector and ground as follows.

	ECM	ECM		
Connector	Terminal	Connector	Terminal	
E16	95 (Fuel tank temperature sensor signal)	E16	104 (Sensor ground)	

Make sure that the voltage is less than 4.2V.

- Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and wait at least 20 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-299, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44. "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK CONNECTOR

- Disconnect EVAP control system pressure sensor harness connector.
- 2. Check sensor harness connector for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace harness connector.

3.check evap control system pressure sensor power supply circuit

- 1. Turn ignition switch ON.
- 2. Check the voltage between EVAP control system pressure sensor harness connector and ground.

EVAP control syste	em pressure sensor	Ground	Voltage
Connector	Terminal	Ground	voltage
B47	3	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 4.

4.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT-II

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

	VAP control system pressure sensor		СМ	Continuity
Connector	Terminal	Connector	Terminal	
B47	3	E16	91	Existed

[FOR CALIFORNIA]

< COMPONENT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 6. NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1, M11
- Harness connectors M77, E105
- Harness for open or short between EVAP control system pressure sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor		
Connector	Terminal	Name	Connector	Terminal
70	72	Tumble control valve position sensor	F41	1
F8	12	Refrigerant pressure sensor	E49	3
	76	CKP sensor (POS)	F20	1
E10	87	APP sensor	E110	5
L10	91	EVAP control system pressure sensor	B47	3

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair short to ground or short to power in harness or connectors.

7. CHECK COMPONENT

Check the following.

- Crankshaft position sensor (POS) (Refer to EC-255, "Component Inspection".)
- Refrigerant pressure sensor (Refer to EC-434, "Diagnosis Procedure".)
- Tumble control valve position sensor (Refer to EC-365, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace malfunctioning component.

8. CHECK APP SENSOR

Refer to EC-395, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 9.

9. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- Go to EC-27, "ACCELERATOR PÉDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> INSPECTION END

10.check evap control system pressure sensor ground circuit for open and short

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

evaP control sy sen	sor	EC	M	Continuity	
Connector	Terminal	Connector	Terminal		
B47	1	E16	96	Existed	
		short to grou	nd and short	to power.	
•	on result norr O TO 12.	nal?			
	O TO 12. O TO 11.				
1.DETECT	MALFUNCT	ONING PART	_		
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>> R	epair open cii	cuit or short t	o ground or s	short to power	in harness or connectors.
2. CHECK	EVAP CONTI	ROL SYSTEM	1 PRESSUR	E SENSOR IN	PUT SIGNAL CIRCUIT FOR OPEN AND
HORT					
	•	etween EVAF	control syst	tem pressure	sensor harness connector and ECM har-
ness con	nector.				
=VAP control ev	stem pressure				
sen		EC	M	Continuity	
Connector	Terminal	Connector	Terminal	1	
B47	2	E16	86	Existed	
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Harness for	epair open cii RUBBER TUI		o ground or s	short to power	in harness or connectors.
Harness for >> R 4.CHECK Disconne	RUBBER TUI	BE connected to		short to power	
Harness for >> R 4.CHECK Disconne Check the	RUBBER TUI	BE connected to for clogging.			
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>> R 4.CHECK Disconne Check the the inspection YES >> G NO >> C 5.CHECK	RUBBER TUI ct rubber tube e rubber tube on result norr O TO 15. lean the rubb EVAP CANIS	e connected to for clogging. nal? er tube using TER VENT C	EVAP canis an air blower ONTROL VA	ter vent contro	I valve.
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>> R 4.CHECK Disconne Check the the inspecti YES >> G NO >> C 5.CHECK efer to EC-2 the inspecti	RUBBER TUI ct rubber tube e rubber tube on result norr O TO 15. lean the rubb EVAP CANIS 84. "Compone on result norr	e connected to for clogging. nal? er tube using TER VENT Content Inspection	EVAP canis an air blower ONTROL VA	ter vent contro	I valve.
>> R 4.CHECK Disconne Check the the inspecti YES >> G NO >> C 5.CHECK efer to EC-2 the inspecti YES >> G	ct rubber tube e rubber tube on result norr O TO 15. lean the rubb EVAP CANIS 84, "Componer on result norr O TO 16.	e connected to for clogging. nal? er tube using TER VENT Content Inspection	an air blower ONTROL VA	ter vent contro r, repair or rep LVE	I valve.

Revision: 2008 January EC-301 2008 Rogue

Refer to EC-302, "Component Inspection".

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Is the inspection result normal?

YES >> GO TO 17.

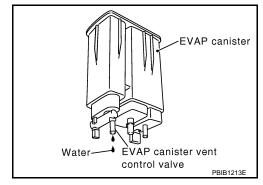
NO >> Replace EVAP control system pressure sensor.

17. CHECK IF EVAP CANISTER SATURATED WITH WATER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- 2. Check if water will drain from the EVAP canister.

Does water drain from EVAP canister?

YES >> GO TO 18. NO >> GO TO 20.



18. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES >> GO TO 20. NO >> GO TO 19.

19. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection
 - >> Repair hose or replace EVAP canister.

20. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001881059

1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister. Always replace O-ring with a new one.
- 3. Install a vacuum pump to EVAP control system pressure sensor.
- 4. Turn ignition switch ON and check output voltage between ECM harness connector terminals under the following conditions.

ECM			Condition		
Connector	+	-	Condition [Applied vacuum kPa (kg/cm², psi)	Voltage	
Connector	Terminal	Terminal	[rippiled vacadiii iii a (iig/oiii , poi/		
	86	96	Not applied	1.8 - 4.8V	
E16	(EVAP control system pressure sensor signal)	(Sensor ground)	-26.7 (-0.272, -3.87)	2.1 to 2.5V lower than above value	

CAUTION:

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

- Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-0.952 kg/cm², -13.53 psi) or pressure over 101.3 kPa (1.033 kg/cm², 14.69 psi).

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP control system pressure sensor

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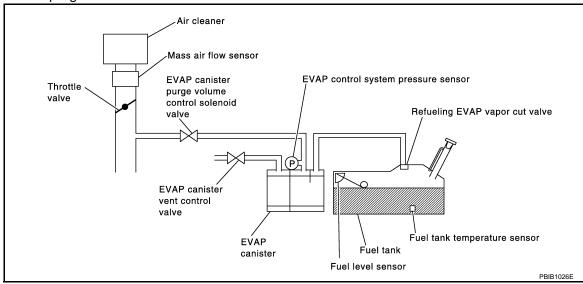
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DTC Logic

DTC DETECTION LOGIC

This diagnosis detects a very large leak (fuel filler cap fell off etc.) in EVAP system between the fuel tank and EVAP canister purge volume control solenoid valve.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0455	EVAP control system gross leak detected	EVAP control system has a very large leak such as fuel filler cap fell off, EVAP control system does not operate properly.	Fuel filler cap remains open or fails to close. Incorrect fuel tank vacuum relief valve Incorrect fuel filler cap used Foreign matter caught in fuel filler cap. Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve. Foreign matter caught in EVAP canister vent control valve. EVAP canister or fuel tank leaks EVAP purge line (pipe and rubber tube) leaks EVAP purge line rubber tube bent. Loose or disconnected rubber tube EVAP canister vent control valve and the circuit EVAP canister purge volume control solenoid valve and the circuit Fuel tank temperature sensor O-ring of EVAP canister vent control valve is missing or damaged. EVAP control system pressure sensor Refueling EVAP vapor cut valve ORVR system leaks

CAUTION:

- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.
- If the fuel filler cap is not tightened properly, the MIL may come on.
- Use only a genuine NISSAN rubber tube as a replacement.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

CAUTION:

P0455 EVAP CONTROL SYSTEM [FOR CALIFORNIA] < COMPONENT DIAGNOSIS > Never remove fuel filler cap during the DTC CONFIRMATION PROCEDURE. If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test. NOTE: Make sure that EVAP hoses are connected to EVAP canister purge volume control solenoid valve EC properly. **TESTING CONDITION:** Perform "DTC WORK SUPPORT" when the fuel level is between 1/4 and 3/4 full, and vehicle is placed on flat level surface. Open engine hood before conducting the following procedures. Do you have CONSULT-III? YES >> GO TO 2. D NO >> GO TO 4. 2 Perform DTC Confirmation procedure (P)With CONSULT-III Tighten fuel filler cap securely until ratcheting sound is heard. Turn ignition switch ON. F Turn ignition switch OFF and wait at least 10 seconds. 4. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III. 5. Make sure that the following conditions are met. COOLAN TEMP/S: 0 - 70°C (32 - 158°F) INT/A TEMP SE: 0 - 60°C (32 - 140°F) 6. Select "EVAP SML LEAK P0442/P1442" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-III. Н Follow the instruction displayed. NOTE: If the engine speed cannot be maintained within the range displayed on the CONSULT-III screen, go to EC-22, "BASIC INSPECTION: Special Repair Requirement". Which is displayed on CONSULT-III screen? OK >> Go to EC-305, "Diagnosis Procedure". NG >> GO TO 3. 3.CHECK DTC Check DTC. Which DTC is detected? P0455 >> Go to EC-305, "Diagnosis Procedure". P0442 >> Go to EC-270, "Diagnosis Procedure" 4. PERFORM DTC CONFIRMATION PROCEDURE ■With GST NOTE: Be sure to read the explanation of DIRVING PATTERN in EC-467, "How to Set SRT Code" before driving vehicle. 1. Start engine. N Drive vehicle according to DRIVING PATTERN.

- Stop vehicle.
- 4. Turn ignition switch OFF, wait at least 10 seconds and then turn ON.
- 5. Check 1st trip DTC.

Is 1st trip DTC detected?

YES-1 >> P0455: Go to EC-305, "Diagnosis Procedure". YES-2 >> P0442: Go to EC-270, "Diagnosis Procedure".

YES-3 >> P0441: Go to EC-266, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1.CHECK FUEL FILLER CAP DESIGN

Turn ignition switch OFF.

EC-305 Revision: 2008 January 2008 Rogue

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< COMPONENT DIAGNOSIS >

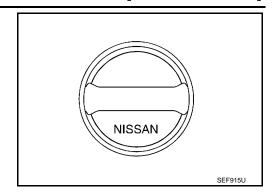
[FOR CALIFORNIA]

2. Check for genuine NISSAN fuel filler cap design.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace with genuine NISSAN fuel filler cap.



2. CHECK FUEL FILLER CAP INSTALLATION

Check that the cap is tightened properly by rotating the cap clockwise.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Open fuel filler cap, then clean cap and fuel filler neck threads using air blower. Then retighten until ratcheting sound is heard.

3.CHECK FUEL FILLER CAP FUNCTION

Check for air releasing sound while opening the fuel filler cap.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4. CHECK FUEL TANK VACUUM RELIEF VALVE

Refer to EC-308, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace fuel filler cap with a genuine one.

5.CHECK EVAP PURGE LINE

Check EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks, improper connection or disconnection.

Refer to EC-72, "System Diagram".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or reconnect the hose.

6.CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 7.

7. CHECK EVAP CANISTER VENT CONTROL VALVE

Check the following.

EVAP canister vent control valve is installed properly.

Refer to <u>EC-489</u>, "<u>Exploded View</u>".

• EVAP canister vent control valve.

Refer to EC-284, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace EVAP canister vent control valve and O-ring.

8.CHECK FOR EVAP LEAK

Refer to EC-72, "System Diagram".

Is there any leak in EVAP line?

< COMPONENT DIAGNOSIS >	[FOR CALIFORNIA]
YES >> Repair or replace. NO-1 >> With CONSULT-III: GO TO 9. NO-2 >> Without CONSULT-III: GO TO 10.	А
9. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPE	
 With CONSULT-III Disconnect vacuum hose to EVAP canister purge volume control solenoid valve a Start engine. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode. Touch "Qu" on CONSULT-III screen to increase "PURG VOL CONT/V" opening to Check vacuum hose for vacuum. 	C
Vacuum should exist.	D
Is the inspection result normal? YES >> GO TO 12. NO >> GO TO 11.	Е
10. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OP	ERATION
 Without CONSULT-III Start engine and warm it up to normal operating temperature. Stop engine. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve a Start engine and let it idle for at least 80 seconds. Check vacuum hose for vacuum when revving engine up to 2,000 rpm. 	•
Vacuum should exist.	Н
Is the inspection result normal? YES >> GO TO 13. NO >> GO TO 11.	I
11.check vacuum hose	J
Check vacuum hoses for clogging or disconnection. Refer to <u>EC-72</u> . "System Diagram Is the inspection result normal?	<u>1"</u> .
YES-1 >> With CONSULT-III: GO TO 12. YES-2 >> Without CONSULT-III: GO TO 13. NO >> Repair or reconnect the hose.	K
12. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE	L
 With CONSULT-III Start engine. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III. Check ies according to the valve opening. Does engine speed vary according to the valve opening? YES >> GO TO 14. NO >> GO TO 13. 	k that engine speed var-
13. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE	
Refer to EC-278, "Component Inspection".	0
Is the inspection result normal?	
YES >> GO TO 14. NO >> Replace EVAP canister purge volume control solenoid valve.	Р
14. CHECK FUEL TANK TEMPERATURE SENSOR	
Refer to EC-237, "Component Inspection".	
Is the inspection result normal? YES >> GO TO 15. NO >> Replace fuel level sensor unit.	

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

15. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-292, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace EVAP control system pressure sensor.

16. CHECK EVAP/ORVR LINE

Check EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, looseness and improper connection. For location, refer to <u>EC-428</u>, "<u>Description</u>".

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or replace hoses and tubes.

17. CHECK RECIRCULATION LINE

Check recirculation line between filler neck tube and fuel tank for clogging, kink, cracks, looseness and improper connection.

Is the inspection result normal?

YES >> GO TO 18.

NO >> Repair or replace hose, tube or filler neck tube.

18. CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-431, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 19.

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

19. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

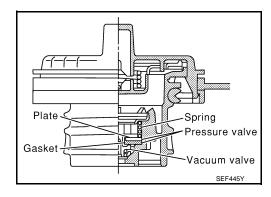
>> INSPECTION END

Component Inspection

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1. CHECK FUEL FILLER CAP

- 1. Turn ignition switch OFF.
- 2. Remove fuel filler cap.
- 3. Wipe clean valve housing.



4. Install fuel filler cap adapter (commercial service tool) to fuel filler cap.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Check valve opening pressure and vacuum.

Pressure: 15.3 - 20.0 kPa (0.156 - 0.204 kg/cm², 2.22 -

2.90 psi)

Vacuum: -6.0 to -3.3 kPa (-0.061 to -0.034 kg/cm²,

-0.87 to -0.48 psi)

Is the inspection result normal?

YES >> INSPECTION END

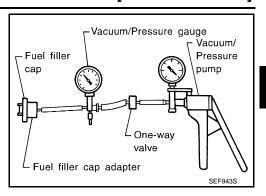
NO >> GO TO 2.

2.REPLACE FUEL FILLER CAP

Replace fuel filler cap. **CAUTION:**

Use only a genuine fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.

>> INSPECTION END



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DTC Logic

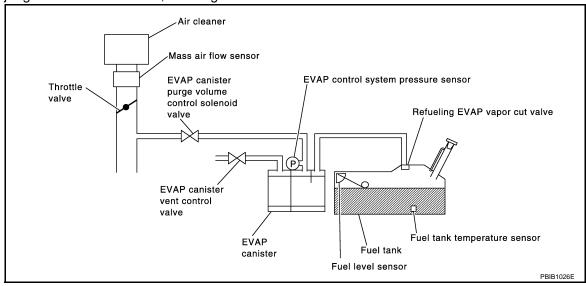
DTC DETECTION LOGIC

This diagnosis detects very small leaks in the EVAP line between fuel tank and EVAP canister purge volume control solenoid valve, using the intake manifold vacuum in the same way as conventional EVAP small leak diagnosis.

If ECM judges a leak which corresponds to a very small leak, the very small leak P0456 will be detected.

If ECM judges a leak equivalent to a small leak, EVAP small leak P0442 will be detected.

If ECM judges there are no leaks, the diagnosis will be OK.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0456	Evaporative emission control system very small leak (negative pressure check)	 EVAP system has a very small leak. EVAP system does not operate properly. 	 Incorrect fuel tank vacuum relief valve Incorrect fuel filler cap used Fuel filler cap remains open or fails to close. Foreign matter caught in fuel filler cap. Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve. Foreign matter caught in EVAP canister vent control valve. EVAP canister or fuel tank leaks EVAP purge line (pipe and rubber tube) leaks EVAP purge line rubber tube bent Loose or disconnected rubber tube EVAP canister vent control valve and the circuit EVAP canister purge volume control solenoid valve and the circuit Fuel tank temperature sensor O-ring of EVAP canister vent control valve is missing or damaged EVAP canister is saturated with water EVAP control system pressure sensor Refueling EVAP vapor cut valve ORVR system leaks Fuel level sensor and the circuit Foreign matter caught in EVAP canister purge volume control solenoid valve

CAUTION:

- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.
- If the fuel filler cap is not tightened properly, the MIL may come on.
- Use only a genuine NISSAN rubber tube as a replacement.

P0456 EVAP CONTROL SYSTEM [FOR CALIFORNIA] < COMPONENT DIAGNOSIS > DTC CONFIRMATION PROCEDURE Α 1.INSPECTION START Do you have CONSULT-III? Do you have CONSULT-III? EC YES >> GO TO 2. NO >> GO TO 4. 2.PRECONDITIONING If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test. D NOTE: If DTC P0456 is displayed with P0442, first perform trouble diagnosis for DTC P0456. After repair, make sure that the hoses and clips are installed properly. Make sure that EVAP hoses are connected to EVAP canister purge volume control solenoid valve properly. **TESTING CONDITION:** Open engine hood before conducting following procedure. • If any of following conditions are met just before the DTC CONFIRMATION PROCEDURE. leave the vehicle for more than 1 hour. - Fuel filler cap is removed. - Fuel is refilled or drained. - EVAP component parts is/are removed. Before performing the following procedure, confirm that battery voltage is more than 11V at idle. Н >> GO TO 3. 3.perform dtc confirmation procedure (P)With CONSULT-III 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III. 2. Make sure the following conditions are met. **FUEL LEVEL SE: 0.25 - 1.4V** COOLAN TEMP/S: 0 - 32°C (32 - 90°F) **FUEL T/TMP SE: 0 - 35°C (32 - 95°F)** INT A/TEMP SE: More than 0°C (32°F) If NG, turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle) or refilling/draining fuel until the output voltage condition of the "FUEL LEVEL SE" meets within the range above and leave the vehicle for more than 1 hour. Then start from step 1). L 3. Turn ignition switch OFF and wait at least 10 seconds. 4. Turn ignition switch ON. Select "EVAP V/S LEAK P0456/P1456" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-III. M Follow the instruction displayed. NOTE: If the engine speed cannot be maintained within the range displayed on CONSULT-III screen, go to Ν

EC-22, "BASIC INSPECTION: Special Repair Requirement".

Which is displayed on CONSULT-III?

OK >> INSPECTION END

NG >> Go to EC-312, "Diagnosis Procedure".

4. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check, Refer to EC-312, "Component Function Check",

NOTE:

Use Component Function Check to check the overall function of the EVAP very small leak function. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-312, "Diagnosis Procedure".

EC-311 Revision: 2008 January 2008 Rogue

Component Function Check

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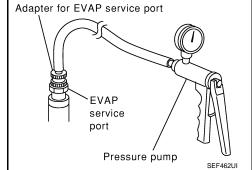
1. PERFORM COMPONENT FUNCTION CHECK

With GST

CAUTION:

- Do not use compressed air, doing so may damage the EVAP system.
- · Do not start engine.
- Do not exceeded 4.12 kPa (0.042 kg/cm², 0.6 psi).
- 1. Attach the EVAP service port adapter (commercial service tool) securely to the EVAP service port.
- 2. Set the pressure pump and a hose.
- 3. Also set a vacuum gauge via 3-way connector and a hose.
- Turn ignition switch ON.
- 5. Connect GST and select Service \$08.
- 6. Using Service \$08 control the EVAP canister vent control valve (close).
- 7. Apply pressure and make sure the following conditions are satisfied.

Pressure to be applied: 2.7 kPa (0.028 kg/cm², 0.39 psi) Time to be waited after the pressure drawn in to the EVAP system and the pressure to be dropped: 60 seconds and the pressure should not be dropped more than 0.4 kPa (0.004 kg/cm², 0.06 psi).



Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-312, "Diagnosis Procedure".

2. RELEASE PRESSURE

- 1. Disconnect GST.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Restart engine and let it idle for 90 seconds.
- 5. Keep engine speed at 2,000 rpm for 30 seconds.
- 6. Turn ignition switch OFF.

NOTE:

For more information, refer to GST Instruction Manual.

>> INSPECTION END

Diagnosis Procedure

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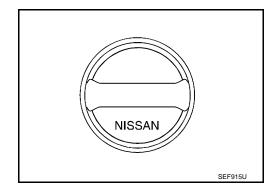
1. CHECK FUEL FILLER CAP DESIGN

- 1. Turn ignition switch OFF.
- 2. Check for genuine NISSAN fuel filler cap design.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace with genuine NISSAN fuel filler cap.



2. CHECK FUEL FILLER CAP INSTALLATION

Check that the cap is tightened properly by rotating the cap clockwise. Is the inspection result normal?

< COMPONENT DIAGNOSIS >

YES >> GO TO 3.

NO >> Open fuel filler cap, then clean cap and fuel filler neck threads using air blower. Then retighten until ratcheting sound is heard.

[FOR CALIFORNIA]

3.CHECK FUEL FILLER CAP FUNCTION

Check for air releasing sound while opening the fuel filler cap.

Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 4.

EC

4. CHECK FUEL TANK VACUUM RELIEF VALVE

Refer to EC-315, "Component Inspection".

Is the inspection result normal?

>> GO TO 5. YES

NO >> Replace fuel filler cap with a genuine one.

5. CHECK FOR EVAP LEAK

Refer to EC-72, "System Diagram".

Is there any leak in EVAP line?

YES >> Repair or replace.

NO >> GO TO 6.

6.CHECK EVAP CANISTER VENT CONTROL VALVE

Check the following.

EVAP canister vent control valve is installed properly.

Refer to EC-489, "Exploded View". EVAP canister vent control valve.

Refer to EC-284, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace EVAP canister vent control valve and O-ring.

7.CHECK IF EVAP CANISTER SATURATED WITH WATER

1. Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

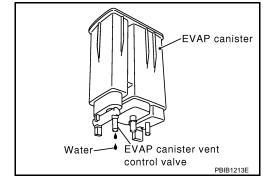
Check if water will drain from the EVAP canister.

Does water drain from EVAP canister?

YES >> GO TO 8.

NO-1 >> With CONSULT-III: GO TO 10.

NO-2 >> Without CONSULT-III: GO TO 11.



8. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 10.

YES-2 >> Without CONSULT-III: GO TO 11.

NO >> GO TO 9.

$\mathbf{9}.$ DETECT MALFUNCTIONING PART

Check the following.

EC-313

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection
 - >> Repair hose or replace EVAP canister.

10.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

(P)With CONSULT-III

- 1. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- Start engine.
- 3. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode.
- 4. Touch "Qu" on CONSULT-III screen to increase "PURG VOL CONT/V" opening to 100%.
- 5. Check vacuum hose for vacuum.

Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 13. NO >> GO TO 12.

11. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

⋈Without CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- Stop engine.
- Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 4. Start engine and let it idle for at least 80 seconds.
- 5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 14. NO >> GO TO 12.

12. CHECK VACUUM HOSE

Check vacuum hoses for clogging or disconnection. Refer to EC-72, "System Diagram".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or reconnect the hose.

13. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-276, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 14.

NO >> Replace EVAP canister purge volume control solenoid valve.

14.check fuel tank temperature sensor

Refer to EC-237, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace fuel level sensor unit.

15. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-292, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace EVAP control system pressure sensor.

16. CHECK EVAP PURGE LINE

Check EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks or improper connection.

< COMPONENT DIAGNOSIS > Refer to EC-72, "System Diagram".

[FOR CALIFORNIA]

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or reconnect the hose.

17. CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 18.

18. CHECK EVAP/ORVR LINE

Check EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, looseness and improper connection. For location, refer to EC-428, "Description".

Is the inspection result normal?

YES >> GO TO 19.

NO >> Repair or replace hoses and tubes.

19. CHECK RECIRCULATION LINE

Check recirculation line between filler neck tube and fuel tank for clogging, kink, cracks, looseness and improper connection.

Is the inspection result normal?

YES >> GO TO 20.

NO >> Repair or replace hose, tube or filler neck tube.

20.CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-431, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 21.

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

21. CHECK FUEL LEVEL SENSOR

Refer to FL-10, "2WD: Inspection" (2WD), FL-14, "AWD: Inspection" (AWD).

Is the inspection result normal?

YES >> GO TO 22.

NO >> Replace fuel level sensor unit.

22. CHECK INTERMITTENT INCIDENT

Refer to GI-41. "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK FUEL FILLER CAP

- Turn ignition switch OFF.
- Remove fuel filler cap.
- Wipe clean valve housing.

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SEF445Y

Plate

Gasket

Pressure valve

Vacuum valve

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

4. Install fuel filler cap adapter (commercial service tool) to fuel filler cap.

5. Check valve opening pressure and vacuum.

Pressure: 15.3 - 20.0 kPa (0.156 - 0.204 kg/cm², 2.22 -

2.90 psi)

Vacuum: -6.0 to -3.3 kPa (-0.061 to -0.034 kg/cm²,

-0.87 to -0.48 psi)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

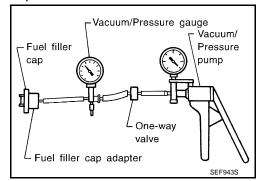
2. REPLACE FUEL FILLER CAP

Replace fuel filler cap.

CAUTION:

Use only a genuine fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.

>> INSPECTION END



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INFOID:0000000001715248

P0460 FUEL LEVEL SENSOR

Description INFOID:000000001715246

The fuel level sensor is mounted in the fuel level sensor unit.

The sensor detects a fuel level in the fuel tank and transmits a signal to the combination meter. The combination meter sends the fuel level sensor signal to the ECM through CAN communication line.

It consists of two parts, one is mechanical float and the other is variable resistor. Fuel level sensor output voltage changes depending on the movement of the fuel mechanical float.

DTC Logic

DTC DETECTION LOGIC

NOTE:

- If DTC P0460 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to <u>EC-128</u>, "<u>DTC Logic</u>".
- If DTC P0460 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-128</u>, "DTC Logic".

When the vehicle is parked, naturally the fuel level in the fuel tank is stable. It means that output signal of the fuel level sensor does not change. If ECM senses sloshing signal from the sensor, fuel level sensor malfunction is detected.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0460	Fuel level sensor circuit noise	Even though the vehicle is parked, a signal being varied is sent from the fuel level sensor to ECM.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (The sensor circuit is open or shorted) Combination meter Fuel level sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait maximum of 2 consecutive minutes.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-317, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK COMBINATION METER FUNCTION

Refer to MWI-43, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to MWI-43, "Diagnosis Procedure".

2. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Revision: 2008 January EC-317 2008 Rogue

P0461 FUEL LEVEL SENSOR

Description INFOID:000000001715249

The fuel level sensor is mounted in the fuel level sensor unit.

The sensor detects a fuel level in the fuel tank and transmits a signal to the combination meter. The combination meter sends the fuel level sensor signal to the ECM through CAN communication line.

It consists of two parts, one is mechanical float and the other is variable resistor. Fuel level sensor output voltage changes depending on the movement of the fuel mechanical float.

DTC Logic INFOID:000000001715250

DTC DETECTION LOGIC

NOTE:

- If DTC P0461 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to <u>EC-128</u>, "<u>DTC Logic"</u>.
- If DTC P0461 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-332</u>, "<u>DTC Logic"</u>.

Driving long distances naturally affect fuel gauge level.

This diagnosis detects the fuel gauge malfunction of the gauge not moving even after a long distance has been driven.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0461	Fuel level sensor circuit range/performance	The output signal of the fuel level sensor does not change within the specified range even though the vehicle has been driven a long distance.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (The sensor circuit is open or shorted) Combination meter Fuel level sensor

DTC CONFIRMATION PROCEDURE

1. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-318, "Component Function Check".

Use Component Function Check to check the overall function of the fuel level sensor function. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-319, "Diagnosis Procedure".

Component Function Check

INFOID:0000000001715251

1.PRECONDITIONING

WARNING:

When performing following procedure, be sure to observe the handling of the fuel. Refer to <u>FL-7, "2WD</u>: <u>Removal and Installation"</u> (2WD), <u>FL-11, "AWD: Removal and Installation"</u> (AWD).

TESTING CONDITION:

Before starting component function check, preparation of draining fuel and refilling fuel is required.

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

2. PERFORM COMPONENT FUNCTION CHECK

(P)With CONSULT-III

NOTE:

Start from step 10, if it is possible to confirm that the fuel cannot be drained by 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal) in advance.

P0461 FUEL LEVEL SENSOR

P0461 FUEL LEVEL SENSOR	
< COMPONENT DIAGNOSIS >	[FOR CALIFORNIA]
 Prepare a fuel container and a spare hose. Release fuel pressure from fuel line, refer to <u>EC-486, "Inspection"</u>. Remove the fuel feed hose on the fuel level sensor unit. Connect a spare fuel hose where the fuel feed hose was removed. 	А
 Turn ignition switch OFF and wait at least 10 seconds then turn ON. Select "FUEL LEVEL SE" in "DATA MONITOR" mode with CONSULT-III. Check "FUEL LEVEL SE" output voltage and note it. Select "FUEL PUMP RELAY" in "ACTIVE TEST" mode with CONSULT-III. 	EC
 9. Touch "ON" and drain fuel approximately 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal) a 10. Check "FUEL LEVEL SE" output voltage and note it. 11. Fill fuel into the fuel tank for 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal). 12. Check "FUEL LEVEL SE" output voltage and note it. 	D
13. Confirm whether the voltage changes more than 0.03V during step 7 to 10 at Is the inspection result normal?	nd 10 to 12.
YES >> INSPECTION END	E
NO >> Go to EC-319, "Diagnosis Procedure".	_
3.PERFORM COMPONENT FUNCTION CHECK	
	F
Start from step 8, if it is possible to confirm that the fuel cannot be drained Imp gal) in advance. 1. Prepare a fuel container and a spare hose. 2. Release fuel pressure from fuel line. Refer to EC-486, "Inspection". 3. Remove the fuel feed hose on the fuel level sensor unit. 4. Connect a spare fuel hose where the fuel feed hose was removed. 5. Turn ignition switch ON. 6. Drain fuel by 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal) from the fuel tank using prop. 7. Confirm that the fuel gauge indication varies. 8. Fill fuel into the fuel tank for 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal). 9. Confirm that the fuel gauge indication varies. Is the inspection result normal? YES >> INSPECTION END NO >> Go to EC-319, "Diagnosis Procedure".	G H
Diagnosis Procedure	INFOID:00000001715252
1. CHECK COMBINATION METER FUNCTION	1
Refer to MWI-43, "Component Function Check".	
Is the inspection result normal? YES >> GO TO 2.	D.4.
NO >> Go to MWI-43, "Diagnosis Procedure".	M
2.CHECK INTERMITTENT INCIDENT	
Refer to GI-41, "Intermittent Incident".	N
>> INSPECTION END	0
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Revision: 2008 January EC-319 2008 Rogue

P0462, P0463 FUEL LEVEL SENSOR

Description INFOID:000000001715253

The fuel level sensor is mounted in the fuel level sensor unit.

The sensor detects a fuel level in the fuel tank and transmits a signal to the combination meter. The combination meter sends the fuel level sensor signal to the ECM through CAN communication line.

It consists of two parts, one is mechanical float and the other is variable resistor. Fuel level sensor output voltage changes depending on the movement of the fuel mechanical float.

DTC Logic

DTC DETECTION LOGIC

NOTE:

- If DTC P0462 or P0463 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to <u>EC-128, "DTC Logic"</u>.
- If DTC P0462 or P0463 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-332</u>, "<u>DTC Logic"</u>.

This diagnosis indicates the former, to detect open or short circuit malfunction.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0462	Fuel level sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The CAN communication line is open or
P0463	Fuel level sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	shorted) Harness or connectors (The sensor circuit is open or shorted) Combination meter Fuel level sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is between 11V and 16V at ignition switch ON.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-320, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715255

1. CHECK COMBINATION METER FUNCTION

Refer to MWI-43, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to MWI-43, "Diagnosis Procedure".

2.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

P0462, P0463 FUEL LEVEL SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

>> INSPECTION END

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P0500 VSS

Description INFOID:000000001715256

The vehicle speed signal is sent to the combination meter from the "ABS actuator and electric unit (control unit)" by CAN communication line. The combination meter then sends a signal to the ECM by CAN communication line.

DTC Logic

DTC DETECTION LOGIC

NOTE:

- If DTC P0500 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-128, "DTC Logic".
- If DTC P0500 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-332</u>, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0500	Vehicle speed sensor	The almost 0 km/h (0 MPH) signal from vehicle speed sensor is sent to ECM even when vehicle is being driven.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (The vehicle speed signal circuit is open or shorted) Vehicle speed sensor Combination meter ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 5.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 3.

3. CHECK VEHICLE SPEED SENSOR FUNCTION

NOTE

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

(P)With CONSULT-III

- 1. Start engine.
- Read "VHCL SPEED SE" in "DATA MONITOR" mode with CONSULT-III. The vehicle speed on CON-SULT-III should exceed 10 km/h (6 mph) when rotating wheels with suitable gear position.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Go to EC-323, "Diagnosis Procedure".

4. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Select "DATA MONITOR" mode with CONSULT-III.
- 2. Warm engine up to normal operating temperature.
- Maintain the following conditions for at least 50 consecutive seconds. CAUTION:

Always onlye vehicle at	a aafa anaad	
ranayo arroo tomelo at	a safe speed.	
ENG SPEED	1,350 - 6,000 rpm	
COOLAN TEMP/S	More than 70°C (158°F)	
B/FUEL SCHDL	5.5 - 31.8 msec	
Shift lever	Except P or N position	_
PW/ST SIGNAL	OFF	
1. Check 1st trip DTC.		
s 1st trip DTC detected?		
YES >> Go to <u>EC-323, "D</u> NO >> INSPECTION EN	D	
D.PERFORM COMPONENT	FUNCTION CHECK	
	Check. Refer to EC-323, "Component Function of the vehicle to confirmed."	
s the inspection result norma		
YES >> INSPECTION EN		
NO >> Go to <u>EC-323, "D</u>	iagnosis Procedure".	
Component Function C	heck	INFOID:000000001715258
1.PERFORM COMPONENT		
With GST		
I. Lift up drive wheels.		
 Start engine. Read vehicle speed sens 	or signal in Service \$01 with GST.	
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	r on GST should be able to exceed 10 km/h	(6 MPH) when rotating wheels with
suitable gear position.		(6 MPH) when rotating wheels with
suitable gear position. s the inspection result norma	<u>1?</u>	(6 MPH) when rotating wheels with
suitable gear position. s the inspection result norma YES >> INSPECTION EN	<u>l?</u> ID	(6 MPH) when rotating wheels with
suitable gear position. s the inspection result norma YES >> INSPECTION EN NO >> Go to EC-323. "D	<u>l?</u> ID	
suitable gear position. s the inspection result norma YES >> INSPECTION EN NO >> Go to EC-323, "D Diagnosis Procedure	<u>I?</u> ID iagnosis Procedure".	INFOID:000000001715259
suitable gear position. s the inspection result norma YES >> INSPECTION EN NO >> Go to EC-323, "D Diagnosis Procedure	<u>l?</u> ID	INFOID:000000001715259
suitable gear position. s the inspection result norma YES >> INSPECTION EN NO >> Go to EC-323, "D Diagnosis Procedure 1. CHECK DTC WITH "ABS A	<u>I?</u> ID iagnosis Procedure".	INFOID:000000001715259 OL UNIT)"
suitable gear position. s the inspection result norma YES >> INSPECTION EN NO >> Go to EC-323. "D Diagnosis Procedure 1. CHECK DTC WITH "ABS A Refer to BRC-15. "CONSULT- s the inspection result norma	I? ID iagnosis Procedure". ACTUATOR AND ELECTRIC UNIT (CONTR -III Function" (ABS models), BRC-94, "CONS	INFOID:000000001715259 OL UNIT)"
suitable gear position. s the inspection result norma YES >> INSPECTION EN NO >> Go to EC-323, "D Diagnosis Procedure CHECK DTC WITH "ABS A Refer to BRC-15, "CONSULTS the inspection result norma YES >> GO TO 2.	I? ID liagnosis Procedure". ACTUATOR AND ELECTRIC UNIT (CONTR -III Function" (ABS models), BRC-94, "CONS	INFOID:000000001715259 OL UNIT)"
suitable gear position. s the inspection result norma YES >> INSPECTION EN NO >> Go to EC-323. "D Diagnosis Procedure 1. CHECK DTC WITH "ABS A Refer to BRC-15. "CONSULT- s the inspection result norma YES >> GO TO 2. NO >> Repair or replace	I? ID iagnosis Procedure". ACTUATOR AND ELECTRIC UNIT (CONTR -III Function" (ABS models), BRC-94, "CONS I?	INFOID:000000001715259 OL UNIT)"
suitable gear position. s the inspection result norma YES >> INSPECTION EN NO >> Go to EC-323. "D Diagnosis Procedure 1. CHECK DTC WITH "ABS A Refer to BRC-15. "CONSULT- s the inspection result norma YES >> GO TO 2. NO >> Repair or replace 2. CHECK COMBINATION M	I <u>?</u> ID viagnosis Procedure". ACTUATOR AND ELECTRIC UNIT (CONTROLL) -III Function" (ABS models), BRC-94, "CONSTROLL) I? IETER	INFOID:000000001715259 OL UNIT)"
suitable gear position. s the inspection result norma YES >> INSPECTION EN NO >> Go to EC-323. "D Diagnosis Procedure 1. CHECK DTC WITH "ABS A Refer to BRC-15. "CONSULT- s the inspection result norma YES >> GO TO 2. NO >> Repair or replace	I <u>?</u> ID viagnosis Procedure". ACTUATOR AND ELECTRIC UNIT (CONTROLL) -III Function" (ABS models), BRC-94, "CONSTROLL) I? IETER	INFOID:000000001715259 OL UNIT)"
suitable gear position. s the inspection result norma YES >> INSPECTION EN NO >> Go to EC-323, "D Diagnosis Procedure 1. CHECK DTC WITH "ABS A Refer to BRC-15, "CONSULT- s the inspection result norma YES >> GO TO 2. NO >> Repair or replace 2. CHECK COMBINATION M Refer to MWI-33, "CONSULT-	I? ID	INFOID:000000001715259 OL UNIT)"
suitable gear position. s the inspection result norma YES >> INSPECTION EN NO >> Go to EC-323. "D Diagnosis Procedure 1. CHECK DTC WITH "ABS A Refer to BRC-15. "CONSULT- s the inspection result norma YES >> GO TO 2. NO >> Repair or replace 2. CHECK COMBINATION M	I? ID	INFOID:000000001715259 OL UNIT)"
suitable gear position. s the inspection result norma YES >> INSPECTION EN NO >> Go to EC-323, "D Diagnosis Procedure 1. CHECK DTC WITH "ABS A Refer to BRC-15, "CONSULT- s the inspection result norma YES >> GO TO 2. NO >> Repair or replace 2. CHECK COMBINATION M Refer to MWI-33, "CONSULT-	I? ID	INFOID:000000001715259 OL UNIT)"

P0506 ISC SYSTEM

Description INFOID.000000001715260

The ECM controls the engine idle speed to a specified level through the fine adjustment of the air, which is let into the intake manifold, by operating the electric throttle control actuator. The operating of the throttle valve is varied to allow for optimum control of the engine idling speed. The crankshaft position sensor (POS) detects the actual engine speed and sends a signal to the ECM.

The ECM controls the electric throttle control actuator so that the engine speed coincides with the target value memorized in the ECM. The target engine speed is the lowest speed at which the engine can operate steadily. The optimum value stored in the ECM is determined by taking into consideration various engine conditions, such as during warming up, deceleration, and engine load (air conditioner, power steering and cooling fan operation, etc.).

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0506 is displayed with other DTC, first perform the trouble diagnosis for the other DTC.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0506	Idle speed control system RPM lower than expected	The idle speed is less than the target idle speed by 100 rpm or more.	Electric throttle control actuator Intake air leak

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

If the target idle speed is out of the specified value, perform <u>EC-27</u>, "IDLE AIR VOLUME LEARNING: <u>Special Repair Requirement"</u>, before conducting DTC CONFIRMATION PROCEDURE.

TESTING CONDITION:

- Before performing the following procedure, confirm that battery voltage is more than 11V at idle.
- Always perform the test at a temperature above –10°C (14°F).

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and run it for at least 1 minute at idle speed.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-324, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715262

1. CHECK INTAKE AIR LEAK

- 1. Start engine and let it idle.
- Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> Discover air leak location and repair.

NO >> GO TO 2.

2.REPLACE ECM

- 1. Stop engine.
- Replace ECM.

P0506 ISC SYSTEM

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

3. Go to EC-25, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> INSPECTION END

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P0507 ISC SYSTEM

Description INFOID:000000001715263

The ECM controls the engine idle speed to a specified level through the fine adjustment of the air, which is let into the intake manifold, by operating the electric throttle control actuator. The operating of the throttle valve is varied to allow for optimum control of the engine idling speed. The crankshaft position sensor (POS) detects the actual engine speed and sends a signal to the ECM.

The ECM controls the electric throttle control actuator so that the engine speed coincides with the target value memorized in the ECM. The target engine speed is the lowest speed at which the engine can operate steadily. The optimum value stored in the ECM is determined by taking into consideration various engine conditions, such as during warming up, deceleration, and engine load (air conditioner, power steering and cooling fan operation, etc.).

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0507 is displayed with other DTC, first perform the trouble diagnosis for the other DTC.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0507	Idle speed control system RPM higher than expected	The idle speed is more than the target idle speed by 200 rpm or more.	Electric throttle control actuatorIntake air leakPCV system

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

If the target idle speed is out of the specified value, perform <u>EC-27</u>, "IDLE AIR VOLUME LEARNING: <u>Special Repair Requirement"</u>, before conducting DTC CONFIRMATION PROCEDURE.

TESTING CONDITION:

- Before performing the following procedure, confirm that battery voltage is more than 11V at idle.
- Always perform the test at a temperature above –10°C (14°F).

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and run it for at least 1 minute at idle speed.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-326, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715265

1. CHECK PCV HOSE CONNECTION

Confirm that PCV hose is connected correctly.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace.

2. CHECK INTAKE AIR LEAK

- 1. Start engine and let it idle.
- Listen for an intake air leak after the mass air flow sensor.

P0507 ISC SYSTEM

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

I٩	intake	air	leak	detected?
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YES >> Discover air leak location and repair.

NO >> GO TO 3.

3.REPLACE ECM

- 1. Stop engine.
- 2. Replace ECM.
- 3. Go to EC-25, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement".

>> INSPECTION END

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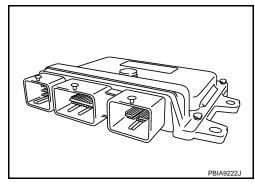
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P0603 ECM POWER SUPPLY

Description INFOID:000000001715270

Battery voltage is supplied to the ECM even when the ignition switch is turned OFF for the ECM memory function of the DTC memory, the air-fuel ratio feedback compensation value memory, the idle air volume learning value memory, etc.



DTC Logic INFOID:000000001715271

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0603	ECM power supply circuit	ECM back-up RAM system does not function properly.	Harness or connectors [ECM power supply (back-up) circuit is open or shorted.] ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure

- 1. Turn ignition switch ON and wait at least 1 second.
- Start engine and let it idle for 1 second.
- 3. Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- 4. Repeat steps 2 and 3 for four times.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-328, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715272

1. CHECK ECM POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the voltage between ECM harness connector and ground.

EC	М	Ground	Voltage	
Connector Terminal		Oround	Voltage	
F8	77	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

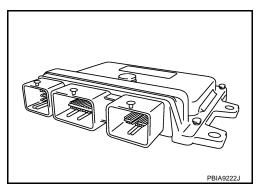
P0603 ECM POWER SUPPLY

[FOR CALIFORNIA] < COMPONENT DIAGNOSIS > $\overline{2}$.DETECT MALFUNCTIONING PART Α Check the following. Harness connectors E8, F122 20A fuse (No. 62) EC IPDM E/R harness connector E15 Harness for open or short between ECM and battery >> Repair or replace harness or connectors. 3. CHECK INTERMITTENT INCIDENT Refer to GI-41, "Intermittent Incident". D Is the inspection result normal? YES >> GO TO 4. Е NO >> Repair or replace harness or connectors. 4. PERFORM DTC CONFIRMATION PROCEDURE Erase DTC. 2. Perform DTC CONFIRMATION PROCEDURE. See EC-328, "DTC Logic". Is the 1st trip DTC P0603 displayed again? YES >> GO TO 5. NO >> INSPECTION END 5. REPLACE ECM Replace ECM. 2. Go to EC-25, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement". >> INSPECTION END Ν

P0605 ECM

Description INFOID:000000001715273

The ECM consists of a microcomputer and connectors for signal input and output and for power supply. The ECM controls the engine.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
P0605 Engine control module		A)	ECM calculation function is malfunctioning.	
	B)	ECM EEP-ROM system is malfunctioning.	• ECM	
		C)	ECM self shut-off function is malfunctioning.	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

- 1. Turn ignition switch ON.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-331, "Diagnosis Procedure".

NO >> GO TO 3.

${f 3.}$ PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B

- 1. wait at least 1 second.
- 2. Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-331, "Diagnosis Procedure".

NO >> GO TO 4.

f 4.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION C

- 1. wait at least 1 second.
- 2. Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- Repeat step 2 for 32 times.
- 4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-331, "Diagnosis Procedure".

NO >> INSPECTION END

P0605 ECM

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

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Diagnosis Procedure INFOID:0000000001715275

1.INSPECTION START

Erase DTC. 2. Perform DTC CONFIRMATION PROCEDURE. See EC-330, "DTC Logic".

Is the 1st trip DTC P0605 displayed again?

YES >> GO TO 2.

NO >> INSPECTION END

2.REPLACE ECM

Replace ECM.

2. Go to EC-25, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> INSPECTION END

EC-331 Revision: 2008 January 2008 Rogue

P0607 ECM

Description INFOID:000000001715072

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic INFOID.000000001715073

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0607	CAN communication bus	When detecting error during the initial diagnosis of CAN controller of ECM.	• ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure

- 1. Turn ignition switch ON.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-332, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715074

1. INSPECTION START

- 1. Erase DTC.
- Perform DTC CONFIRMATION PROCEDURE. See EC-332, "DTC Logic".

Is the DTC P0607 displayed again?

YES >> GO TO 2.

NO >> INSPECTION END

2.REPLACE ECM

- 1. Replace ECM.
- 2. Go to EC-25, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> INSPECTION END

P0643 SENSOR POWER SUPPLY

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P0643 SENSOR POWER SUPPLY

DTC Logic

DTC DETECTION LOGIC

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DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0643	Sensor power supply circuit short	ECM detects a voltage of power source for sensor is excessively low or high.	Harness or connectors (APP sensor 1 circuit is shorted.) (TP sensor circuit is shorted.) [Camshaft position sensor (PHASE) circuit is shorted.] Accelerator pedal position sensor Throttle position sensor Camshaft position sensor (PHASE)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-333, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715277

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK ACCELERATOR PEDAL POSITION SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

APP s	sensor	Ground	Voltage	
Connector Terminal		Oround	voltage	
E110	4	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 3.

3.CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

Revision: 2008 January EC-333 2008 Rogue

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P0643 SENSOR POWER SUPPLY

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

ECM		Sensor		
Connector	Terminal	Name	Connector	Terminal
F8	47	Electric throttle control actuator	F29	1
10	59	CMP sensor (PHASE)	F26	1
E16	83	APP sensor	E110	4

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair short to ground or short to power in harness or connectors.

4. CHECK COMPONENT

Check the following.

• Camshaft position sensor (PHASE) (Refer to EC-258, "Component Inspection".)

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace malfunctioning component.

5. CHECK TP SENSOR

Refer to EC-165, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9. NO >> GO TO 6.

6. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- Go to EC-27, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> INSPECTION END

7. CHECK APP SENSOR

Refer to EC-395, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9. NO >> GO TO 8.

8.replace accelerator pedal assembly

- Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- 2. Go to EC-395, "Special Repair Requirement".

>> INSPECTION END

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0850 PNP SWITCH

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P0850 PNP SWITCH

Description INFOID:000000001715278

When the shift lever position is P or N, park/neutral position (PNP) switch is ON. ECM detects the position because the continuity of the line (the ON signal) exists.

INFOID:0000000001715279

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DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0850	Park/neutral position switch	The signal of the park/neutral position (PNP) switch is not changed in the process of engine starting and driving.	Harness or connectors [The park/neutral position (PNP) switch circuit is open or shorted.] Park/neutral position (PNP) switch

DTC CONFIRMATION PROCEDURE

1. INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 5.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 3.

3. CHECK PNP SWITCH FUNCTION

(P)With CONSULT-III

1. Turn ignition switch ON.

2. Select "P/N POSI SW" in "DATA MONITOR" mode with CONSULT-III. Then check the "P/N POSI SW" signal under the following conditions.

Position (Shift lever)	Known-good signal
N or P position	ON
Except above position	OFF

Is the inspection result normal?

YES >> GO TO 4.

NO >> Go to EC-336, "Diagnosis Procedure".

4. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Maintain the following conditions for at least 50 consecutive seconds.

CAUTION:

Always drive vehicle at a safe speed.

ENG SPEED	1,300 - 6,375 rpm
COOLAN TEMP/S	More than 70°C (158°F)
B/FUEL SCHDL	3.0 - 31.8 msec

P0850 PNP SWITCH

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

VHCL SPEED SE	More than 64 km/h (40 mph)
Shift lever	Suitable position

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-336, "Diagnosis Procedure".

NO >> INSPECTION END

5. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-336, "Component Function Check".

NOTE:

Use Component Function Check to check the overall function of the park/neutral position (PNP) switch circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-336, "Diagnosis Procedure".

Component Function Check

INFOID:0000000001715280

1. PERFORM COMPONENT FUNCTION CHECK

- 1. Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector and ground.

	ECM	Ground	Condition Voltage		Voltage
Connector	Terminal				voltage
E16	102	Ground	Shift lever	P or N	BATTERY VOLTAGE
	(PNP switch signal)	Giodila	Sillit level	Except above	Approx. 0V

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-336, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001715281

1. CHECK PNP SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect Park/neutral position (PNP) switch harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between PNP switch harness connector and ground.

PNP switch		Ground	Voltage
Connector	Terminal	Ground	voltage
F21	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

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2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E15
- 10A fuse (No. 58)
- Harness for open or short between PNP switch and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

P0850 PNP SWITCH

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

$\overline{\mathbf{3.}}$ CHECK PNP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT-I

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between PNP switch harness connector and ECM harness connector.

PNP	PNP switch		ECM	
Connector	Terminal	Connector	Terminal	Continuity
F21	2	E16	102	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- · Harness for open or short between PNP switch and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK PNP SWITCH

Refer to TM-53, "Component Inspection (Park/Neutral Position Switch)".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace PNP switch.

6.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

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P1148 CLOSED LOOP CONTROL

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P1148 CLOSED LOOP CONTROL

DTC Logic

DTC DETECTION LOGIC

NOTE:

DTC P1148 is displayed with another DTC for A/F sensor 1. Perform the trouble diagnosis for the corresponding DTC.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
Closed loop control	The closed loop control function for bank 1 does not operate even when vehicle is driving in the specified condition.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.)	
F 1140	P1148 function	The closed loop control function for bank 2 does not operate even when vehicle is driving in the specified condition.	A/F sensor 1 A/F sensor 1 heater

P1212 TCS COMMUNICATION LINE

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P1212 TCS COMMUNICATION LINE

Description INFOID:0000000001831339

This CAN communication line is used to control the smooth engine operation during the TCS operation. Pulse signals are exchanged between ECM and "ABS actuator and electric unit (control unit)".

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DTC Logic

INFOID:0000000001831340

DTC DETECTION LOGIC

NOTE:

- If DTC P1212 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-128, "DTC Logic".
- If DTC P1212 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-332</u>, "<u>DTC Logic"</u>.
- Be sure to erase the malfunction information such as DTC not only for "ABS actuator and electric unit (control unit)" but also for ECM after TCS related repair.

Freeze frame data is not stored in the ECM for this self-diagnosis.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1212	TCS communication line	ECM can not receive the information from "ABS actuator and electric unit (control unit)" continuously.	Harness or connectors (The CAN communication line is open or shorted.) ABS actuator and electric unit (control unit) Dead (Weak) battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for at least 10 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-339, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

Go to BRC-72, "Work Flow".

INFOID:0000000001831341

Revision: 2008 January EC-339 2008 Rogue

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P1217 ENGINE OVER TEMPERATURE

DTC Logic INFOID.000000001715283

DTC DETECTION LOGIC

NOTE:

- If DTC P1217 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-128, "DTC Logic".
- If DTC P1217 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-332, "DTC Logic".

If the cooling fan or another component in the cooling system malfunctions, engine coolant temperature will rise.

When the engine coolant temperature reaches an abnormally high temperature condition, a malfunction is indicated.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1217	Engine over tempera- ture (Overheat)	 Cooling fan does not operate properly (Overheat). Cooling fan system does not operate properly (Overheat). Engine coolant was not added to the system using the proper filling method. Engine coolant is not within the specified range. 	Harness or connectors (The cooling fan circuit is open or shorted.) IPDM E/R (Cooling fan relay-1) Cooling fan relays-2 and -3 Cooling fan motor Radiator hose Radiator Radiator cap Reservoir tank Water pump Thermostat Water control valve

CAUTION:

When a malfunction is indicated, be sure to replace the coolant. Refer to <u>CO-9, "Draining"</u> and <u>CO-10, "Refilling"</u>. Also, replace the engine oil. Refer to <u>LU-6, "Draining"</u> and <u>LU-7, "Refilling"</u>.

- 1. Fill radiator with coolant up to specified level with a filling speed of 2 liters per minute. Be sure to use coolant with the proper mixture ratio. Refer to MA-18, "FOR NORTH AMERICA: Anti-Freeze Coolant Mixture Ratio".
- 2. After refilling coolant, run engine to ensure that no water-flow noise is emitted.

DTC CONFIRMATION PROCEDURE

1. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check, Refer to EC-340, "Component Function Check".

NOTE:

Use Component Function Check to check the overall function of the cooling fan. During this check, a DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-341, "Diagnosis Procedure".

Component Function Check

INFOID:0000000001715284

1.PERFORM COMPONENT FUNCTION CHECK-I

WARNING:

Never remove the radiator cap when the engine is hot. Serious burns could be caused by high pressure fluid escaping from the radiator.

Wrap a thick cloth around cap. Carefully remove the cap by turning it a quarter turn to allow built-up pressure to escape. Then turn the cap all the way off.

P1217 ENGINE OVER TEMPERATURE

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

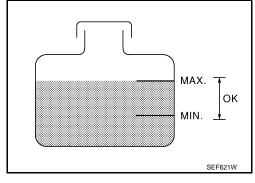
Check the coolant level in the reservoir tank and radiator.

Allow engine to cool before checking coolant level.

Is the coolant level in the reservoir tank and/or radiator below the proper range?

YES >> Go to EC-341, "Diagnosis Procedure".

NO >> GO TO 2.



2.PERFORM COMPONENT FUNCTION CHECK-II

Confirm whether customer filled the coolant or not.

Did customer fill the coolant?

YES >> Go to EC-341, "Diagnosis Procedure".

NO >> GO TO 3.

3. PERFORM COMPONENT FUNCTION CHECK-III

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Perform "COOLING FAN" in "ACTIVE TEST" mode with CONSULT-III.
- Make sure that cooling fan motors-1 and -2 operate at each speed (LOW/HI).

Without CONSULT-III

Perform IPDM E/R auto active test and check cooling fan motors operation, refer to PCS-8, "Diagnosis Description".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-341, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK COOLING FAN OPERATION

(II) With CONSULT-III

- 1. Turn ignition switch ON.
- Perform "COOLING FAN" in "ACTIVE TEST" mode with CONSULT-III.
- Make sure that cooling fan motors-1 and -2 operate at each speed (LOW/HI).

W Without CONSULT-III

- 1. Perform IPDM E/R auto active test and check cooling fan motors operation, refer to PCS-8, "Diagnosis Description".
- 2. Make sure that cooling fan motors-1 and -2 operate at each speed (Low/High).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-408, "Diagnosis Procedure".

2.CHECK COOLING SYSTEM FOR LEAK-I

Check cooling system for leak. Refer to CO-9, "Inspection".

Is leakage detected?

YES >> GO TO 3.

NO >> GO TO 4.

3.CHECK COOLING SYSTEM FOR LEAK-II

Check the following for leak.

- Hose
- Radiator
- Water pump

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P1217 ENGINE OVER TEMPERATURE

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

>> Repair or replace malfunctioning part.

4. CHECK RADIATOR CAP

Check radiator cap. Refer to CO-13, "RADIATOR CAP: Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace radiator cap.

CHECK THERMOSTAT

Check thermostat. Refer to CO-26, "Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace thermostat.

6. CHECK WATER CONTROL VALVE

Check water control valve. Refer to CO-26, "Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace water control valve

7. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-161, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace engine coolant temperature sensor.

8. CHECK MAIN 13 CAUSES

If the cause cannot be isolated, check the following.

Engine	Step	Inspection item	Equipment	Standard	Reference page
OFF	1	Blocked radiator Blocked condenser Blocked radiator grille Blocked bumper	Visual	No blocking	_
	2	Coolant mixture	Coolant tester	50 - 50% coolant mixture	MA-18, "FOR NORTH AMERICA: Anti-Freeze Coolant Mixture Ratio"
	3	Coolant level	Visual	Coolant up to MAX level in reservoir tank and radiator filler neck	CO-9, "Inspection"
	4	Radiator cap	Pressure tester	59 - 98 kPa (0.6 - 1.0 kg/cm ² , 9 - 14 psi) (Limit)	CO-13, "RADIATOR CAP : Inspection"
ON* ²	5	Coolant leaks	Visual	No leaks	CO-9, "Inspection"
ON* ²	6	Thermostat	Touch the upper and lower radiator hoses	Both hoses should be hot	CO-26, "Inspection"
ON* ¹	7	Cooling fan motor	CONSULT-III	Operating	EC-407, "Component Function Check"
OFF	8	Combustion gas leak	Color checker chemical tester 4 Gas analyzer	Negative	_
ON* ³	9	Coolant temperature gauge	Visual	Gauge less than 3/4 when driving	_
		Coolant overflow to reservoir tank	Visual	No overflow during driving and idling	CO-9, "Inspection"
OFF* ⁴	10	Coolant return from reservoir tank to radiator	Visual	Should be initial level in reservoir tank	CO-9, "Inspection"

P1217 ENGINE OVER TEMPERATURE

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Engine	Step	Inspection item	Equipment	Standard	Reference page
OFF	11	Water control valve	Remove and inspect the valve	Within the specified value	CO-26, "Inspection"
OFF	12	Cylinder head	Straight gauge feeler gauge	0.1 mm (0.004 in) Maximum distortion (warping)	EM-83, "Inspection"
	13	Cylinder block and pistons	Visual	No scuffing on cylinder walls or piston	EM-94, "Inspection"

^{*1:} Turn the ignition switch ON.

For more information, refer to CO-4, "Troubleshooting Chart".

>> INSPECTION END

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^{*2:} Engine running at 3,000 rpm for 10 minutes.

^{*3:} Drive at 90 km/h (56 MPH) for 30 minutes and then let idle for 10 minutes.

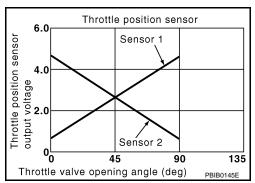
^{*4:} After 60 minutes of cool down time.

P1225 TP SENSOR

Description INFOID:000000001890237

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1225	Closed throttle position learning performance	Closed throttle position learning value is excessively low.	Electric throttle control actuator (TP sensor 1 and 2)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-344, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715288

1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- Turn ignition switch OFF.
- 2. Remove the intake air duct.

P1225 TP SENSOR

< COMPONENT DIAGNOSIS >

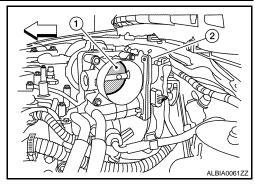
[FOR CALIFORNIA]

- 3. Check if foreign matter is caught between the throttle valve (1) and the housing.
 - 2. Electric throttle control actuator
 - <□ : Vehicle front

Is the inspection result normal?

YES >> GO TO 2.

NO >> Remove the foreign matter and clean the electric throttle control actuator inside.



2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- 2. Go to EC-345, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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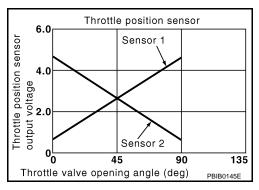
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P1226 TP SENSOR

Description INFOID:000000001890292

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1226	Closed throttle position learning performance	Closed throttle position learning is not performed successfully, repeatedly.	Electric throttle control actuator (TP sensor 1 and 2)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

>> GO TO 2.

2.perform dtc confirmation procedure

- 1. Turn ignition switch ON.
- 2. Turn ignition switch OFF, wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Repeat steps 2 and 3 for 32 times.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-346, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715292

1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- 1. Turn ignition switch OFF.
- 2. Remove the intake air duct.

P1226 TP SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

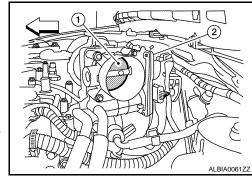
3. Check if foreign matter is caught between the throttle valve (1) and the housing.

2. Electric throttle control actuator

Is the inspection result normal?

YES >> GO TO 2.

NO >> Remove the foreign matter and clean the electric throttle control actuator inside.



2.replace electric throttle control actuator

- 1. Replace electric throttle control actuator.
- 2. Go to EC-347, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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P1421 COLD START CONTROL

Description INFOID:000000001715294

ECM controls ignition timing and engine idle speed when engine is started with prewarming up condition. This control promotes the activation of three way catalyst by heating the catalyst and reduces emissions.

DTC Logic (INFOID:000000001715295

DTC DETECTION LOGIC

NOTE:

If DTC P1421 is displayed with other DTC, first perform the trouble diagnosis for other DTC.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1421	Cold start emission reduction strategy monitoring	ECM does not control ignition timing and engine idle speed properly when engine is started with prewarming up condition.	Lack of intake air volume Fuel injection system ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Select "DATA MONITOR" mode with CONSULT-III.
- 4. Check that the "COOLAN TEMP/S" indication is between 4°C (39°F) and 36°C (97°F). If "COOLAN TEMP/S" indication is within the specified value, go to the following step. If "COOLANT TEMP/S" indication is out of the specified value, cool engine down or warm engine up and go to step 1.
- 5. Start engine and let it idle for 5 minutes.
- 6. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-348, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715296

${f 1}$.PERFORM IDLE AIR VOLUME LEARNING

Perform EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 2.

NO >> Follow the instruction of Idle Air Volume Learning.

2.CHECK INTAKE SYSTEM

Check for the cause of intake air volume lacking. Refer to the following.

- Crushed intake air passage
- Intake air passage clogging

P1421 COLD START CONTROL	
< COMPONENT DIAGNOSIS > [FOR CALIFORNIA]	-
Is the inspection result normal?	Λ
YES >> GO TO 3. NO >> Repair or replace malfunctioning part	Α
3. CHECK FUEL INJECTION SYSTEM FUNCTION	
Perform DTC CONFIRMATION PROCEDURE for DTC P0171. Refer to EC-227, "DTC Logic".	EC
Is the inspection result normal?	
YES >> GO TO 4. NO >> Go to EC-228. "Diagnosis Procedure" for DTC P0171.	С
NO >> Go to EC-228, "Diagnosis Procedure" for DTC P0171. 4. PERFORM DTC CONFIRMATION PROCEDURE	
	D
With CONSULT-III Turn ignition switch ON.	
Select "SELF DIAG RESULTS" mode with CONSULT-III. Touch "ERASE".	Е
4. Perform DTC CONFIRMATION PROCEDURE.	
See <u>EC-348, "DTC Logic"</u> .	
1. Turn ignition switch ON.	F
Select Service \$04 with GST. Perform DTC CONFIRMATION PROCEDURE.	
See EC-348, "DTC Logic".	G
Is the 1st trip DTC P1421 displayed again?	
YES >> GO TO 5. NO >> INSPECTION END	Н
5. REPLACE ECM	
1. Replace ECM.	1
 Go to <u>EC-25</u>, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement". 	
ment.	1
>> INSPECTION END	J
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P1564 ASCD STEERING SWITCH

Description INFOID:000000001715314

ASCD steering switch has variant values of electrical resistance for each button. ECM reads voltage variation of switch, and determines which button is operated.

Refer to EC-58, "System Description" for the ASCD function.

DTC Logic INFOID:000000001715315

DTC DETECTION LOGIC

NOTE:

If DTC P1564 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-330, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1564	ASCD steering switch	 An excessively high voltage signal from the ASCD steering switch is sent to ECM. ECM detects that input signal from the ASCD steering switch is out of the specified range. ECM detects that the ASCD steering switch is stuck ON. 	 Harness or connectors (The switch circuit is open or shorted.) ASCD steering switch ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure

- 1. Turn ignition switch ON.
- 2. Wait at least 10 seconds.
- 3. Press MAIN switch for at least 10 seconds, then release it and wait at least 10 seconds.
- 4. Press CANCEL switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press RESUME/ACCELERATE switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press SET/COAST switch for at least 10 seconds, then release it and wait at least 10 seconds.
- 7. Check DTC.

Is DTC detected?

YES >> Go to EC-350, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715316

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YS >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK ASCD STEERING SWITCH CIRCUIT

(P) With CONSULT-III

1. Turn ignition switch ON.

P1564 ASCD STEERING SWITCH

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

- 2. Select "MAIN SW", "CANCEL SW", "RESUME/ACC SW" and "SET SW" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check each item indication under the following conditions.

Monitor item	Condition		Indication
MAIN SW	MAIN switch	Pressed	ON
MAIN OW	WAIN SWIGH	Released	OFF
CANCEL SW	CANCEL switch	Pressed	ON
CANCLL SW	CANCLE SWILLIN	Released	OFF
RESUME/ACC SW	RESUME/ACCELERATE switch	Pressed	ON
KLGOWIL/ACC GW	RESONE/ACCELENATE SWILLI	Released	OFF
SET SW	SET/COAST switch	Pressed	ON
3L1 3W	SET/COAST SWIICH	Released	OFF

Without CONSULT-III

- 1. Turn ignition switch ON.
- 2. Check the voltage between ECM harness connectors.

ECM		ECM		Condition	Voltage
Connector	Terminal	Connector	Terminal		
`		(ASCD steering E16	92 (Switch ground)	MAIN switch: Pressed	Approx. 0V
				CANSEL switch: Pressed	Approx. 1V
				SET/COAST switch: Pressed	Approx. 2V
		switch signal)		RESUME/ACCELERATE switch: Pressed	Approx. 3V
				All ASCD steering switches: Released	Approx. 4V

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 3.

${f 3.}$ CHECK ASCD STEERING SWITCH GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Disconnect combination switch harness connector M352.
- 4. Check the continuity between combination switch and ECM harness connector.

Combina	tion switch	E	CM	Continuity
Connector	Connector Terminal		Terminal	Continuity
M352	18	E16	92	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M77, E105
- Combination switch (spiral cable)
- Harness for open and short between ECM and combination switch

>> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK ASCD STEERING SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

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2008 Rogue

P1564 ASCD STEERING SWITCH

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

1. Check the continuity between ECM harness connector and combination switch.

Combinat	ion switch	E	СМ	Continuity
Connector	Connector Terminal		Terminal	Continuity
M352	21	E10	85	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M77, E105
- · Combination switch (spiral cable)
- Harness for open and short between ECM and combination switch

>> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK ASCD STEERING SWITCH

Refer to EC-352, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace ASCD steering switch.

8.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001715317

1. CHECK ASCD STEERING SWITCH

- 1. Disconnect combination switch (spiral cable) harness connector M352.
- 2. Check the continuity between combination switch harness connector terminals under following conditions.

Combination meter		Condition	Resistance	
Connector	Terminals	Condition	resistance	
	18 and 21	MAIN switch: Pressed	Approx. 0 Ω	
		CANCEL switch: Pressed	Approx. 250 Ω	
M352		SET/COAST switch: Pressed	Approx. 660 Ω	
		RESUME/ACCELERATE switch: Pressed	Approx. 1,480 Ω	
		All ASCD steering switches: Released	Approx. 4,000 Ω	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD steering switch

P1572 ASCD BRAKE SWITCH

Description INFOID:0000000001715318

When the brake pedal is depressed, ASCD brake switch is turned OFF and stop lamp switch is turned ON. ECM detects the state of the brake pedal by this input of two kinds (ON/OFF signal).

Refer to EC-58, "System Description" for the ASCD function.

DTC Logic INFOID:0000000001715319

DTC DETECTION LOGIC

 If DTC P1572 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-330, "DTC Logic".

 This self-diagnosis has the one trip detection logic. When malfunction A is detected, DTC is not stored in ECM memory. And in that case, 1st trip DTC and 1st trip freeze frame data are displayed. 1st trip DTC is erased when ignition switch OFF. And even when malfunction A is detected in two consecutive trips, DTC is not stored in ECM memory.

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
P1572 ASCD brake swi		A)	When the vehicle speed is above 30 km/h (19 MPH), ON signals from the stop lamp switch and the ASCD brake switch are sent to the ECM at the same time.	Harness or connectors (The stop lamp switch circuit is shorted.) Harness or connectors (The ASCD brake switch circuit is shorted.)
	ASCD brake switch	B)	ASCD brake switch signal is not sent to ECM for extremely long time while the vehicle is driving.	 Stop lamp switch ASCD brake switch Incorrect stop lamp switch installation Incorrect ASCD brake switch installation ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

NOTE:

Procedure for malfunction B is not described here. It takes extremely long time to complete procedure for malfunction B. By performing procedure for malfunction A, the incident that causes malfunction B can be detected.

>> GO TO 2.

2.perform dtc confirmation procedure for malfunction a

- Start engine.
- Press MAIN switch and make sure that CRUISE indicator is displayed in combination meter.
- 3. Drive the vehicle for at least 5 consecutive seconds under the following conditions.

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

Vehicle speed	More than 30 km/h (19 mph)	
Shift lever	Suitable position	

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-354, "Diagnosis Procedure".

>> GO TO 3. NO

EC-353 Revision: 2008 January 2008 Rogue

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3.perform dtc confirmation procedure for malfunction b

1. Drive the vehicle for at least 5 consecutive seconds under the following conditions.

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

Vehicle speed	More than 30 km/h (19 mph)
Selector lever	Suitable position
Driving location	Depress the brake pedal for more than five seconds so as not to come off from the above-mentioned vehicle speed.

2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-354, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715320

1. CHECK OVERALL FUNCTION-I

(P) With CONSULT-III

- Turn ignition switch ON.
- 2. Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "BRAKE SW1" indication under the following conditions.

Monitor item Condition		Indication	
BRAKE SW1	Brake pedal	Slightly depressed	OFF
	втаке редаі	Fully released	ON

Without CONSULT-III

- Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector and ground.

ECM		Ground	Condition		Voltage	
Connector	Terminal	Giodila	Condition		voltage	
E16	110	Ground	Brake pedal	Slightly depressed	Approx. 0V	
LIU	(ASCD brake switch signal) Ground Brak		brake pedar	Fully released	Battery voltage	

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK OVERALL FUNCTION-II

(I) With CONSULT-III

Select "BRAKE SW2" and check indication in "DATA MONITOR" mode.

Monitor item	Condition		Indication
BRAKE SW2 Brake pe	Brake nedal	Slightly depressed	ON
	Бтаке рецаг	Fully released	OFF

₩ Without CONSULT-III

Check the voltage between ECM harness connector and ground.

P1572 ASCD BRAKE SWITCH

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

	ECM						А
Connector	Term	ninal	— Ground	С	ondition	Voltage	
E16	10)6	Cround	Brake pedal	Slightly depressed	Battery voltage	EC
	(Stop lamp sv	witch signal)	Ground	Бтаке рецаг	Fully released	Approx. 0V	
•	ection result					_	
	> GO TO 11. > GO TO 7.						С
		KE SWIT	TH POWER	SUPPLY CIF	CUIT		
	gnition switch		JIII OWEN				D
 Discor Turn ig 	nnect ASCD gnition switch	brake swit า ON.			ss connector and (ground.	Е
ACCD by	raka awitah			_			
Connector	rake switch Terminal	Ground	Voltage				F
E112	1	Ground	Battery voltage	 1 0			
Is the insp	ection result		, , ,	<u>, - </u>			G
YES >	> GO TO 5.						O
4	> GO TO 4.						
4.DETEC	T MALFUNC	CTIONING	PART				H
	block conne	ctor E105,	M77				
 10A fuse Harness 		short hetwo	een ASCD	brake switch a	and fuse		I
110111000	тог оролгог с						
_			_		to power in harnes		s.
5.CHECK	ASCD BRA	KE SWIT	CH INPUT S	SIGNAL CIRC	UIT FOR OPEN A	ND SHORT	
	gnition switch						I/
	nnect ECM has the continuit		nnector.				K
3. Check		IN DEIMEEI	n ASCD bra	ke switch har	ness connector an	d ECM harness	
3. Check		ty between	n ASCD bra	ke switch har	ness connector an	d ECM harness	
	orake switch		n ASCD bra		ness connector an	d ECM harness	
	orake switch Terminal		ECM	ke switch har	ness connector an	d ECM harness	s connector.
ASCD b	Terminal 2	Connector E16	Terminal	- Continuity Existed		d ECM harness	
ASCD to Connector E112 4. Also c	Terminal 2 heck harness	Connector E16	Terminal	Continuity		d ECM harness	s connector.
Connector E112 4. Also c Is the insp	Terminal 2 heck harness ection result	Connector E16	Terminal	- Continuity Existed		d ECM harness	s connector.
ASCD to Connector E112 4. Also Cols the insport YES >	Terminal 2 heck harness ection result > GO TO 6.	Connector E16 s for short normal?	Terminal 110 to ground a	Existed and short to po	ower.		s connector.
ASCD to Connector E112 4. Also cols the insport YES > NO >	Terminal 2 heck harness ection result > GO TO 6.	Connector E16 s for short normal?	Terminal 110 to ground a	Existed and short to po			s connector. L M N s.
ASCD to Connector E112 4. Also cols the insport YES > NO > CHECK	Terminal 2 heck harness ection result > GO TO 6. > Repair ope	Connector E16 s for short normal? en circuit o	Terminal 110 to ground a	Existed and short to poo	ower. to power in harnes		s connector.
ASCD to Connector E112 4. Also cools the insport YES > NO > CHECK Refer to E	Terminal 2 heck harness ection result > GO TO 6. > Repair ope	Connector E16 s for short normal? en circuit o KE SWITO	Terminal 110 to ground a	Existed and short to po	ower. to power in harnes		s connector. L M N s.
ASCD to Connector E112 4. Also cols the insponsor YES > NO > 6.CHECK Refer to Els the insponsor YES >	Terminal 2 heck harness ection result > GO TO 6. > Repair ope (ASCD BRA C-356, "Com ection result > GO TO 11.	Connector E16 s for short normal? en circuit o KE SWITC	Terminal 110 to ground a r short to gr CH spection (AS	Existed and short to poo	ower. to power in harnes		s connector. L M N s.
ASCD to Connector E112 4. Also cols the insponence of the inspon	Terminal 2 heck harness ection result > GO TO 6. > Repair ope (ASCD BRA C-356, "Com ection result > GO TO 11. > Replace AS	Connector E16 s for short normal? en circuit o KE SWITO ponent Ins normal?	Terminal 110 to ground a r short to gr CH spection (As	Existed and short to poo	ower. to power in harnes vitch)".		s connector. L M N s.

Turn ignition switch OFF.

2. Disconnect stop lamp switch harness connector.

3. Check the voltage between stop lamp switch harness connector and ground.

< COMPONENT DIAGNOSIS >

Stop la	ımp switch	Ground	Voltago	
Connector	Terminal	Giodila	Voltage	
E115	1	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 9. NO >> GO TO 8.

8.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E105, M77
- 10A fuse (No.11)
- Harness for open or short between stop lamp switch and battery

>> Repair open circuit or short to ground or short to power in harness or connectors.

9. CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect ECM harness connector.
- 2. Check the continuity between ECM harness connector and stop lamp switch harness connector.

E	CM	Stop la	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E16	106	E115	2	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

10. CHECK STOP LAMP SWITCH

Refer to EC-357, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace stop lamp switch.

11. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection (ASCD Brake Switch)

INFOID:0000000001715321

1. CHECK ASCD BRAKE SWITCH-I

- 1. Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- 3. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Existed
T dild 2	Бтаке речаг	Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK ASCD BRAKE SWITCH-II

P1572 ASCD BRAKE SWITCH

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

- Adjust ASCD brake switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	C	Continuity	
1 and 2	Brake pedal	Fully released	Existed
1 4114 2	Бтаке ресса	Slightly depressed	Not existed

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Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD brake switch.

Component Inspection (Stop Lamp Switch)

INFOID:0000000001715323

1. CHECK STOP LAMP SWITCH-I

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- Check the continuity between stop lamp switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake nedal	Fully released	Not existed
	Brake pedal	Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK STOP LAMP SWITCH-II

- 1. Adjust stop lamp switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between stop lamp switch terminals under the following conditions.

Terminals	C	Continuity	
1 and 2	Brake nedal	Fully released	Not existed
	Brake pedal	Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch.

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P1574 ASCD VEHICLE SPEED SENSOR

Description INFOID:000000001715324

The ECM receives two vehicle speed sensor signals via CAN communication line. One is sent from combination meter, and the other is from TCM (Transmission control module). The ECM uses these signals for ASCD control. Refer to EC-58, "System Description" for ASCD functions.

DTC Logic INFOID:000000001715325

DTC DETECTION LOGIC

NOTE:

- If DTC P1574 is displayed with DTC U1000, U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to <u>EC-128</u>, "<u>DTC Logic"</u>.
- If DTC P1574 is displayed with DTC P0500, first perform the trouble diagnosis for DTC P0500. Refer to <u>EC-322, "DTC Logic"</u>
- If DTC P1574 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-330, "DTC Logic"
- If DTC P1574 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-332</u>, "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1574	ASCD vehicle speed sensor	ECM detects a difference between two vehicle speed signals is out of the specified range.	Harness or connectors (The CAN communication line is open or shorted.) (Combination meter circuit is open or shorted.) Combination meter ABS actuator and electric unit (control unit) Wheel sensor TCM ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine.
- Drive the vehicle at more than 40 km/h (25 MPH).

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

3. Check DTC.

Is DTC detected?

YES >> Go to EC-358, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715326

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-43, "CONSULT-III Function (TRANSMISSION)".

Is the inspection result normal?

YES >> GO TO 2.

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P1574 ASCD VEHICLE SPEED SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

NO >> Perform trouble shooting relevant to DTC indicated.

 $2.\mathsf{CHECK}$ DTC WITH "ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)"

Refer to <u>BRC-15</u>, "CONSULT-III Function" (ABS models), <u>BRC-94</u>, "CONSULT-III Function" (VDC models).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace.

3. CHECK COMBINATION METER

Check combination meter function.

Refer to MWI-33, "CONSULT-III Function (METER/M&A)".

>> INSPECTION END

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P1715 INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P1715 INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

Description INFOID:000000001715327

ECM receives primary speed sensor signal from TCM through CAN communication line. ECM uses this signal for engine control.

DTC Logic (INFOID:000000001715328

DTC DETECTION LOGIC

NOTE:

- If DTC P1715 is displayed with DTC U1000, U1001 first perform the trouble diagnosis for DTC U1000, U1001. Refer to <u>EC-128</u>, "<u>DTC Logic</u>".
- If DTC P1715 is displayed with DTC P0335, first perform the trouble diagnosis for DTC P0335. Refer to EC-252, "DTC Logic".
- If DTC P1715 is displayed with DTC P0340, first perform the trouble diagnosis for DTC P0340. Refer to EC-256, "DTC Logic".
- If DTC P1715 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-330, "DTC Logic".
- If DTC P1715 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-332</u>, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1715	Input speed sensor (Primary speed sensor) (TCM output)	Primary speed sensor signal is different from the theoretical value calculated by ECM from secondary speed sensor signal and engine rpm signal.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (Primary speed sensor circuit is open or shorted) TCM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

Start engine and drive the vehicle at more than 50 km/h (31 MPH) for at least 5 seconds.

CAUTION:

Always drive vehicle at a safe speed.

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-360, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715329

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-43, "CONSULT-III Function (TRANSMISSION)".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble shooting relevant to DTC indicated.

2.replace ${\sf TCM}$

Replace TCM.

P1715 INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

< COMPONENT DIAGNOSIS > [FOR CALIFORNIA]

>> INSPECTION END

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P1805 BRAKE SWITCH

Description INFOID:0000000001715330

Brake switch signal is applied to the ECM through the stop lamp switch when the brake pedal is depressed. This signal is used mainly to decrease the engine speed when the vehicle is driving.

DTC Logic INFOID:0000000001715331

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P1805	Brake switch	A brake switch signal is not sent to ECM for extremely long time while the vehicle is driving.	Harness or connectors (Stop lamp switch circuit is open or shorted.) Stop lamp switch	

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Fully depress the brake pedal for at least 5 seconds.
- Erase the DTC with CONSULT-III.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-362, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

INFOID:0000000001715332

1. CHECK STOP LAMP SWITCH CIRCUIT

- Turn ignition switch OFF.
- Check the stop lamp when depressing and releasing the brake pedal.

Brake pedal	Stop lamp
Fully released	Not illuminated
Slightly depressed	Illuminated

Is 1st trip DTC detected?

YES >> GO TO 4.

NO >> GO TO 2.

2.CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect stop lamp switch harness connector. 2.
- Check the voltage between stop lamp switch harness connector and ground.

Stop lan	np switch	Ground	Voltage	
Connector	Terminal	Giodila	voltage	
E115	1	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

Harness connectors E105, M77

P1805 BRAKE SWITCH

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

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- 10A fuse (No. 11)
- Harness for open or short between stop lamp switch and battery

>> Repair open circuit or short to ground or short to power in harness or connectors.

4.check stop lamp switch input signal circuit for open and short

- Disconnect ECM harness connector.
- Check the continuity between ECM harness connector and stop lamp switch harness connector.

ECMStop lamp switchConnectorTerminalConnectorTerminalE16106E1152Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

CHECK STOP LAMP SWITCH

Refer to EC-363, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace stop lamp switch.

$\mathbf{6}.$ CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection (Stop Lamp Switch)

1. CHECK STOP LAMP SWITCH-I

- Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check the continuity between stop lamp switch terminals under the following conditions.

Terminals	C	Continuity	
1 and 2	Brake pedal	Fully released	Not existed
		Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK STOP LAMP SWITCH-II

- 1. Adjust stop lamp switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between stop lamp switch terminals under the following conditions.

	Terminals	C	Continuity	
_	1 and 2	Brake pedal	Fully released	Not existed
		brake pedar	Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch.

P2004 TUMBLE CONTROL VALVE

Description INFOID:0000000001715334

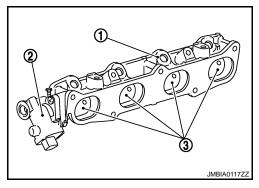
Tumble control valve (3) is installed in the intake manifold adapter (1).

Tumble control valve actuator (2) is connected to the front end of the valve shaft.

Tumble control valve actuator consists of motor and position sensor, etc.

The motor opens or closes the valve by the output signal of the ECM.

The sensor consists of a permanent magnet and Hall IC. It senses the valve shaft movement and feeds the voltage signals to the ECM.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2004	Tumble control valve stuck	The target angle of tumble control valve controlled by ECM and the input signal from tumble control valve position sensor is not in the normal range.	Harness or connectors (Tumble control valve motor circuit is open or shorted.) (Tumble control valve position sensor circuit is open or shorted.) (Accelerator pedal position sensor 2 circuit is shorted.) [Crankshaft position sensor (POS) circuit is shorted.] (EVAP control system pressure sensor circuit is shorted.) (Refrigerant pressure sensor circuit is shorted.) Tumble control valve actuator (Tumble control valve motor) (Tumble control valve position sensor) Accelerator pedal position sensor (APP sensor 2) Crankshaft position sensor (POS) EVAP control system pressure sensor Refrigerant pressure sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

- Before performing the following procedure, confirm that battery voltage is more than 11V at idle.
- Always perform the test at a temperature above 0°C (32°F)

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(P) With CONSULT-III

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-III.
- Make sure that "COOLAN TEMP/S" indicates between 5°C (41°F) to 60°C (140°F).
 If not, cool engine down or warm engine up until "COOLAN TEMP/S" indicates between 5°C (41°F) to 60°C (140°F). Then go to the following steps.

P2004 TUMBLE CONTROL VALVE

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

- Fully release accelerator pedal and wait at least 5 seconds.
- Depress accelerator pedal and wait at least 5 seconds.
- Check 1st trip DTC.

With GST

Following the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-365, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715336

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1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK TUMBLE CONTROL VALVE MOTOR POWER SUPPLY CIRCUIT-I

Check the voltage between ECM harness connector and ground.

ECM Connector Terminal		Ground	Condition	Voltage	
		Ground	Containon		
F7	7	Ground	Ignition switch OFF	Approx. 0V	
1 7	,	Giodila	Ignition switch ON	Battery voltage	

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 3.

3.CHECK TUMBLE CONTROL VALVE MOTOR POWER SUPPLY CIRCUIT-II

- Turn ignition switch OFF.
- Disconnect ECM harness connector. 2.
- Disconnect IPDM E/R harness connector. 3.
- Check the continuity between IPDM E/R harness connector and ECM harness connector.

IPDM E/R		Е	Continuity	
Connector	Terminal	Connector Terminal		Continuity
E15	47	F7	7	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> Refer to EC-124, "Diagnosis Procedure".

NO >> GO TO 4.

4. DETECT MALFUNCTIOMNING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between ECM and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK TUMBLE CONTROL VALVE MOTOR OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect tumble control valve actuator harness connector.
- 2. Disconnect ECM harness connector.
- Check the continuity between tumble control valve actuator harness connector and ECM harness connector.

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Tumble control	valve actuator	ECM		Continuity	
Connector	Connector Terminal		Terminal		
	4 5	F7 -	1	Not existed	
F41			3	Existed	
141			1	Existed	
			3	Not existed	

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK TUMBLE CONTROL VALVE POSITION SENSOR POWER SUPPLY CIRCUIT-I

- Reconnect ECM harness connector disconnected.
- 2. Turn ignition switch ON.
- 3. Check the voltage between tumble control valve actuator harness connector and ground.

Tumble control	Ground	Voltage	
Connector	Connector Terminal		voltage
F41	1	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 12.

NO >> GO TO 7.

7. CHECK TUMBLE CONTROL VALVE POSITION SENSOR POWER SUPPLY CIRCUIT-II

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between tumble control valve actuator harness connector and ECM harness connector.

Tumble control	valve actuator	E	Continuity	
Connector	Terminal	Connector Terminal		
F41	1	F8	72	Existed

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit.

8. CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
F8	72	Tumble control valve actuator	F41	1	
	12	Refrigerant pressure sensor	E49	3	
	76	CKP sensor (POS)	F20	1	
E16	87	APP sensor	E110	5	
E10	91	EVAP control system pressure sensor	B47	3	

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair short to ground or short to power in harness or connectors.

P2004 TUMBLE CONTROL VALVE

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

9. CHECK COMPONENT

Check the following.

- Refrigerant pressure sensor (Refer to <u>EC-434, "Diagnosis Procedure"</u>.)
 Crankshaft position sensor (POS) (Refer to <u>EC-255, "Component Inspection"</u>.)
- EVAP control system pressure sensor (Refer to EC-292, "Component Inspection".)

Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace malfunctioning components.

10.CHECK APP SENSOR

Refer to EC-395, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO >> GO TO 11.

11. REPLACE ACCELERATOR PEDAL ASSEMBLY

- Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- Refer to EC-395, "Special Repair Requirement".

>> INSPECTION END

12. CHECK TUMBLE CONTROL VALVE POSITION SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between tumble control valve actuator harness connector and ECM harness connector.

Tumble control valve actuator		Е	Continuity	
Connector	Terminal	Connector Termina		Continuity
F41	2	F8	52	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

13. CHECK TUMBLE CONTROL VALVE POSITION SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between tumble control valve actuator harness connector and ECM harness connector.

Tumble control	valve actuator	E	CM	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F41	3	F8	54	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 14.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

14. CHECK TUMBLE CONTROL VALVE

Refer to EC-368, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace intake manifold adapter. EC

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P2004 TUMBLE CONTROL VALVE

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

15. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace intake manifold adapter.

NO >> Repair or replace harness or connectors.

Component Inspection

INFOID:0000000001715337

1. CHECK TUMBLE CONTROL VALVE

With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Remove intake manifold adapter. Refer to EM-29, "Removal and Installation".
- 3. Visually check the valve for damage and check if foreign matter is caught between the valve and the housing.
- 4. Connect tumble control valve actuator harness connector.
- Turn ignition switch ON.
- Perform "TUMBLE CONTROL VALVE" in "ACTIVE TEST" mode with CONSULT-III.
- 7. Touch "ON/OFF" and check that the valve opens and closes.

⊗ Without CONSULT-III

- Turn ignition switch OFF.
- 2. Remove intake manifold adapter. Refer to EM-29, "Removal and Installation".
- 3. Visually check the valve for damage and check if foreign matter is caught between the valve and the housing.
- 4. Supply tumble control valve actuator terminals with battery voltage within 2 seconds and check operation.

Tumble control		
Term	Operation	
(+)	(-)	
4	5	Open
5	4	Close

CAUTION:

Do not apply 12V DC continuously for 30 seconds or more. Doing so may result in damage to the coil in tumble control valve motor.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace intake manifold adaptor.

P2014 TUMBLE CONTROL VALVE POSITION SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

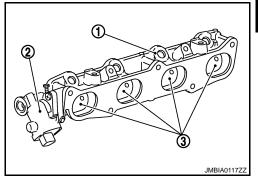
P2014 TUMBLE CONTROL VALVE POSITION SENSOR

Description INFOID:0000000001715338

Tumble control valve position sensor is built into the tumble control valve actuator (2).

- Intake manifold adapter (1)
- Tumble control valve (2)

The sensor consists of a permanent magnet and Hall IC. It senses the valve shaft movement and feeds the voltage signals to the ECM.



DTC Logic INFOID:0000000001715339

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2014	Tumble control valve position sensor circuit	An excessively low or high voltage from the sensor is sent to ECM.	Harness or connectors (Tumble control valve position sensor circuit is open or shorted.) (Accelerator pedal position sensor 2 circuit is shorted.) [Crankshaft position sensor (POS) circuit is shorted.] (EVAP control system pressure sensor circuit is shorted.) (Refrigerant pressure sensor circuit is shorted.) Tumble control valve actuator (Tumble control valve position sensor) Accelerator pedal position sensor (APP sensor 2) Crankshaft position sensor (POS) EVAP control system pressure sensor Refrigerant pressure sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2 .PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 5 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-369, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

EC-369 Revision: 2008 January 2008 Rogue

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INFOID:0000000001715340

P2014 TUMBLE CONTROL VALVE POSITION SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK TUMBLE CONTROL VALVE POSITION SENSOR POWER SUPPLY CIRCUIT-I

- 1. Reconnect ECM harness connector disconnected.
- Turn ignition switch ON.
- Check the voltage between tumble control valve actuator harness connector and ground.

Tumble control v	Ground	Voltage		
Connector	Terminal	Ground	voltage	
F41	1	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 3.

3.check tumble control valve position sensor power supply circuit-ii

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between tumble control valve actuator harness connector and ECM harness connec-

Tumble control	valve actuator	E	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F41	1	F8	72	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit.

4. CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

EC	CM	Sensor			
Connector	Terminal	Name Connector Terminal			
	72	Tumble control valve actuator	F41	1	
F8	12	Refrigerant pressure sensor	E49	3	
	76	CKP sensor (POS)	F20	1	
E16	87	APP sensor	E110	5	
91		EVAP control system pressure sensor	B47	3	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair short to ground or short to power in harness or connectors.

5. CHECK COMPONENT

Check the following.

- Refrigerant pressure sensor (Refer to <u>EC-434, "Diagnosis Procedure".)</u>
 Crankshaft position sensor (POS) (Refer to <u>EC-255, "Component Inspection".)</u>
- EVAP control system pressure sensor (Refer to EC-292, "Component Inspection".)

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace malfunctioning components.

P2014 TUMBLE CONTROL VALVE POSITION SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

6.CHECK APP SENSOR

Refer to EC-395, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 7.

7.REPLACE ACCELERATOR PEDAL ASSEMBLY

- Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- Go to EC-395, "Special Repair Requirement".

>> INSPECTION END

8.check tumble control valve position sensor ground circuit for open and short

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between tumble control valve actuator harness connector and ECM harness connec-

Tumble control	Tumble control valve actuator		valve actuator ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity	
F41	2	F8	52	Existed	

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9.check tumble control valve position sensor input signal circuit for open and

Check the continuity between tumble control valve actuator harness connector and ECM harness connector.

Tumble control	valve actuator	EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F41	3	F8	54	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

10.check intermittent incident

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace intake manifold adapter.

NO >> Repair or replace harness or connectors. EC

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P2100, P2103 THROTTLE CONTROL MOTOR RELAY

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P2100, P2103 THROTTLE CONTROL MOTOR RELAY

Description INFOID:0000000001715341

Power supply for the throttle control motor is provided to the ECM via throttle control motor relay. The throttle control motor relay is ON/OFF controlled by the ECM. When the ignition switch is turned ON, the ECM sends an ON signal to throttle control motor relay and battery voltage is provided to the ECM. When the ignition switch is turned OFF, the ECM sends an OFF signal to throttle control motor relay and battery voltage is not provided to the ECM.

DTC Logic INFOID:000000001715342

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2100	Throttle control motor relay circuit open	ECM detects a voltage of power source for throttle control motor is excessively low.	Harness or connectors (Throttle control motor relay circuit is open) Throttle control motor relay
P2103	Throttle control motor relay circuit short	ECM detect the throttle control motor relay is stuck ON.	Harness or connectors (Throttle control motor relay circuit is shorted) Throttle control motor relay

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V.

Witch DTC is detected?

P2100 >> GO TO 2.

P2103 >> GO TO 3.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P2100

- 1. Turn ignition switch ON and wait at least 2 seconds.
- 2. Start engine and let it idle for 5 seconds.
- Check DTC.

Is DTC detected?

YES >> Go to EC-372, "Diagnosis Procedure".

NO >> INSPECTION END

3.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P2103

- 1. Turn ignition switch ON and wait at least 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-372, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715343

1. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Disconnect IPDM E/R harness connector.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

P2100, P2103 THROTTLE CONTROL MOTOR RELAY

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Continuity F7 15 E13 32 Existed 5. Also check harness for short to ground and short to power. Is the inspection result normal? YES >> GO TO 3. NO >> GO TO 2. 2. DETECT MALFUNCTION PART Check the following. * Harness connectors E7, F121 * Harness for open or incuit or short to ground or short to power in harness or connectors. 3. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT 1. Check the continuity between ECM harness connector and IPDM E/R harness connector. ECM IPDM E/R Continuity ECM IPDM E/R Continuity F7 2 E15 52 Existed 2. Also check harness for short to ground and short to power. Is the inspection result normal? YES >> GO TO 5. NO >> GO TO 4. 4. DETECT MALFUNCTION PART Check the following. **Harness connectors E7, F121 **Harness for open or short between ECM and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. 5. CHECK FUSE 1. Disconnect 20A fuse (No. 61) from IPDM E/R. 2. Check 20A fuse for blown. Is the inspection result normal? YES >> GO TO 6. NO >> Replace 20A fuse. 6. CHECK INTERMITTENT INCIDENT Refer to GI-41. "Intermittent incident". Is the inspection result normal? YES >> Replace IPDM E/R. NO >> Repair or replace harness or connectors.	E	CM	IPDI	M E/R	.	•	
Also check harness for short to ground and short to power. sthe inspection result normal? YES >> GO TO 3. NO >> GO TO 2. 2. DETECT MALFUNCTION PART Check the following. Harness connectors E7, F121 Harness for open or short between ECM and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. 3. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT I. Check the continuity between ECM harness connector and IPDM E/R harness connector. ECM	Connector	Terminal	Connector	Terminal	Continuity		
sthe inspection result normal? YES >> GO TO 3. NO >> GO TO 2. 2. DETECT MALFUNCTION PART Check the following. Harness connectors E7, F121 Harness for open or short between ECM and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. 3. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT Check the continuity between ECM harness connector and IPDM E/R harness connector. ECM	F7	15	E13	32	Existed	•	
Connector Terminal Connector Terminal Connector Terminal F7 2 E15 52 Existed 2. Also check harness for short to ground and short to power. 3. CHECK THRUTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT 3. Check the continuity between ECM harness connector and IPDM E/R harness connector. Connector Terminal Connector Terminal Continuity	s the inspe	ection resu > GO TO 3 > GO TO 2	ilt normal? 3.	Ü	and short t	power.	
Harness connectors E7, F121 Harness for open or short between ECM and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. 3. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT . Check the continuity between ECM harness connector and IPDM E/R harness connector. ECM			NCTION PA	ARI			
CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT Check the continuity between ECM harness connector and IPDM E/R harness connector. Connector IPDM E/R Continuity	Harness	connectors		veen ECM	and IPDM E	//R	
Check the continuity between ECM harness connector and IPDM E/R harness connector. ECM	ζ,	> Penair o	oen circuit	or short to	around or el	port to nower in harness or connectors	
ECM IPDM E/R Connector Terminal Connector Terminal F7 2 E15 52 Existed 2. Also check harness for short to ground and short to power. s the inspection result normal? YES >> GO TO 5. NO >> GO TO 4. 4. DETECT MALFUNCTION PART Check the following. Harness connectors E7, F121 Harness for open or short between ECM and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. 5. CHECK FUSE 1. Disconnect 20A fuse (No. 61) from IPDM E/R. 2. Check 20A fuse for blown. s the inspection result normal? YES >> GO TO 6. NO >> Replace 20A fuse. 5. CHECK INTERMITTENT INCIDENT Refer to GI-41. "Intermittent Incident". s the inspection result normal? YES >> Replace IPDM E/R.	_					•	
Connector Terminal Connector Terminal F7 2 E15 52 Existed 2. Also check harness for short to ground and short to power. s the inspection result normal? YES >> GO TO 5. NO >> GO TO 4. 4. DETECT MALFUNCTION PART Check the following. Harness connectors E7, F121 Harness for open or short between ECM and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. D.CHECK FUSE 1. Disconnect 20A fuse (No. 61) from IPDM E/R. 2. Check 20A fuse for blown. 3. the inspection result normal? YES >> GO TO 6. NO >> Replace 20A fuse. D.CHECK INTERMITTENT INCIDENT Refer to GI-41, "Intermittent Incident". s the inspection result normal? YES >> Replace IPDM E/R.	. Check	the contin	uity betwee	en ECM hai	ness conne	ctor and IPDM E/R harness connector.	
Connector Terminal Connector Terminal F7 2 E15 52 Existed 2. Also check harness for short to ground and short to power. s the inspection result normal? YES >> GO TO 5. NO >> GO TO 4. 4. DETECT MALFUNCTION PART Check the following. Harness connectors E7, F121 Harness for open or short between ECM and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. D.CHECK FUSE 1. Disconnect 20A fuse (No. 61) from IPDM E/R. 2. Check 20A fuse for blown. s the inspection result normal? YES >> GO TO 6. NO >> Replace 20A fuse. D.CHECK INTERMITTENT INCIDENT Refer to GI-41, "Intermittent Incident". s the inspection result normal? YES >> Replace IPDM E/R.	E	CM	IPD	M E/R	O a ration site s		
2. Also check harness for short to ground and short to power. s the inspection result normal? YES >> GO TO 5. NO >> GO TO 4. 4. DETECT MALFUNCTION PART Check the following. Harness connectors E7, F121 Harness for open or short between ECM and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. D.CHECK FUSE 1. Disconnect 20A fuse (No. 61) from IPDM E/R. 2. Check 20A fuse for blown. s the inspection result normal? YES >> GO TO 6. NO >> Replace 20A fuse. D.CHECK INTERMITTENT INCIDENT Refer to GI-41. "Intermittent Incident". s the inspection result normal? YES >> Replace IPDM E/R.	Connector	Terminal	Connector	Terminal	Continuity		
sthe inspection result normal? YES >> GO TO 5. NO >> GO TO 4. LIDETECT MALFUNCTION PART Check the following. Harness connectors E7, F121 Harness for open or short between ECM and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. CHECK FUSE Disconnect 20A fuse (No. 61) from IPDM E/R. the inspection result normal? YES >> GO TO 6. NO >> Replace 20A fuse. CHECK INTERMITTENT INCIDENT Refer to GI-41. "Intermittent Incident". sthe inspection result normal? YES >> Replace IPDM E/R.	F7	2	E15	52	Existed		
Harness connectors E7, F121 Harness for open or short between ECM and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. O.CHECK FUSE Disconnect 20A fuse (No. 61) from IPDM E/R. Check 20A fuse for blown. Sthe inspection result normal? YES >> GO TO 6. NO >> Replace 20A fuse. O.CHECK INTERMITTENT INCIDENT Refer to GI-41, "Intermittent Incident". Sthe inspection result normal? YES >> Replace IPDM E/R.	YES >: NO >:	> GO TO 5 > GO TO 4	i.	ART			
Disconnect 20A fuse (No. 61) from IPDM E/R. Check 20A fuse for blown. Sthe inspection result normal? YES >> GO TO 6. NO >> Replace 20A fuse. CHECK INTERMITTENT INCIDENT Refer to GI-41. "Intermittent Incident". Sthe inspection result normal? YES >> Replace IPDM E/R.	Harness	connectors		ween ECM	and IPDM E	:/R	
Disconnect 20A fuse (No. 61) from IPDM E/R. Check 20A fuse for blown. Sthe inspection result normal? YES >> GO TO 6. NO >> Replace 20A fuse. CHECK INTERMITTENT INCIDENT Refer to GI-41. "Intermittent Incident". Sthe inspection result normal? YES >> Replace IPDM E/R.							
2. Check 20A fuse for blown. s the inspection result normal? YES >> GO TO 6. NO >> Replace 20A fuse. CHECK INTERMITTENT INCIDENT Refer to GI-41, "Intermittent Incident". s the inspection result normal? YES >> Replace IPDM E/R.	_		pen circuit	or snort to (ground or si	ort to power in narness or connectors.	
s the inspection result normal? YES >> GO TO 6. NO >> Replace 20A fuse. CHECK INTERMITTENT INCIDENT Refer to GI-41, "Intermittent Incident". s the inspection result normal? YES >> Replace IPDM E/R.				1) from IPD	M E/R.		
YES >> GO TO 6. NO >> Replace 20A fuse. CHECK INTERMITTENT INCIDENT Refer to GI-41, "Intermittent Incident". s the inspection result normal? YES >> Replace IPDM E/R.							
CHECK INTERMITTENT INCIDENT Refer to GI-41, "Intermittent Incident". s the inspection result normal? YES >> Replace IPDM E/R.	YES >	> GO TO 6).				
s the inspection result normal? YES >> Replace IPDM E/R.	_			CIDENT			
YES >> Replace IPDM E/R.	Refer to <u>G</u>	l-41, "Inter	mittent Inci	dent".			_
· ·	-						
				arness or co	onnectors		
		. topan of					

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P2101 ELECTRIC THROTTLE CONTROL FUNCTION

Description INFOID:000000001715344

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc.

The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The current opening angle of the throttle valve is detected by the throttle position sensor and it provides feedback to the ECM to control the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

DTC Logic INFOID:000000001715345

DTC DETECTION LOGIC

NOTE:

If DTC P2101 is displayed with DTC P2100 or P2119, first perform the trouble diagnosis for DTC P2100 or P2119. Refer to <u>EC-372</u>, "<u>DTC Logic"</u> or <u>EC-380</u>, "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2101	Electric throttle control performance	Electric throttle control function does not operate properly.	Harness or connectors (Throttle control motor circuit is open or shorted) Electric throttle control actuator

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V when engine is running.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 2 seconds.
- 2. Start engine and let it idle for 5 seconds.
- Check DTC.

Is DTC detected?

YES >> Go to EC-374, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715346

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-I

1. Check the voltage between ECM harness connector and ground.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Connector Terminal Ground Condition Voltage F14 2 Ground Ignition switch OFF Approx. 0V Ignition switch ON Battery voltage	C D E
Is the inspection result normal? YES SO TO 9. NO SO TO 3.	C D
Is the inspection result normal? YES >> GO TO 9. NO >> GO TO 3. 3. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT 1. Disconnect ECM harness connector. 2. Disconnect IPDM E/R harness connector. 3. Check the continuity between ECM harness connector and IPDM E/R harness connector. IPDM E/R	C D
YES >> GO TO 9. NO >> GO TO 3. 3. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT 1. Disconnect ECM harness connector. 2. Disconnect IPDM E/R harness connector. 3. Check the continuity between ECM harness connector and IPDM E/R harness connector. IPDM E/R ECM Continuity	— D
3. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT 1. Disconnect ECM harness connector. 2. Disconnect IPDM E/R harness connector. 3. Check the continuity between ECM harness connector and IPDM E/R harness connector. IPDM E/R ECM Continuity Connector Terminal Connector Terminal E13 32 F7 15 Existed Existed	— D
3. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT 1. Disconnect ECM harness connector. 2. Disconnect IPDM E/R harness connector. 3. Check the continuity between ECM harness connector and IPDM E/R harness connector. IPDM E/R ECM Continuity	
Disconnect ECM harness connector. Disconnect IPDM E/R harness connector. Check the continuity between ECM harness connector and IPDM E/R harness connector. IPDM E/R	
Disconnect IPDM E/R harness connector. Check the continuity between ECM harness connector and IPDM E/R harness connector. IPDM E/R	
IPDM E/R ECM Connector Terminal Continuity E13 32 F7 15 Existed	
ConnectorTerminalConnectorTerminalE1332F715Existed	
ConnectorTerminalConnectorTerminalE1332F715Existed	F
E13 32 F7 15 Existed	F
4. Also check narness for short to ground and short to power.	
Is the inspection result normal?	G
YES >> GO TO 5.	G
NO >> GO TO 4.	
4. DETECT MALFUNCTION PART	-
Check the following.	
Harness connectors E7, F121	ı
Harness for open or short between ECM and IPDM E/R	
>> Repair open circuit or short to ground or short to power in harness or connectors.	
5. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-II	J
1. Check the continuity between ECM harness connector and IPDM E/R harness connector.	K
IPDM E/R ECM	
Connector Terminal Connector Terminal Continuity	
E15 52 F7 2 Existed	L
2. Also check harness for short to ground and short to power.	
Is the inspection result normal?	IV
YES >> GO TO 7.	
NO >> GO TO 6.	
6.DETECT MALFUNCTION PART	N
Check the following.	
 Harness connectors E7, F121 Harness for open or short between ECM and IPDM E/R 	C
Hamood for opon or onort botwoon bow and it bin b/it	
>> Repair open circuit or short to ground or short to power in harness or connectors.	_
7.CHECK FUSE	F

1. Disconnect 20A fuse (No. 61) from IPDM E/R.

2. Check 20A fuse for blown.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace 20A fuse.

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< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connectors.

9.check throttle control motor output signal circuit for open or short

- Turn ignition switch OFF.
- Disconnect electric throttle control actuator harness connector.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle	control actuator	E	Continuity	
Connector	Connector Terminal		Terminal	Continuity
F29	5	F7 -	5	Not existed
	6		6	Existed
			5	Existed
			6	Not existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

>> GO TO 10. YES

>> Repair or replace. NO

10. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

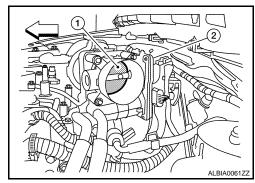
- Remove the intake air duct.
- 2. Check if foreign matter is caught between the throttle valve (1) and the housing.
- ⟨□: Vehicle front
- Electric throttle control actuator (2)

Is the inspection result normal?

YES >> GO TO 11.

NO >> Remove the foreign matter and clean the electric throttle

control actuator inside.



11. CHECK THROTTLE CONTROL MOTOR

Refer to EC-377, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 12.

NO >> GO TO 13.

12. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or replace harness or connectors.

13. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace malfunction electric throttle control actuator.
- Go to EC-377, "Special Repair Requirement".

>> INSPECTION END

[FOR CALIFORNIA] < COMPONENT DIAGNOSIS > Component Inspection INFOID:0000000001715347 Α 1. CHECK THROTTLE CONTROL MOTOR Disconnect electric throttle control actuator harness connector. EC Check resistance between electric throttle control actuator terminals as follows. **Terminals** Resistance 5 and 6 Approx. 1 - 15 Ω [at 25 °C (77°F)] Is the inspection result normal? YES >> INSPECTION END D NO >> GO TO 2. 2.replace electric throttle control actuator Replace electric throttle control actuator. Go to EC-377, "Special Repair Requirement". F >> INSPECTION END Special Repair Requirement INFOID:0000000001897005 1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING Refer to EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement" Н >> GO TO 2. 2. PERFORM IDLE AIR VOLUME LEARNING Refer to EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement" >> END K M Ν

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[FOR CALIFORNIA]

P2118 THROTTLE CONTROL MOTOR

Description INFOID:000000001715349

The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The current opening angle of the throttle valve is detected by the throttle position sensor and it provides feedback to the ECM to control the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2118	Throttle control motor circuit short	ECM detects short in both circuits between ECM and throttle control motor.	Harness or connectors (Throttle control motor circuit is shorted.) Electric throttle control actuator (Throttle control motor)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 2 seconds.
- 2. Start engine and let it idle for 5 seconds.
- Check DTC.

Is DTC detected?

YES >> Go to EC-378, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715351

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Disconnect electric throttle control actuator harness connector.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle	control actuator	EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F29	5	F7	5	Not existed
	6		6	Existed
		1 7	5	Existed
	0		6	Not existed

P2118 THROTTLE CONTROL MOTOR

< COMPONENT DIAGNOSIS >	[FOR CALIFORNIA]	
4. Also check harness for short to ground and short to power.	_	
Is the inspection result normal?		Α
YES >> GO TO 3. NO >> Repair or replace.	i	
3. CHECK THROTTLE CONTROL MOTOR		EC
Refer to EC-379, "Component Inspection".		
Is the inspection result normal?		С
YES >> GO TO 4.		0
NO >> GO TO 5. 4.CHECK INTERMITTENT INCIDENT		D
		D
Refer to GI-41, "Intermittent Incident". Is the inspection result normal?		
YES >> GO TO 5.		Е
NO >> Repair or replace harness or connectors.		
5. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR		F
Replace electric throttle control actuator.	_	
2. Go to EC-379, "Special Repair Requirement".		
>> INSPECTION END		G
Component Inspection		
	INFOID:000000001897014	Н
1. CHECK THROTTLE CONTROL MOTOR		
 Disconnect electric throttle control actuator harness connector. Check resistance between electric throttle control actuator terminals as follows. 		
Terminals Resistance		
5 and 6 Approx. 1 - 15 Ω [at 25 °C (77°F)]		J
Is the inspection result normal?		
YES >> INSPECTION END		K
NO >> GO TO 2.		
2.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR		L
 Replace electric throttle control actuator. Go to <u>EC-379</u>, "Special Repair Requirement". 		
		\mathbb{M}
>> INSPECTION END		
Special Repair Requirement	INFOID:000000001897015	Ν
1.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING		14
Refer to EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair	r Requirement"	
		0
>> GO TO 2.		
2.PERFORM IDLE AIR VOLUME LEARNING		Р
Refer to EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"		
>> END		

P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

Description INFOID:000000001715354

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc.

The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The throttle position sensor detects the throttle valve position, and the opening and closing speed of the throttle valve and feeds the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name		DTC detecting condition	Possible cause
	Electric throttle control	A)	Electric throttle control actuator does not function properly due to the return spring malfunction.	
P2119	actuator	B)	Throttle valve opening angle in fail-safe mode is not in specified range.	Electric throttle control actuator
		C)	ECM detect the throttle valve is stuck open.	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A AND B

- 1. Turn ignition switch ON and wait at least 1 second.
- 2. Set shift lever to D position and wait at least 3 seconds.
- 3. Set shift lever to P position.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Turn ignition switch ON and wait at least 1 second.
- 6. Set shift lever to D position and wait at least 3 seconds.
- 7. Set shift lever to P position.
- 8. Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- 9. Check DTC.

Is DTC detected?

YES >> Go to EC-380, "Diagnosis Procedure".

NO >> GO TO 3.

3.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION C

- 1. Turn ignition switch ON and wait at least 1 second.
- 2. Set shift lever to D position and wait at least 3 seconds.
- 3. Set shift lever to N, P position.
- 4. Start engine and let it idle for 3 seconds.
- 5. Check DTC.

Is DTC detected?

YES >> Go to EC-380, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715356

1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

[FOR CALIFORNIA] < COMPONENT DIAGNOSIS >

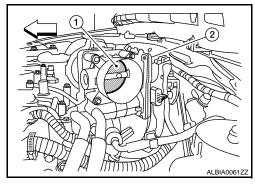
- Turn ignition switch OFF.
- 2. Remove the intake air duct.
- 3. Check if foreign matter is caught between the throttle valve (1) and the housing.
- ⟨□: Vehicle front
- Electric throttle control actuator (2)

Is the inspection result normal?

YES >> GO TO 2.

NO

>> Remove the foreign matter and clean the electric throttle control actuator inside.



2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace electric throttle control actuator.
- 2. Go to EC-381, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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EC-381 Revision: 2008 January 2008 Rogue

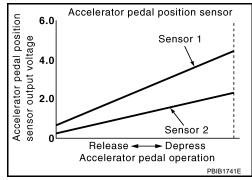
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P2122, P2123 APP SENSOR

Description INFOID:0000000001715358

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.

Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals.



Idle position of the accelerator pedal is determined by the ECM receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.

DTC Logic INFOID:0000000001715359

DTC DETECTION LOGIC

NOTE:

If DTC P2122 or P2123 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-333, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2122	Accelerator pedal position sensor 1 circuit low input	An excessively low voltage from the APP sensor 1 is sent to ECM.	Harness or connectors (APP sensor 1 circuit is open or shorted.)
P2123	Accelerator pedal position sensor 1 circuit high input	An excessively high voltage from the APP sensor 1 is sent to ECM.	Accelerator pedal position sensor (APP sensor 1)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-382, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715360

${f 1}$.CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

$\overline{2}$.check app sensor 1 power supply circuit

- 1. Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

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APP	sensor	Ground	Voltage	
Connector Terminal		Ground	voltage	
E110	4	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3.CHECK APP SENSOR 1 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between APP sensor harness connector and ECM harness connector.

APP sensor		nsor	ECM		Continuity
Connector	Terminal	Terminal	Connector	Terminal	Continuity
E110	2	2	E16	84	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

f 4.CHECK APP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between APP sensor harness connector and ECM harness connector.

APP	APP sensor ECM			Continuity
Connector Terminal		Connector	Terminal	Continuity
E110	3	E16	81	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK APP SENSOR

Refer to EC-384, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

$\mathsf{6}.\mathsf{REPLACE}$ ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Go to EC-384, "Special Repair Requirement".

>> INSPECTION END

7.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Component Inspection

INFOID:0000000001715361

1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- 1. Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Check the voltage between ECM harness connector terminals.

		ECM					
+		-		Condition		Voltage	
Connector	Terminal	Connector	Terminal				
	81 (APP sensor 1 signal)		84 (Sensor ground) 100 (Sensor ground)		Fully released	0.5 - 1.0V	
E16		(APP sensor 1 signal) E16		Accelerator pedal	Fully depressed	4.2 - 4.8V	
		LIU			Fully released	0.25 - 0.5V	
	(APP sensor 2 signal)	2 signal)			Fully depressed	2.0 - 2.5V	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Go to EC-384, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000001715362

1. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-27, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 2.

2.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END

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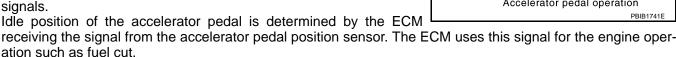
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P2127, P2128 APP SENSOR

Description INFOID:000000001897017

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.

Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P2127	Accelerator pedal position sensor 2 circuit low input	An excessively low voltage from the APP sensor 2 is sent to ECM.	Harness or connectors (APP sensor 2 circuit is open or shorted.) [Crankshaft position sensor (POS) circuit	Н
P2128	Accelerator pedal position sensor 2 circuit high input	An excessively high voltage from the APP sensor 2 is sent to ECM.	is shorted.] (Refrigerant pressure sensor circuit is shorted.) (EVAP control system pressure sensor circuit is shorted.) (Tumble control valve position sensor circuit is shorted.) • Accelerator pedal position sensor (APP sensor 2) • Crankshaft position sensor (POS) • Refrigerant pressure sensor • EVAP control system pressure sensor • Tumble control valve position sensor	J K

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-386, "Diagnosis Procedure".

NO >> INSPECTION END

Accelerator pedal position sensor

Sensor 1

Sensor 2

Release Depress
Accelerator pedal operation

Revision: 2008 January EC-385 2008 Rogue

[FOR CALIFORNIA]

< COMPONENT DIAGNOSIS >

Diagnosis Procedure

INFOID:0000000001715365

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-I

- 1. Disconnect accelerator pedal position (APP) sensor harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between APP sensor harness connector and ground.

APP	sensor	Ground	Voltage
Connector	Terminal	Ground	voltage
E110	5	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 3.

3.check app sensor 2 power supply circuit-ii $\,$

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

APP	sensor	Е	Continuity	
Connector	Terminal	Connector Terminal		Continuity
E110	5	E16	87	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor				
Connector	Terminal	Name	Connector	Terminal		
	72	Tumble control valve position sensor	F41	1		
F8	12	Refrigerant pressure sensor	E49	3		
76		CKP sensor (POS)	F20	1		
E16	87	APP sensor	E110	5		
E16	91	EVAP control system pressure sensor	B47	3		

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair short to ground or short to power in harness or connectors.

5. CHECK COMPONENT

Check the following.

- Crankshaft position sensor (POS) (Refer to EC-255, "Component Inspection".)
- EVAP control system pressure sensor (Refer to <u>EC-292, "Component Inspection"</u>.)
- Refrigerant pressure sensor (Refer to EC-434, "Diagnosis Procedure".)
- Tumble control valve position sensor (Refer to <u>EC-365, "Diagnosis Procedure"</u>.)

P2127, P2128 APP SENSOR [FOR CALIFORNIA] < COMPONENT DIAGNOSIS > Is the inspection result normal? Α YES >> GO TO 10. NO >> Replace malfunctioning component. 6.CHECK APP SENSOR 2 GROUND CIRCUIT FOR OPEN AND SHORT EC Turn ignition switch OFF. Disconnect ECM harness connector. 2. Check the continuity between APP sensor harness connector and ECM harness connector. APP sensor **ECM** Continuity Connector Terminal Connector Terminal D E110 1 E16 100 Existed Also check harness for short to ground and short to power. Е Is the inspection result normal? YES >> GO TO 7. NO >> Repair open circuit or short to ground or short to power in harness or connectors. F 7.CHECK APP SENSOR 2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT Check the continuity between APP sensor harness connector and ECM harness connector. APP sensor **ECM** Continuity Connector Terminal Connector Terminal E110 E16 82 Existed Also check harness for short to ground and short to power. Is the inspection result normal? YES >> GO TO 8. NO >> Repair open circuit or short to ground or short to power in harness or connectors. 8.CHECK APP SENSOR Refer to EC-395, "Component Inspection". Is the inspection result normal? K >> GO TO 10. YES NO >> GO TO 9. 9.replace accelerator pedal assembly Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation". Go to EC-395, "Special Repair Requirement". M >> INSPECTION END 10. CHECK INTERMITTENT INCIDENT Refer to GI-41, "Intermittent Incident". >> INSPECTION END

Component Inspection

1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- 1. Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Check the voltage between ECM harness connector terminals.

Revision: 2008 January EC-387 2008 Rogue

INFOID:0000000001897018

		ECM					
+ -			Condition		Voltage		
Connector	Terminal	Connector Terminal					
	81 (APP sensor 1 signal) E16 (Sensor ground)			Fully released	0.5 - 1.0V		
E16			Accelerator pedal	Fully depressed	4.2 - 4.8V		
E10	82	100	Accelerator pedar	Fully released	0.25 - 0.5V		
	(APP sensor 2 signal)		(Sensor ground)		Fully depressed	2.0 - 2.5V	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Go to EC-388, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000001897019

1.PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-27, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 2.

2. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

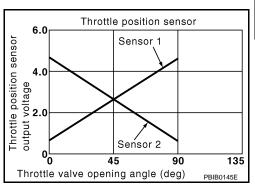
>> END

P2135 TP SENSOR

Description INFOID:000000001897325

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic INFOID:000000001715369

DTC DETECTION LOGIC

NOTE:

If DTC P2135 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to <u>EC-333, "DTC Logic"</u>.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2135	Throttle position sensor circuit range/performance	Rationally incorrect voltage is sent to ECM compared with the signals from TP sensor 1 and TP sensor 2.	Harness or connector (TP sensor 1 and 2 circuit is open or shorted.) Electric throttle control actuator (TP sensor 1 and 2)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-389, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT-I

1. Disconnect electric throttle control actuator harness connector.

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INFOID:0000000001715370

< COMPONENT DIAGNOSIS >

- 2. Turn ignition switch ON.
- 3. Check the voltage between electric throttle control actuator harness connector and ground.

Electric throttle of	ontrol actuator	Ground	Voltage	
Connector	Terminal	Ground	voltage	
F29	1	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.CHECK THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT-II

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between electric throttle control actuator harness connector and ground.

Electric throttle c	ontrol actuator	EC	Continuity	
Connector Terminal		Connector	Terminal	Continuity
F29	1	F8	47	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit.

4. CHECK THROTTLE POSITION SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between electric throttle control actuator harness connector and ground.

Electric throttle of	ontrol actuator	EC	Continuity	
Connector Terminal		Connector	Terminal	Continuity
F57	4	F8	36	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK THROTTLE POSITION SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between electric throttle control actuator harness connector and ground.

Electric throttle of	control actuator	EC	Continuity		
Connector Terminal		Connector	Terminal	Continuity	
F29	2	F8	37	Existed	
1 23	3	10	38	LAISIEU	

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK THROTTLE POSITION SENSOR

Refer to EC-391, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

P2135 TP SENSOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

7.replace electric throttle control actuator

- Replace electric throttle control actuator.
- 2. Go to EC-391, "Special Repair Requirement".

>> INSPECTION END

8.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000001897326

1. CHECK THROTTLE POSITION SENSOR

- Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- Perform EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set shift lever to D position.
- 6. Check the voltage between ECM harness connector terminals.

	ECM						
	+		-		dition	Voltage	
Connector	Terminal	Connector	Terminal				
	37 (TP sensor 1 signal)	F0	36 (Sensor Accelerator pedal ground)	Fully released Fully depressed	More than 0.36V Less than 4.75V		
F8	38 (TP sensor 2 signal)	F8		Accelerator pedal	Fully released Fully depressed	Less than 4.75V More than 0.36V	

Is the inspection result normal?

YES >> INSPECTION END

>> GO TO 2. NO

2.replace electric throttle control actuator

- 1. Replace electric throttle control actuator.
- 2. Go to EC-391, "Special Repair Requirement".

>> INSPECTION END

INFOID:0000000001897327

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

EC-391 Revision: 2008 January 2008 Rogue

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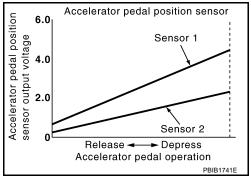
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P2138 APP SENSOR

Description INFOID:000000001897020

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.

Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals.



Idle position of the accelerator pedal is determined by the ECM receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P2138 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-333, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2138	Accelerator pedal position sensor circuit range/performance	Rationally incorrect voltage is sent to ECM compared with the signals from APP sensor 1 and APP sensor 2.	Harness or connector (APP sensor 1 and 2 circuit is open or shorted.) [Crankshaft position sensor (POS) circuit is shorted.) (Refrigerant pressure sensor circuit is shorted.) (EVAP control system sensor circuit is shorted.) (Tumble control valve position sensor circuit is shorted.) Accelerator pedal position sensor (APP sensor 1 and 2) Crankshaft position sensor (POS) Refrigerant pressure sensor EVAP control system pressure sensor Tumble control valve position sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-393, "Diagnosis Procedure".

NO >> INSPECTION END

Revision: 2008 January EC-392 2008 Rogue

< COMPONENT DIAGNOSIS > [FOR CALIFORNIA]

Diagnosis Procedure

INFOID:0000000001715375

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1. CHECK GROUND CONNECTION

1. Turn ignition switch OFF.

2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK APP SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Disconnect accelerator pedal position (APP) sensor harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between APP sensor harness connector and ground.

APP sensor		Ground	Voltage	
Connector	Terminal	Ground	voltage	
E110	4	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or shot to power in harness or connectors.

3.CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-I

- Turn ignition switch ON.
- 2. Check the voltage between APP sensor harness connector and ground.

APF	P sensor	Ground	Voltage	
Connector	Terminal	Ground	voltage	
E110	5	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 4.

4.CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-II

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

APP	APP sensor		ECM	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E110	5	E16	87	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or shot to power in harness or connectors.

5. CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

EC	M	Sensor		
Connector	Terminal	Name	Connector	Terminal
	72	Tumble control valve position sensor	F41	1
F8	12	Refrigerant pressure sensor	E49	3
	76	76 CKP sensor (POS)		1
			•	

< COMPONENT DIAGNOSIS >

ECM		Sensor		
Connector	Terminal	Name	Connector	Terminal
E16	87	APP sensor	E110	5
LIO	91	EVAP control system pressure sensor	B47	3

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair short to ground or short to power in harness or connectors.

6.check component

Check the following.

- Crankshaft position sensor (POS) (Refer to EC-255, "Component Inspection".)
- EVAP control system pressure sensor (Refer to EC-292, "Component Inspection".)
- Refrigerant pressure sensor (Refer to EC-434, "Diagnosis Procedure".)
- Tumble control valve position sensor (Refer to EC-365, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace malfunctioning component.

7.CHECK APP SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between APP sensor harness connector and ECM harness connector as follows.

APP sensor		ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
E110	2	E16	84	Existed	
LIIU	1	L 10	100	LAISIEU	

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to ground or shot to power in harness or connectors.

f 8.CHECK APP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between APP sensor harness connector and ECM harness connector as follows.

APP sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E110	6	E16	82	Existed
EIIU	3	E10	81	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or shot to power in harness or connectors.

9.CHECK APP SENSOR

Refer to EC-395, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> GO TO 10.

10. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- 2. Go to EC-395, "Special Repair Requirement".

>> INSPECTION END

11. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- Reconnect all harness connectors disconnected.
- Turn ignition switch ON.
- Check the voltage between ECM harness connector terminals.

ECM						
+ -		Condition		Voltage		
Connector	Terminal	Connector	Terminal			
	81		84		Fully released	0.5 - 1.0V
E16	(APP sensor 1 signal)	E16	(Sensor ground)	- Accelerator pedal	Fully depressed	4.2 - 4.8V
E10	82	EIO	100		Fully released	0.25 - 0.5V
	(APP sensor 2 signal)		(Sensor ground)		Fully depressed	2.0 - 2.5V

Is the inspection result normal?

>> INSPECTION END YES

NO >> GO TO 2.

2.replace accelerator pedal assembly

- Replace accelerator pedal assembly.
- 2. Go to EC-395, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-27, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 2.

2.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-27, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-27, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END

EC-395 Revision: 2008 January 2008 Rogue

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P2423 HC ADSORPTION CATALYST FUNCTION

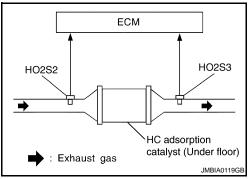
DTC Logic

DTC DETECTION LOGIC

The ECM monitors the phase gap between heated oxygen sensor 2 signal and heated oxygen sensor 3 signal.

The phase gap between heated oxygen sensor 2 signal and heated oxygen sensor 3 signal becomes small as the HC adsorption catalyst (under floor) is deteriorated.

When the phase gap between heated oxygen sensor 2 signal and heated oxygen sensor 3 signal approaches a specified limit value, the HC adsorption catalyst (under floor) malfunction is diagnosed.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2423	HC adsorption catalyst efficiency below threshold	 HC adsorption catalyst (under floor) does not operate properly. HC adsorption catalyst (under floor) does not have enough oxygen storage capacity. 	HC adsorption catalyst (under floor) Exhaust tube Intake air leaks Fuel injector Fuel injector leaks Spark plug Improper ignition timing

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

(P)With CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Repeat the following procedure 3 times.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

NOTE

Keep the vehicle speed as steady as possible during the cruising.

Stop vehicle with engine running.

NOTE:

Never turn ignition switch OFF.

- 3. Select "DTC & SRT CONFIRMATION" then "SRT WORK SUPPORT" mode with CONSULT-III.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more until "INCMP" of "CATALYST" changes to "CMPLT" NOTE:
 - · Keep the vehicle speed as steady as possible during the cruising.
 - It will take at most 3 minutes until "INCMP" of "CATALYST" changes to "CMPLT".
- 5. Check 1st trip DTC.

With GST

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Repeat the following procedure 3 times.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

NOTE

Keep the vehicle speed as steady as possible during the cruising.

- Stop vehicle with engine running.

NOTE:

P2423 HC ADSORPTION CATALYST FUNCTION

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Never turn ignition switch OFF.

Check 1st trip DTC.

Is 1st tip DTC detected?

YES >> Go to EC-397, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

INFOID:0000000001715379

1. CHECK EXHAUST SYSTEM

Visually check exhaust tubes and muffler for dent.

Is the inspection result normal?

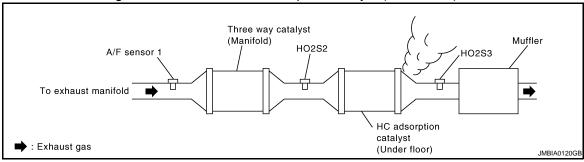
YES >> GO TO 2.

NO >> Repair or replace.

2.CHECK EXHAUST GAS LEAK

Start engine and run it at idle.

Listen for an exhaust gas leak before the HC adsorption catalyst (under floor).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 3.

3.CHECK INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 4.

4. CHECK IGNITION TIMING

Check the following items. Refer to EC-22, "BASIC INSPECTION: Special Repair Requirement".

Items	Specifications
Target idle speed	700 ± 50 rpm (in P or N position)
Ignition timing	15 ± 5° BTDC (in P or N position)

Is the inspection result normal?

YES >> GO TO 5.

NO >> Follow the EC-22, "BASIC INSPECTION: Special Repair Requirement".

5. CHECK FUEL INJECTOR

Stop engine and then turn ignition switch ON.

Check the voltage between ECM harness connector and ground.

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ECM Connector Terminal		Ground	Voltage
		Giouna	
	29		
F7	30	Ground	Battery voltage
	31	Giouna	
	32		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Perform <u>EC-416</u>, "<u>Diagnosis Procedure</u>".

6.CHECK FUNCTION OF IGNITION COIL-I

CAUTION:

Do the following procedure in the place where ventilation is good without the combustible.

- 1. Turn ignition switch OFF.
- 2. Remove fuel pump fuse in IPDM E/R to release fuel pressure.

NOTE:

Do not use CONSULT-III to release fuel pressure, or fuel pressure applies again during the following procedure.

- 3. Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.
- 6. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 7. Remove ignition coil and spark plug of the cylinder to be checked.
- 8. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 9. Connect spark plug and harness connector to ignition coil.
- 10. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

CAUTION:

- Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.
- It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken. NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 7.

7.CHECK FUNCTION OF IGNITION COIL-II

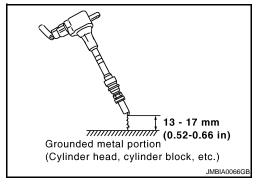
- 1. Turn ignition switch OFF.
- Disconnect spark plug and connect a known-good spark plug.
- 3. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

Is the inspection result normal?

YES >> GO TO 8.

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P2423 HC ADSORPTION CATALYST FUNCTION

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

>> Check ignition coil, power transistor and their circuits. Refer to EC-422, "Diagnosis Procedure". NO

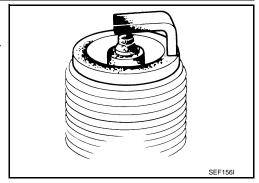
8. CHECK SPARK PLUG

Check the initial spark plug for fouling, etc.

Is the inspection result normal?

YES >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-19, "Inspection".

NO >> Repair or clean spark plug. Then GO TO 9.



9. CHECK FUNCTION OF IGNITION COIL-III

- Reconnect the initial spark plugs.
- 2. Crank engine for about three seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

Spark should be generated.

Is the inspection result normal?

>> INSPECTION END YFS

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-19, "Inspec-

10. CHECK FUEL INJECTOR

- Turn ignition switch OFF.
- Remove fuel injector assembly.

Refer to EM-42, "Removal and Installation".

Keep fuel hose and all fuel injectors connected to fuel tube.

- 3. Disconnect all ignition coil harness connectors.
- Reconnect all fuel injector harness connectors disconnected.
- Turn ignition switch ON.

Make sure fuel does not drip from fuel injector.

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace the fuel injector(s) from which fuel is dripping.

11. CHECK INTERMITTENT INCIDENT

Refer to GI-41. "Intermittent Incident".

Is the trouble fixed?

YES >> INSPECTION END

NO >> Replace HC adsorption catalyst (under floor). EC

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P2A00 A/F SENSOR 1

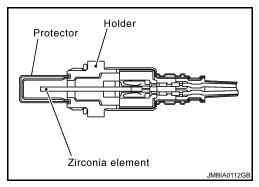
Description INFOID:000000001897697

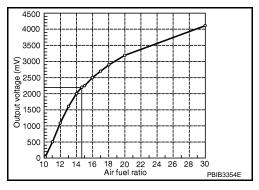
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800°C (1,472°F).





DTC Logic

DTC DETECTION LOGIC

To judge the malfunction, the A/F signal computed by ECM from the A/F sensor 1 signal is monitored not to be shifted to LEAN side or RICH side.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P2A00	Air fuel ratio (A/F) sensor 1 circuit range/performance	 The output voltage computed by ECM from the A/F sensor 1 signal is shifted to the lean side for a specified period. The A/F signal computed by ECM from the A/F sensor 1 signal is shifted to the rich side for a specified period. 	 A/F sensor 1 A/F sensor 1 heater Fuel pressure Fuel injector Intake air leaks

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- Clear the mixture ratio self-learning value. Refer to <u>EC-29</u>, "MIXTURE RATIO SELF-LEARNING VALUE <u>CLEAR</u>: Special Repair Requirement".
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Keep engine speed between 2,500 and 3,000 rpm for 20 minutes.
- 6. Check 1st trip DTC\$.

P2A00 A/F SENSOR 1 [FOR CALIFORNIA] < COMPONENT DIAGNOSIS > Is 1st trip DTC detected? Α YES >> Go to EC-401, "Diagnosis Procedure". NO >> INSPECTION END Diagnosis Procedure INFOID:0000000001715382 EC 1. CHECK GROUND CONNECTION Turn ignition switch OFF. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection". Is the inspection result normal? YES >> GO TO 2. NO >> Repair or replace ground connection. 2.RETIGHTEN A/F SENSOR 1 Loosen and retighten the A/F sensor 1. Refer to EM-32, "Removal and Installation". >> GO TO 3. F 3.CHECK FOR INTAKE AIR LEAK Start engine and run it at idle. Listen for an intake air leak after the mass air flow sensor. Is intake air leak detected? >> GO TO 4. YES NO >> Repair or replace. Н f 4.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE Clear the mixture ratio self-learning value. Refer to EC-29, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement". 2. Run engine for at least 10 minutes at idle speed. Is the 1st trip DTC P0171 or P0172 detected? Is it difficult to start engine? >> Perform trouble diagnosis for DTC P0171or P0172. Refer to EC-227, "DTC Logic" or EC-231, YES "DTC Logic". >> GO TO 5. NO K CHECK HARNESS CONNECTOR Turn ignition switch OFF. Disconnect A/F sensor 1 harness connector. Check harness connector for water. Water should not exit.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace harness connector.

$\mathsf{6}.$ CHECK A/F SENSOR 1 POWER SUPPLY CIRCUIT

- Turn ignition switch ON.
- Check the voltage between A/F sensor 1 harness connector and ground.

	A/F sensor 1 Connector Terminal		Ground	Voltage
			Ground	
	F28	4	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

.DETECT MALFUNCTIONING PART

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< COMPONENT DIAGNOSIS >

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

$8.\mathsf{CHECK}$ A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sensor 1		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F28	1	F8	45	Existed
Γ20	2	го	49	Existed

4. Check the continuity between ECM harness connector or A/F sensor 1 harness connector and ground.

A/F s	A/F sensor 1 ECM Ground		ECM		Continuity
Connector	Terminal	Connector	Terminal	Ground	Continuity
F28	1	F8	45	Ground	Not existed
Γ20	2	ГО	49	Giodila	Not existed

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9.CHECK A/F SENSOR 1 HEATER

Refer to EC-135, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 11.

10. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace.

11.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

Do you have CONSULT-III?

YES >> GO TO 12.

NO >> GO TO 13.

12.CONFIRM A/F ADJUSTMENT DATA

(II) With CONSULT-III

1. Turn ignition switch ON.

P2A00 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

- Select "A/F ADJ-B1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Make sure that "0.000" is displayed on CONSULT-III screen.

Is "0.000" displayed?

YES >> INSPECTION END

NO >> GO TO 13.

13.clear the mixture ratio self-learning value

Clear the mixture ratio self-learning value. Refer to EC-29, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".

Do you have CONSULT-III?

YES >> GO TO 14.

NO >> INSPECTION END

14. CONFIRM A/F ADJUSTMENT DATA

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- Select "A/F ADJ-B1" in "DATA MONITOR" mode with CONSULT-III.
- Make sure that "0.000" is displayed on CONSULT-III screen.

>> INSPECTION END

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ASCD BRAKE SWITCH

Description INFOID:000000001902640

When the brake pedal is depressed, ASCD brake switch is turned OFF and stop lamp switch is turned ON. ECM detects the state of the brake pedal by this input of two kinds (ON/OFF signal). Refer to EC-58, "System Description" for the ASCD function.

Component Function Check

INFOID:0000000001715384

1. CHECK FOR ASCD BRAKE SWITCH FUNCTION

With CONSULT-III

- Turn ignition switch ON.
- 2. Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "BRAKE SW1" indication under the following conditions.

Monitor item	Co	Indication	
BRAKE SW1 Brake peo	Brake podal	Slightly depressed	OFF
	Brake pedar	Fully released	ON

Without CONSULT-III

- 1. Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector and ground.

ECM		Ground		ndition	Voltage
Connector	Terminal	Oround	Condition		voitage
E16	110	Ground	Brake pedal	Slightly depressed	Approx. 0V
LIO	(ASCD brake switch signal)	Giodila	Brake pedar	Fully released	Battery voltage

Is the inspection result normal?

YES >> INSPECTION END.

NO >> Refer to EC-404, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001715385

1. CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between ASCD brake switch harness connector and ground.

ASCD b	rake switch	Ground	Voltage
Connector	Connector Terminal		voltage
E112	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E105, M77
- 10A fuse (No. 1)
- Harness for open or short between ASCD brake switch and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

ASCD BRAKE SWITCH

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

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$\overline{3.}$ CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between ASCD brake switch harness connector and ECM harness connector.

ASCD brake switch		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E112	2	E16	110	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK ASCD BRAKE SWITCH

Refer to EC-405, "Component Inspection (ASCD Brake Switch)".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace ASCD brake switch.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection (ASCD Brake Switch)

INFOID:0000000001902641

1.CHECK ASCD BRAKE SWITCH-I

- Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- 3. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Existed
	Бтаке рецаг	Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK ASCD BRAKE SWITCH-II

- Adjust ASCD brake switch installation. Refer to <u>BR-9</u>, "Inspection and Adjustment".
- 2. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	2 Brake pedal	Fully released	Existed
i and z		Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD brake switch.

[FOR CALIFORNIA]

ASCD INDICATOR

Description INFOID:000000001715388

ASCD indicator lamp illuminates to indicate ASCD operation status. Lamp has two indicators, CRUISE and SET, and is integrated in combination meter.

CRUISE lamp illuminates when MAIN switch on ASCD steering switch is turned ON to indicated that ASCD system is ready for operation.

SET lamp illuminates when following conditions are met.

- CRUISE lamp is illuminated.
- SET/COAST switch on ASCD steering switch is turned ON while vehicle speed is within the range of ASCD setting.

SET lamp remains lit during ASCD control.

Refer to EC-58, "System Description" for the ASCD function.

Component Function Check

INFOID:0000000001715389

1. ASCD INDICATOR FUNCTION

Check ASCD indicator under the following conditions.

ASCD INDICATOR	CONDITION		SPECIFICATION
CRUISE LAMP	Ignition switch: ON MAIN switch: Pressed at the 1st time →at the 2nd time		$ON \to OFF$
	MAIN switch: ON	ASCD: Operating	ON
SET LAMP	When vehicle speed: Be- tween 40 km/h (25 MPH) and 144 km/h (89 MPH)	ASCD: Not operating	OFF

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-406, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001715390

1.CHECK DTC

Check that DTC U1000 or U1001 is not displayed.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble diagnosis for DTC U1000, U1001. Refer to <u>EC-128</u>. "DTC Logic".

2.CHECK COMBINATION METER OPERATION

Refer to MWI-33, "CONSULT-III Function (METER/M&A)".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check combination meter circuit. Refer to MWI-9, "SPEEDOMETER: System Diagram".

3.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

[FOR CALIFORNIA]

COOLING FAN

Description INFOID:000000001715391

The ECM controls the cooling fan corresponding to the vehicle speed, engine coolant temperature, refrigerant pressure, and air conditioner ON signal. The control system has 3-step control [HIGH/LOW/OFF].

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COOLING FAN MOTOR

The cooling fan operates at each speed when the current flows in the cooling fan motor as follows.

Cooling fan speed	Cooling fan motor terminals		
Cooling lan speed	(+)	(-)	
Middle (MID)	1	3 and 4	
	2	3 and 4	
	1 and 2	3	
	1 and 2	4	
High (HI)	1 and 2	3 and 4	

The cooling fan operates at low (LOW) speed when cooling fan motors-1 and -2 are circuited in series under middle speed condition.

Refer to EC-65, "System Description".

Component Function Check

INFOID:0000000001715392

1. CHECK COOLING FAN LOW SPEED FUNCTION

(II) With CONSULT-III

- 1. Turn ignition switch ON.
- Perform "COOLING FAN" in "ACTIVE TEST" mode with CONSULT-III and touch "LOW" on the CON-SULT-III screen.
- 3. Make sure that cooling fans operates at low speed.

® Without CONSULT-III

- 1. Start engine and let it idle.
- Turn air conditioner switch and blower fan switch ON.
- 3. Make sure that cooling fan operates at low speed.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Check cooling fan low speed control circuit. Refer to "PROCEDURE A" in <u>EC-408</u>, "<u>Diagnosis Procedure</u>".

2.CHECK COOLING FAN HIGH SPEED FUNCTION

(III) With CONSULT-III

- 1. Touch "HI" on the CONSULT-III screen.
- Make sure that cooling fans operates at higher speed than low speed.

Without CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Turn air conditioner switch and blower fan switch OFF.
- 3. Disconnect engine coolant temperature sensor harness connector.
- 4. Connect 150Ω resistor to engine coolant temperature sensor harness connector.
- 5. Restart engine and make sure that cooling fan operates at higher speed than low speed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Check cooling fan high speed control circuit. Refer to "PROCEDURE B" in <u>EC-408</u>, "<u>Diagnosis Procedure"</u>.

< COMPONENT DIAGNOSIS >

Diagnosis Procedure

INFOID:0000000001715393

[FOR CALIFORNIA]

PROCEDURE A

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E38. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK COOLING FAN MOTORS POWER SUPPLY CIRCUIT-I

- 1. Disconnect cooling fan motor-2 harness connector.
- 2. Check the voltage between cooling fan motor-2 harness connector and ground.

Cooling fan motor-2		Ground	Voltage
Connector	Terminal	Giodila	voltage
F54	1	Ground	Battery voltage
⊑ 34	2	Giouna	battery voitage

3. Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- 40A fusible link (letter M)
- · Harness for open or short between cooling fan motor-2 and battery
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK COOLING FAN MOTORS POWER SUPPLY CIRCUIT-II

- 1. Disconnect cooling fan relay-4.
- 2. Turn ignition switch ON.
- 3. Check the voltage between cooling fan relay-4 harness connector and ground.

Cooling fan relay-4		Ground	Voltage	
Con	nector	Terminal	Ground	voltage
Е	57	2	Ground	Battery voltage

4. Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- · Harness for open or short between cooling fan relay-4 and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK COOLING FAN MOTORS GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect cooling fan motor-1 harness connector.

[FOR CALIFORNIA]

3. Check the continuity between cooling fan motor-1 harness connector and ground.

Cooling fan motor-1		Ground	Continuity
Connector	Terminal	Giodila	Continuity
E53	3	Ground	Existed
LJJ	4	Giodila	LXISTEG

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4. Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

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7.CHECK COOLING FAN MOTORS CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect IPDM E/R harness connector E13.
- Check the continuity between cooling fan motor-2 harness connector and cooling fan relay-4 harness connector.

Cooling fa	an motor-2	Cooling fan relay-4		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E54	3	E57	3	Existed

 Check the continuity between cooling fan relay-4 harness connector and cooling fan motor-1 harness connector and ground.

Cooling f	an relay-4	Cooling fan motor-1		Continuity
Connector	Terminal	Connector Terminal		Continuity
E57	5	E53	2	Existed

4. Check the continuity between cooling fan relay-4 harness connector and IPDM E/R harness connector.

Cooling fan relay-4		IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		Continuity
E57	1	E13	31	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

8.CHECK COOLING FAN RELAY-4

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Refer to EC-413, "Component Inspection (Cooling Fan Relay)".

Is the inspection result normal?

YES >> GO TO 9.

NO

>> Replace cooling fan relay.

9. CHECK COOLING FAN MOTORS

Refer to EC-412, "Component Inspection (Cooling Fan Motor)".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace malfunctioning cooling fan motor.

10. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connector.

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< COMPONENT DIAGNOSIS >

PROCEDURE B

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21, E38. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK IPDM E/R POWER SUPPLY CIRCUIT

- Disconnect IPDM E/R harness connector E10.
- 2. Check the voltage between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Voltage
Connector	Terminal	Orouna	voltage
E10	6	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.

- 40A fusible link (letter K)
- Harness for open or short between IPDM E/R and battery

>> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK IPDM E/R GROUND CIRCUIT FOR OPEN ANF SHORT

- 1. Disconnect IPDM E/R harness connector E11.
- 2. Check the continuity between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal	Ground	Continuity
E11	11	Ground	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK COOLING FAN MOTORS POWER SUPPLY CIRCUIT-I

- 1. Disconnect cooling fan motor-2 harness connector.
- 2. Check the voltage between cooling fan motor-2 harness connector and ground.

Cooling fan motor-2		Ground	Voltage
Connector	Terminal	Giodila	voltage
F54	1	Ground	Battery voltage
L34	2	Glound	Dattery Voltage

Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

• 40A fusible link (letter M)

COOLING FAN

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

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Harness for open or short between cooling fan motor-2 and battery

>> Repair open circuit or short to ground or short to power in harness or connectors.

7.CHECK COOLING FAN MOTORS POWER SUPPLY CIRCUIT-II

- Disconnect cooling fan relay-5.
- 2. Turn ignition switch ON.
- 3. Check the voltage between cooling fan relay-5 harness connector and ground.

Cooling fan relay-5		Ground	Voltage
Connector	Terminal	Ground	voltage
E59	2	Ground	Battery voltage

Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 8.

8.DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- · Harness for open or short between cooling fan relay-5 and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

9. CHECK COOLING FAN MOTORS GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect cooling fan motor-1 harness connector.
- 3. Check the continuity between cooling fan motor-1 harness connector and ground.

Cooling fan motor-1		Ground	Continuity	
Connector	Terminal	Ground	Continuity	
E53	3	Ground	Existed	
L33	4	Giodila	LAISIEU	

Check the continuity between cooling fan relay-5 harness connector and ground.

Cooling f	Cooling fan relay-5		Continuity
Connector	Terminal	Ground	Continuity
E59	5	Ground	Existed

5. Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

10.CHECK COOLING FAN MOTORS CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect IPDM E/R harness connector E15.
- 2. Check the continuity between cooling fan motor-2 harness connector and cooling fan relay-5 harness connector.

Cooling fa	Cooling fan motor-2		Cooling fan relay-5	
Connector	Terminal	Connector Terminal		Continuity
E54	4	E59	3	Existed

INFOID:0000000001715394

< COMPONENT DIAGNOSIS >

3. Check the continuity between cooling fan motor-2 harness connector and IPDM E/R harness connector.

Cooling fan motor-2		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E54	3	E10	7	Existed

4. Check the continuity between cooling fan relay-5 harness connector and IPDM E/R harness connector.

Cooling f	Cooling fan relay-5		IPDM E/R	
Connector	Terminal	Connector Terminal		Continuity
E59	1	E15	50	Existed

5. Check the continuity between cooling fan motor-1 harness connector and IPDM E/R harness connector.

Cooling fa	an motor-1	IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		Continuity
E52	1	E10	4	Existed
LJJ	E53 E10		8	LAISIEU

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

11. CHECK COOLING FAN RELAY-5

Refer to EC-413, "Component Inspection (Cooling Fan Relay)".

Is the inspection result normal?

YES >> GO TO 12.

NO >> Replace cooling fan relay.

12. CHECK COOLING FAN MOTORS

Refer to EC-412, "Component Inspection (Cooling Fan Motor)".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace malfunctioning cooling fan motor.

13. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connector.

Component Inspection (Cooling Fan Motor)

1. CHECK COOLING FAN MOTORS

- Turn ignition switch OFF.
- 2. Disconnect cooling fan motor-1 and -2 harness connectors E53, E54.
- 3. Supply cooling fan motor terminals with battery voltage and check operation.

[FOR CALIFORNIA]

Cooling fan n	notor terminals	Operation	
(+)	(-)	— Operation	
1	3 and 4		
2	3 and 4	Cooling fans operates at low speed.	
1 and 2	3	Cooling lans operates at low speed.	
1 and 2	4		
1 and 2	3 and 4	Cooling fans operates at high spee	

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INFOID:0000000001715395

Is the inspection result normal?

YES >> INSPECTION END

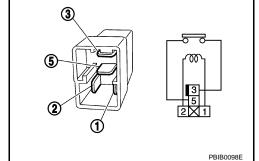
NO >> Replace cooling fan motor.

Component Inspection (Cooling Fan Relay)

1. CHECK COOLING FAN RELAYS

- 1. Turn ignition switch OFF.
- Remove cooling fan relay.
- Check the continuity between cooling fan relay terminals under the following conditions.

Terminals	Conditions	Continuity
3 and 5	12V direct current supply between terminals 1 and 2	Existed
5 and 5	No current supply	Not existed



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace cooling fan relay.

EC-413 Revision: 2008 January 2008 Rogue

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ELECTRICAL LOAD SIGNAL

Description INFOID:000000001715396

The electrical load signal (Headlamp switch signal, rear window defogger switch signal, etc.) is transferred through the CAN communication line from BCM to ECM via IPDM E/R.

Component Function Check

INFOID:0000000001715397

1. CHECK REAR WINDOW DEFOGGER SWITCH FUNCTION

- 1. Turn ignition switch ON.
- 2. Connect CONSULT-III and select "DATA MONITOR" mode.
- 3. Select "LOAD SIGNAL" and check indication under the following conditions.

Monitor item	Condition	Indication	
LOAD SIGNAL	Rear window defogger switch	ON	ON
LOAD SIGNAL	Real willdow delogger switch	OFF	OFF

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-414, "Diagnosis Procedure".

2. CHECK LIGHTING SWITCH FUNCTION

Check "LOAD SIGNAL" indication under the following conditions.

Monitor item	Co	Indication	
LOAD SIGNAL	Lighting switch	ON at 2nd position	ON
LOAD SIGNAL	Lighting switch	OFF	OFF

Is the inspection result normal?

YES >> GO TO 3.

NO >> Go to EC-414, "Diagnosis Procedure".

3.CHECK HEATER FAN CONTROL SWITCH FUNCTION

Select "HEATER FAN SW" and check indication under the following conditions.

Monitor item	Condition		Indication
HEATER FAN SW	Heater fan control switch	ON	ON
TIEATER TAN OW	Tieater fair control switch	OFF	OFF

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-414, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001715398

1. INSPECTION START

Confirm the malfunctioning circuit (rear window defogger, headlamp or heater fan). Refer to <u>EC-414, "Component Function Check"</u>.

Which circuit is related to the incident?

Rear window defogger>>GO TO 2.

Headlamp>>GO TO 3.

Heater fan>>GO TO 4.

2. CHECK REAR WINDOW DEFOGGER SYSTEM

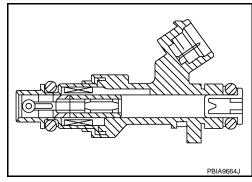
Refer to DEF-4, "System Diagram".

ELECTRICAL LOAD SIGNAL [FOR CALIFORNIA] < COMPONENT DIAGNOSIS > >> INSPECTION END 3.CHECK HEADLAMP SYSTEM Α Refer to EXL-8, "System Diagram" (XENON TYPE) or EXL-136, "System Diagram" (HALOGEN TYPE). EC >> INSPECTION END 4. CHECK HEATER FAN CONTROL SYSTEM Refer to VTL-3, "System Description". >> INSPECTION END D Е F Н K L M Ν 0

FUEL INJECTOR

Description INFOID:000000001715399

The fuel injector is a small, precise solenoid valve. When the ECM supplies a ground to the fuel injector circuit, the coil in the fuel injector is energized. The energized coil pulls the ball valve back and allows fuel to flow through the fuel injector into the intake manifold. The amount of fuel injected depends upon the injection pulse duration. Pulse duration is the length of time the fuel injector remains open. The ECM controls the injection pulse duration based on engine fuel needs.



Component Function Check

INFOID:0000000001715400

1.INSPECTION START

Turn ignition switch to START.

Is any cylinder ignited?

YES >> GO TO 2.

NO >> Go to EC-416, "Diagnosis Procedure".

2. CHECK FUEL INJECTOR FUNCTION

(P)With CONSULT-III

- 1. Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- 3. Make sure that each circuit produces a momentary engine speed drop.

⊗Without CONSULT-III

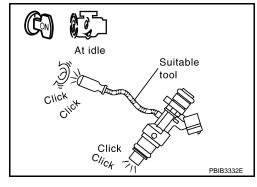
- 1. Let engine idle.
- 2. Listen to each fuel injector operating sound.

Clicking noise should be heard.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-416, "Diagnosis Procedure".



Diagnosis Procedure

INFOID:0000000001715401

1.CHECK FUEL INJECTOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect fuel injector harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between fuel injector harness connector and ground.

Fuel injector			Ground	Voltage	
Cylinder	Connector	Terminal	Giodila	voitage	
1	F37	1		Battery voltage	
2	F38	1	Ground		
3	F39	1	Ground		
4	F40	1			
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Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

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INFOID:0000000001715402

2.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- IPDM E/R harness connector E14
- 15A fuse (No. 64)
- Harness for open or short between fuel injector and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

3.check fuel injector output signal circuit for open and short

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between fuel injector harness connector and ECM harness connector.

Fuel injector			ECM		Continuity
Cylinder	Connector	Terminal	Connector	Terminal	Continuity
1	F37	2		32	
2	F38	2	F7	31	Existed
3	F39	2	Г	30	Existed
4	F40	2		29	

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK FUEL INJECTOR

Refer to EC-417, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace malfunctioning fuel injector.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

Component Inspection

1. CHECK FUEL INJECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect fuel injector harness connector.

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FUEL INJECTOR

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

3. Check resistance between fuel injector terminals as follows.

Terminals	Resistance
1 and 2	11.1 - 14.3Ω [at 10 -60°C (50 - 140°F)]

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace malfunctioning fuel injector.

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FUEL PUMP

Description INFOID:0000000001715403

Sensor	Input signal to ECM	ECM Function	Actuator
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*	Fuel pump control	Fuel pump relay ↓
Battery	Battery voltage*		Fuel pump

^{*:} ECM determines the start signal status by the signals of engine speed and battery voltage.

The ECM activates the fuel pump for several seconds after the ignition switch is turned ON to improve engine startability. If the ECM receives a engine speed signal from the camshaft position sensor (PHASE), it knows that the engine is rotating, and causes the pump to operate. If the engine speed signal is not received when the ignition switch is ON, the engine stalls. The ECM stops pump operation and prevents battery discharging, thereby improving safety. The ECM does not directly drive the fuel pump. It controls the ON/OFF fuel pump relay, which in turn controls the fuel pump.

Condition	Fuel pump operation	
Ignition switch is turned to ON.	Operates for 1 second.	
Engine running and cranking	Operates.	
When engine is stopped	Stops in 1.5 seconds.	
Except as shown above	Stops.	

Component Function Check

1. CHECK FUEL PUMP FUNCTION

- Turn ignition switch ON.
- Pinch fuel feed hose (1) with two fingers.
- ∀: Vehicle front

Fuel pressure pulsation should be felt on the fuel feed hose for 1 second after ignition switch is turned ON.

Is the inspection result normal?

YES >> INSPECTION END

NO >> EC-419, "Diagnosis Procedure".

INFOID:0000000001715405

INFOID:000000001715404

Diagnosis Procedure

${f 1}$.CHECK FUEL PUMP POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

E	СМ	Ground	Voltage	
Connector	Terminal	Ground	voltage	
F7	14	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 2.

2.CHECK FUEL PUMP POWER SUPPLY CIRCUIT-II

< COMPONENT DIAGNOSIS >

- 1. Turn ignition switch OFF.
- Disconnect IDPDM E/R harness connector E13.
- 3. Check the continuity between IPDM E/R harness connector and ECM harness connector.

E	СМ	IPDI	Continuity	
Connector	Terminal	Connector Termin		Continuity
F7	14	E13	33	Existed

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R connector E13
- Harness for open or short between ECM and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK 15A FUSE

- 1. Disconnect 15A fuse (No. 57) from IPDM E/R.
- 2. Check 15A fuse.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace fuse.

5. CHECK FUEL PUMP POWER SUPPLY CIRCUIT-III

- 1. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 2. Check the continuity between IPDM E/R harness connector and "fuel level sensor unit and fuel pump" and ground.

IPDM E/R		Fuel level	Continuity	
Connector	Terminal	Connector	Terminal	
E14	46	B40	5	Existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E105, M77
- Harness connectors M11, B1
- Harness for open or short between "fuel level sensor unit and fuel pump" and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

7.CHECK FUEL PUMP GROUND CIRCUIT

1. Check the continuity between "fuel level sensor unit and fuel pump" and ground.

Fuel level s and fue		Ground	Continuity
Connector Terminal			
B40	3	Ground	Existed

2. Also heck harness for short to power.

FUEL PUMP

FUEL PUMP		
< COMPONENT DIAGNOSIS >	[FOR CALIFORNIA]	
Is the inspection result normal?		
YES >> GO TO 8. NO >> Repair open circuit or short to power in harness or connectors.		Α
8.CHECK FUEL PUMP		
Refer to EC-421, "Component Inspection".		EC
Is the inspection result normal?		
YES >> GO TO 9.		С
NO >> Replace fuel pump.		
9. CHECK INTERMITTENT INCIDENT		
Refer to GI-41, "Intermittent Incident".		D
Is the inspection result normal?		
YES >> Replace IPDM E/R.		Е
NO >> Repair or replace harness or connectors.		
Component Inspection	INFOID:000000001715406	F
1.CHECK FUEL PUMP		
1. Turn ignition switch OFF.		G
 Disconnect "fuel level sensor unit and fuel pump" harness connector. Check resistance between "fuel level sensor unit and fuel pump" terminals as follows: 	NA/C	
3. Officer resistance between Tuerlever sensor unit and fuer pump terminals as folio	W 3.	Н
Terminals Resistance		
3 and 5 0.2 - 5.0 Ω [at 25°C (77°F)]		
Is the inspection result normal?		ı
YES >> INSPECTION END NO >> Replace "fuel level sensor unit and fuel pump".		
The place fuel level serious drift and fuel pump.		J
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IGNITION SIGNAL

Description INFOID:000000001715408

The ignition signal from the ECM is sent to and amplified by the power transistor. The power transistor turns ON and OFF the ignition coil primary circuit. This ON/OFF operation induces the proper high voltage in the coil secondary circuit.

Component Function Check

INFOID:0000000001715409

1.INSPECTION START

Turn ignition switch OFF, and restart engine.

Does the engine start?

YES-1 >> With CONSULT-III: GO TO 2.

YES-2 >> Without CONSULT-III: GO TO 3.

NO >> Go to EC-422, "Diagnosis Procedure".

2.ignition signal function

(P)With CONSULT-III

- 1. Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- 2. Make sure that each circuit produces a momentary engine speed drop.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-422, "Diagnosis Procedure".

3.ignition signal function

⊗ Without CONSULT-III

- 1. Let engine idle.
- 2. Read the voltage signal between ECM harness connector and ground.

ECM		Ground	Voltage signal	
Connector	Terminal	Ground	voltage signal	
	9			
	10		20mSec/div	
- -	11	Ground		
F7	21	Glound	2V/div JMBIA0085GB	

NOTE:

The pulse cycle changes depending on rpm at idle.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-422, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001715410

1. CHECK IGNITION COIL POWER SUPPLY CIRCUIT-I

- Turn ignition switch OFF, wait at least 10 seconds and then turn ON.
- Check the voltage between ECM harness connector and ground.

E	CM	Ground	Voltage
Connector Terminal		Cround	Voltage
E16	105	Ground	Battery voltage

IGNITION SIGNAL

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-124, "Diagnosis Procedure".

2.check ignition coil power supply circuit-ii

- Turn ignition switch OFF.
- Disconnect condenser-1 harness connector. 2.
- 3. Turn ignition switch ON.
- 4. Check the voltage between condenser-1 harness connector and ground.

Cond	denser	Ground	Voltage
Connector Terminal		Vollage	voltage
F26	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 3.

3.CHECK IGNITION COIL POWER SUPPLY CIRCUIT-III

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector E15. 2.
- Check the continuity between IPDM E/R harness connector and condenser-1 harness connector.

IPDM E/R		Condenser-1		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
E15	47	F13	1	Existed	

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> Go to EC-124, "Diagnosis Procedure".

NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between IPDM E/R and condenser-1

>> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK CONDENSER-1 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Check the continuity between condenser-1 harness connector and ground.

Cond	lenser-1	Ground	Continuity
Connector	Terminal	Ground	Continuity
F13	2	Ground	Existed

Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

O.CHECK CONDENSER

Refer to EC-426, "Component Inspection (Condenser-1)"

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace condenser.

EC-423 Revision: 2008 January

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7.check ignition coil power supply circuit-iv

- 1. Reconnect all harness connectors disconnected.
- 2. Disconnect ignition coil harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between ignition coil harness connector and ground.

Ignition coil			Ground	Voltage
Cylinder	Connector	Terminal	Orodria	voltage
1	F33	3		
2	F34	3	Ground	Battery voltage
3	F35	3		Battery voltage
4	F36	3		

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK IGNITION COIL GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Check the continuity between ignition coil harness connector and ground.

Ignition coil			Ground	Continuity
Cylinder	Connector	Terminal	Ground	Continuity
1	F33	2		
2	F34	2	Ground	Existed
3	F35	2	Giodila	LXISIEU
4	F36	2		

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9. CHECK IGNITION COIL OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Disconnect ECM harness connector.
- 2. Check the continuity between ECM harness connector and ignition coil harness connector.

Ignition coil			E	Continuity	
Cylinder	Connector	Terminal	Connector	Terminal	Continuity
1	F33	1		11	
2	F34	1	F7	10	Existed
3	F35	1	F1	9	Existed
4	F36	1		21	

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

10. CHECK IGNITION COIL WITH POWER TRANSISTOR

Refer to EC-425, "Component Inspection (Ignition Coil with Power Transistor)".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace malfunctioning ignition coil with power transistor.

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11. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection (Ignition Coil with Power Transistor)

INFOID:0000000001715411

${f 1}$.CHECK IGNITION COIL WITH POWER TRANSISTOR-I

- Turn ignition switch OFF.
- Disconnect ignition coil harness connector. 2.
- 3. Check resistance between ignition coil terminals as follows.

Terminals	Resistance Ω [at 25°C (77°F)]		
1 and 2	Except 0 or ∞		
1 and 3	Except 0		
2 and 3			

Is the inspection result normal?

>> GO TO 2. YES

NO >> Replace malfunctioning ignition coil with power transistor.

2.CHECK IGNITION COIL WITH POWER TRANSISTOR-II

CAUTION:

Do the following procedure in the place where ventilation is good without the combustible.

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- 3. Remove fuel pump fuse in IPDM E/R to release fuel pressure.

NOTE:

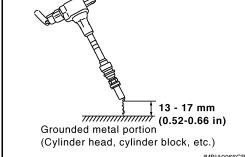
Do not use CONSULT-III to release fuel pressure, or fuel pressure applies again during the following procedure.

- 4. Start engine.
- 5. After engine stalls, crank it two or three times to release all fuel pressure.
- 6. Turn ignition switch OFF.
- 7. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 8. Remove ignition coil and spark plug of the cylinder to be checked.
- 9. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 10. Connect spark plug and harness connector to ignition coil.
- 11. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 -0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- 12. Crank engine for about three seconds, and check whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

CAUTION:

• Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.



 It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken. NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

Is the inspection result normal?

YES >> INSPECTION END

>> Replace malfunctioning ignition coil with power transistor. NO

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IGNITION SIGNAL

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

Component Inspection (Condenser-1)

INFOID:0000000001715412

1. CHECK CONDENSER-1

- 1. Turn ignition switch OFF.
- 2. Disconnect condenser-1 harness connector.
- 3. Check resistance between condenser-1 terminals as follows.

Terminals	Resistance
1 and 2	Above 1 M Ω [at 25°C (77°F)]

Is the inspection result normal?

YES >> INSPECTION END NO >> Replace condenser-1.

[FOR CALIFORNIA]

INFOID:0000000001715413

INFOID:0000000001715414

MALFUNCTION INDICATOR LAMP

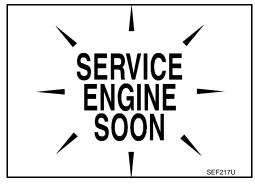
Description

The Malfunction Indicator Lamp (MIL) is located on the combination meter.

The MIL will light up when the ignition switch is turned ON without the engine running. This is a bulb check.

When the engine is started, the MIL should go off. If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.

For details, refer to EC-427, "Diagnosis Procedure".



Component Function Check

1. CHECK MIL FUNCTION

- 1. Turn ignition switch ON.
- 2. Make sure that MIL lights up.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-427, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK DTC

Check that DTC U1000 or U1001 is not displayed.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble diagnosis for DTC U1000, U1001. Refer to EC-128, "Diagnosis Procedure".

2.CHECK DTC WITH METER

Refer to MWI-33, "CONSULT-III Function (METER/M&A)".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace.

3.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace combination meter.

NO >> Repair or replace.

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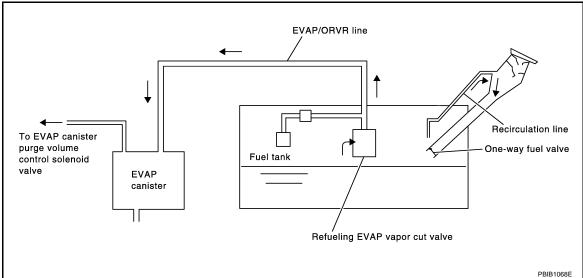
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Description INFOID:000000001715416



From the beginning of refueling, the air and vapor inside the fuel tank go through refueling EVAP vapor cut valve and EVAP/ORVR line to the EVAP canister. The vapor is absorbed by the EVAP canister and the air is released to the atmosphere.

When the refueling has reached the full level of the fuel tank, the refueling EVAP vapor cut valve is closed and refueling is stopped because of auto shut-off. The vapor which was absorbed by the EVAP canister is purged during driving.

WARNING:

When conducting inspections below, be sure to observe the following:

- Put a "CAUTION: FLAMMABLE" sign in workshop.
- Do not smoke while servicing fuel system. Keep open flames and sparks away from work area.
- Be sure to furnish the workshop with a CO2 fire extinguisher.

CAUTION:

- Before removing fuel line parts, carry out the following procedures:
- Put drained fuel in an explosion-proof container and put lid on securely.
- Release fuel pressure from fuel line. Refer to EC-486, "Inspection".
- Disconnect battery ground cable.
- Always replace O-ring when the fuel gauge retainer is removed.
- Do not kink or twist hose and tube when they are installed.
- Do not tighten hose and clamps excessively to avoid damaging hoses.
- · After installation, run engine and check for fuel leaks at connection.
- Do not attempt to top off the fuel tank after the fuel pump nozzle shuts off automatically.
 Continued refueling may cause fuel overflow, resulting in fuel spray and possibly a fire.

Component Function Check

INFOID:0000000001715417

1. CHECK ORVR FUNCTION

Check whether the following symptoms are present.

- Fuel odor from EVAP canister is strong.
- Cannot refuel/Fuel odor from the fuel filler opening is strong while refueling.

Is any symptom present?

YES >> Go to EC-428, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000001715418

1.INSPECTION START

Check whether the following symptoms are present.

A: Fuel odor from EVAP canister is strong.

< COMPONENT DIAGNOSIS >

[FOR CALIFORNIA]

B: Cannot refuel/Fuel odor from the fuel filler opening is strong while refueling.

Which symptom is present?

- A >> GO TO 2.
- B >> GO TO 7.

2. CHECK EVAP CANISTER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Weigh the EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

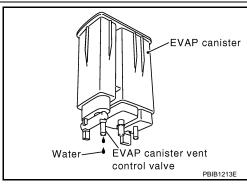
YES >> GO TO 3. NO >> GO TO 4.

3.CHECK IF EVAP CANISTER SATURATED WITH WATER

Check if water will drain from EVAP canister.

Does water drain from the EVAP canister?

YES >> GO TO 4. NO >> GO TO 6.



4. REPLACE EVAP CANISTER

Replace EVAP canister with a new one.

>> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the EVAP hose between EVAP canister and vehicle frame for clogging or poor connection.

>> Repair or replace EVAP hose.

6.CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-431, "Component Inspection".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

7. CHECK EVAP CANISTER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Weigh the EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 9.

8.CHECK IF EVAP CANISTER SATURATED WITH WATER

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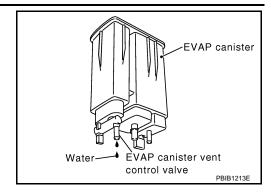
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[FOR CALIFORNIA]

Check if water will drain from EVAP canister.

Does water drain from the EVAP canister?

YES >> GO TO 9. NO >> GO TO 11.



9. REPLACE EVAP CANISTER

Replace EVAP canister with a new one.

>> GO TO 10.

10. DETECT MALFUNCTIONING PART

Check the EVAP hose between EVAP canister and vehicle frame for clogging or poor connection.

>> Repair or replace EVAP hose.

11. CHECK VENT HOSES AND VENT TUBES

Check hoses and tubes between EVAP canister and refueling control valve for clogging, kink, looseness and improper connection.

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace hoses and tubes.

12. CHECK FILLER NECK TUBE

Check recirculation line for clogging, dents and cracks.

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace filler neck tube.

13. CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-431, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 14.

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

14. CHECK FUEL FILLER TUBE

Check filler neck tube and hose connected to the fuel tank for clogging, dents and cracks.

Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace fuel filler tube.

15. CHECK ONE-WAY FUEL VALVE-I

Check one-way valve for clogging.

Is the inspection result normal?

YES >> GO TO 16.

NO >> Repair or replace one-way fuel valve with fuel tank.

16. CHECK ONE-WAY FUEL VALVE-II

- 1. Make sure that fuel is drained from the tank.
- 2. Remove fuel filler tube and hose.

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[FOR CALIFORNIA]

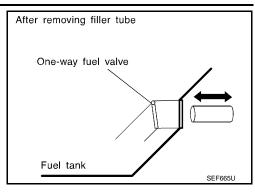
Check one-way fuel valve for operation as follows. When a stick is inserted, the valve should open, when removing stick it should close.

Do not drop any material into the tank.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace fuel filler tube or replace one-way fuel valve with fuel tank.



INFOID:0000000001715419

Component Inspection

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

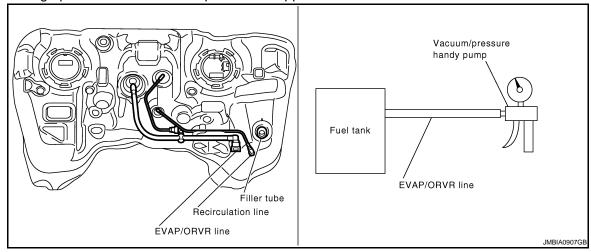
2.CHECK REFUELING EVAP VAPOR CUT VALVE

(P)With CONSULT-III

- Remove fuel tank. Refer to FL-15, "2WD: Removal and Installation" (2WD), FL-18, "AWD: Removal and Installation" (AWD).
- 2. Drain fuel from the tank as follows:
- Remove fuel feed hose located on the fuel gauge retainer.
- Connect a spare fuel hose, one side to fuel gauge retainer where the hose was removed and the other side to a fuel container.
- Drain fuel using "FUEL PUMP RELAY" in "ACTIVE TEST" mode with CONSULT-III.
- Check refueling EVAP vapor cut valve for being stuck to close as follows. Blow air into the refueling EVAP vapor cut valve (from the end of EVAP/ORVR line hose), and check that the air flows freely into the tank.
- 4. Check refueling EVAP vapor cut valve for being stuck to open as follows.
- Connect vacuum pump to hose end.
- Remove fuel gauge retainer with fuel gauge unit.

Always replace O-ring with new one.

- Put fuel tank upside down.
- Apply vacuum pressure to hose end [-13.3 kPa (-0.136 kg/cm³, -1.93 psi)] with fuel gauge retainer remaining open and check that the pressure is applicable.



Is the inspection result normal?

YFS >> INSPECTION END

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

EC-431 Revision: 2008 January 2008 Rogue

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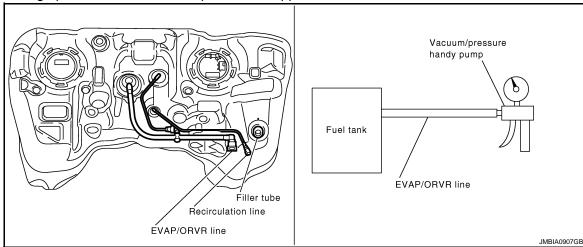
3.check refueling evap vapor cut valve

⊗Without CONSULT-III

- 1. Remove fuel tank. Refer to <u>FL-15</u>, "<u>2WD</u>: <u>Removal and Installation</u>" (2WD), <u>FL-18</u>, "<u>AWD</u>: <u>Removal and Installation</u>" (AWD).
- Drain fuel from the tank as follows:
- Remove fuel gauge retainer.
- Drain fuel from the tank using a handy pump into a fuel container.
- Check refueling EVAP vapor cut valve for being stuck to close as follows.
 Blow air into the refueling EVAP vapor cut valve (from the end of EVAP/ORVR line hose), and check that the air flows freely into the tank.
- 4. Check refueling EVAP vapor cut valve for being stuck to open as follows.
- Connect vacuum pump to hose end.
- Remove fuel gauge retainer with fuel gauge unit.

Always replace O-ring with new one.

- Put fuel tank upside down.
- Apply vacuum pressure to hose end [-13.3 kPa (-0.136 kg/cm³, -1.93 psi)] with fuel gauge retainer remaining open and check that the pressure is applicable.



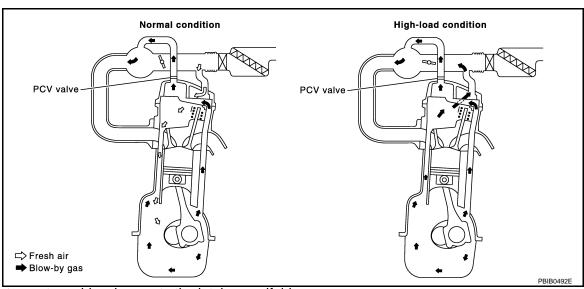
Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

POSITIVE CRANKCASE VENTILATION

Description INFOID:000000001715420



This system returns blow-by gas to the intake manifold.

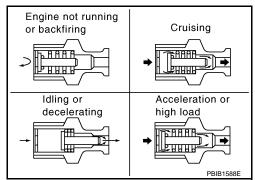
The positive crankcase ventilation (PCV) valve is provided to conduct crankcase blow-by gas to the intake manifold.

During partial throttle operation of the engine, the intake manifold sucks the blow-by gas through the PCV valve.

Normally, the capacity of the valve is sufficient to handle any blow-by and a small amount of ventilating air. The ventilating air is drawn from the air inlet tubes into the crankcase. In this process the air passes through the hose connecting air inlet tubes to rocker cover.

Under full-throttle condition, the manifold vacuum is insufficient to draw the blow-by flow through the valve. The flow goes through the hose connection in the reverse direction.

On vehicles with an excessively high blow-by, the valve does not meet the requirement. This is because some of the flow will go through the hose connection to the air inlet tubes under all conditions.



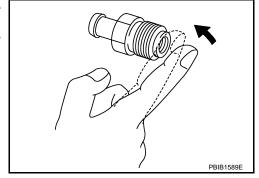
Component Inspection

1. CHECK PCV VALVE

With engine running at idle, remove PCV valve from rocker cover. A properly working valve makes a hissing noise as air passes through it. A strong vacuum should be felt immediately when a finger is placed over valve inlet.

Is the inspection result normal?

YES >> INSPECTION END NO >> Replace PCV valve.



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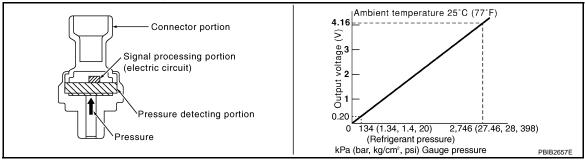
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[FOR CALIFORNIA]

REFRIGERANT PRESSURE SENSOR

Description INFOID:000000001715422

The refrigerant pressure sensor is installed at the condenser of the air conditioner system. The sensor uses an electrostatic volume pressure transducer to convert refrigerant pressure to voltage. The voltage signal is sent to ECM, and ECM controls cooling fan system.



Component Function Check

INFOID:0000000001715423

1. CHECK REFRIGERANT PRESSURE SENSOR OVERALL FUNCTION

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn A/C switch and blower fan switch ON.
- 3. Check the voltage between ECM harness connector terminals.

	Voltage		
Connector	Terminal	Terminal	
F8	39 (Refrigerant pressure sensor signal)	40 (Sensor ground)	1.0 - 4.0V

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-434, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001715424

1. CHECK GROUND CONNECTION

- 1. Turn A/C switch and blower fan switch OFF.
- Stop engine.
- Turn ignition switch OFF.
- 4. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK REFRIGERANT PRESSURE SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect refrigerant pressure sensor harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between refrigerant pressure sensor harness connector and ground.

Refrigerant pre	essure sensor	Ground	Voltage	
Connector	Terminal	Glodila	voitage	
E49	E49 3		Approx. 5V	

Is the inspection result normal?

YES >> GO TO 4.

REFRIGERANT PRESSURE SENSOR [FOR CALIFORNIA] < COMPONENT DIAGNOSIS > NO >> GO TO 3. 3.DETECT MALFUNCTIONING PART Α Check the following. Harness connectors F123, E6 EC · Harness for open or short between ECM and refrigerant pressure sensor >> Repair open circuit or short to ground or short to power in harness or connectors. f 4.CHECK REFRIGERANT PRESSURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT Turn ignition switch OFF. Disconnect ECM harness connector. D Check the continuity between refrigerant pressure sensor harness connector and ECM harness connector. Е **ECM** Refrigerant pressure sensor Continuity Connector Terminal Connector Terminal E49 F8 40 Existed 4. Also check harness for short to ground and short to power. Is the inspection result normal? YES >> GO TO 6. NO >> GO TO 5. 5.DETECT MALFUNCTIONING PART Check the following. • Harness connectors F123, E6 Harness for open or short between ECM and refrigerant pressure sensor >> Repair open circuit or short to ground or short to power in harness or connectors. $\mathsf{6}.$ CHECK REFRIGERANT PRESSURE SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT Check the continuity between ECM harness connector and refrigerant pressure sensor harness connector. **FCM** Refrigerant pressure sensor Continuity **Terminal** Connector Terminal Connector E49 2 Existed Also check harness for short to ground and short to power. Is the inspection result normal? >> GO TO 8. YES NO >> GO TO 7. N .DETECT MALFUNCTIONING PART Check the following.

- Harness connectors F123, E6
- · Harness for open or short between ECM and refrigerant pressure sensor
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

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8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace refrigerant pressure sensor.

NO >> Repair or replace.

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Reference Value

VALUES ON THE DIAGNOSIS TOOL

Remarks:

- 1 Specification data are reference values.
- 1 Specification data are output/input values which are detected or supplied by the ECM at the connector.
 - * Specification data may not be directly related to their components signals/values/operations.

Le. Adjust ignition timing with a timing light before monitoring IGN TIMING, because the monitor may show the specification data in spite of the ignition timing not being adjusted to the specification data. this IGN TIMING monitors the data calculated by the ECM according to the signals input from the camshaft position sensor and other ignition timing related sensors.

Monitor Item		Condition	Values/Status				
ENG SPEED	Run engine and compare CONS	Almost the same speed as the tachometer indication.					
MAS A/F SE-B1	See EC-117, "Diagnosis Procedure	See EC-117, "Diagnosis Procedure".					
B/FUEL SCHDL	See EC-117, "Diagnosis Procedure	<u>"</u> .					
A/F ALPHA-B1	See EC-117, "Diagnosis Procedure						
COOLAN TEMP/S	Engine: After warming up		More than 70°C (158°F)				
A/F SEN1 (B1)	Engine: After warming up	Maintaining engine speed at 2,000 rpm	Fluctuates around 2.2 V				
HO2S2 (B1)	are met Engine: After warming up	 Engine: After warming up After keeping engine speed between 3,500 and 4,000 rpm for 1 minute and at 					
HO2S3 (B1)	 Revving engine from idle up to 3,0 are met. Engine: After warming up Driving for 3 minutes at a speed (Keep the vehicle speed as stead 	0 - 0.3V ←→ Approx. 0.6 - 1.0V					
HO2S2 MNTR (B1)	Revving engine from idle up to 3,0 are met. Engine: After warming up After keeping engine speed betwee idle for 1 minute under no load.	$LEAN \longleftrightarrow RICH$					
HO2S3 MNTR (B1)	 Revving engine from idle up to 3,0 are met. Engine: After warming up Driving for 3 minutes at a speed (Keep the vehicle speed as stead 	$LEAN \longleftrightarrow RICH$					
VHCL SPEED SE	Turn drive wheels and compare 0 dication.	CONSULT-III value with the speedometer in-	Almost the same speed as speedometer indication				
BATTERY VOLT	Ignition switch: ON (Engine stopp	ped)	11 - 14V				
ACCEL SEN 4	Ignition switch: ON	Accelerator pedal: Fully released	0.5 - 1.0V				
ACCEL SEN 1	(Engine stopped)	Accelerator pedal: Fully depressed	4.2 - 4.8V				
ACCEL OFN 0*1	Ignition switch: ON	Accelerator pedal: Fully released	0.5 - 1.0V				
ACCEL SEN 2*1	(Engine stopped)	Accelerator pedal: Fully depressed	4.2 - 4.8V				
	Ignition switch: ON	Accelerator pedal: Fully released	More than 0.36V				
TP SEN 1-B1	(Engine stopped) • Shift lever: D	Accelerator pedal: Fully depressed	Less than 4.75V				
	Ignition switch: ON (Facing standard)	Accelerator pedal: Fully released	More than 0.36V				
TP SEN 2-B1* ¹	(Engine stopped) • Shift lever: D	Accelerator pedal: Fully depressed	Less than 4.75V				
FUEL T/TMP SE	Ignition switch: ON		Indicates fuel tank temperature				

< ECU DIAGNOSIS >

[FOR CALIFORNIA]

Monitor Item	C	ondition	Values/Status	
INT/A TEMP SE	Ignition switch: ON		Indicates Intake air temperature	- <i>F</i>
EVAP SYS PRES	Ignition switch: ON		Approx. 1.8 - 4.8V	_ E(
FUEL LEVEL SE	Ignition switch: ON		Depending on fuel level of fuel tank	
START SIGNAL	• Ignition switch: $ON \rightarrow START \rightarrow C$	ON	$OFF \to ON \to OFF$	
CLSD THL POS	Ignition switch: ON	Accelerator pedal: Fully released	ON	-
OLOD THE TOO	(Engine stopped)	Accelerator pedal: Slightly depressed	OFF	_
	Engine: After warming up, idle the	Air conditioner switch: OFF	OFF	_ [
AIR COND SIG	engine	Air conditioner switch: ON (Compressor operates.)	ON	
P/N POSI SW	Ignition switch: ON	Shift lever: P or N	ON	_
17111 001 011	igililion switch. Oil	Selector lever: Except above	OFF	_
PW/ST SIGNAL	Engine: After warming up, idle the	Steering wheel: Not being turned	OFF	_
	engine	Steering wheel: Being turned	ON	_
LOAD SIGNAL	Ignition switch: ON	Rear window defogger switch: ON and/or Lighting switch: 2nd position	ON	
LOND CICIVAL	Iginuon switch. Oiv	Rear window defogger switch and lighting switch: OFF	OFF	
IGNITION SW	• Ignition switch: $ON \rightarrow OFF \rightarrow ON$		$ON \to OFF \to ON$	-
HEATER FAN SW	Engine: After warming up, idle the	Heater fan switch: ON	ON	_
HEATER FAIN SW	engine	Heater fan switch: OFF	OFF	_
BRAKE SW	Ignition switch: ON	Brake pedal: Fully released	OFF	
BIOTICE OV		Brake pedal: Slightly depressed	ON	_
	Engine: After warming up Chiff leaves Boar N	Idle	2.0 - 3.0 msec	_
INJ PULSE-B1	Shift lever: P or NAir conditioner switch: OFFNo load	2,000 rpm	1.9 - 2.9 msec	
	Engine: After warming up	Idle	10° - 20° BTDC	_
IGN TIMING	Shift lever: P or N Air conditioner switch: OFF No load	2,000 rpm	25° - 45° BTDC	-
	Engine: After warming up	Idle	10% - 35%	_
CAL/LD VALUE	Shift lever: P or N Air conditioner switch: OFF No load	2,500 rpm	10% - 35%	- 1
	Engine: After warming up	Idle	1.0 - 4.0 g·m/s	_
MASS AIRFLOW	 Shift lever: P or N Air conditioner switch: OFF No load 	2,500 rpm	4.0 - 10.0 g·m/s	-
PURG VOL C/V	Engine: After warming up Shift lever: P or N Air conditioner switch: OFF	Idle (Accelerator pedal: Not depressed even slightly, after engine starting.)	0%	(
	No load	2,000 rpm	20% - 90%	_
	Engine: After warming up	Idle	-5° - 5°CA	-
INT/V TIM (B1)	Shift lever: P or NAir conditioner switch: OFFNo load	2,000 rpm	Approx. 0° - 20°CA	_ '
	Engine: After warming up	Idle	0%	-
INT/V SOL (B1)	Shift lever: P or N Air conditioner switch: OFF No load	2,000 rpm	Approx. 0% - 60%	_

[FOR CALIFORNIA]

Monitor Item	C	Condition	Values/Status
SWRL CONT S/V	 Ignition switch: ON Engine coolant temperature: Between 5°C (41°F) and 40°C (104°F) 	Accelerator pedal: Fully released Accelerator pedal: Slightly depressed	ON OFF
		Air conditioner switch: OFF	OFF
AIR COND RLY	Engine: After warming up, idle the engine	Air conditioner switch: ON (Compressor operates)	ON
FUEL PUMP RLY	For 1 seconds after turning ignition Engine running or cranking	n switch: ON	ON
	Except above		OFF
VENT CONT/V	Ignition switch: ON		OFF
THRTL RELAY	Ignition switch: ON		ON
HO2S2 HTR (B1)	 Engine speed: Below 3,600 rpm a Engine: After warming up Keeping the engine speed betwee idle for 1 minute under no load 	ofter the following conditions are met. en 3,500 and 4,000 rpm for 1 minute and at	ON
	Engine speed: Above 3,600 rpm		OFF
HO2S3 HTR (B1)	Engine speed: Below 3,600 rpm a Engine: After warming up Driving for 3 minutes at a speed o (Keep the vehicle speed as steady)	ON	
	Engine speed: Above 3,600 rpm	OFF	
I/P PULLY SPD	Vehicle speed: More than 20 km/h	Almost the same speed as the tachometer indication	
VEHICLE SPEED	Turn drive wheels and compare C dication.	ONSULT-III value with the speedometer in-	Almost the same speed as the speedometer indication
IDL A/V LEARN	Engine: running	Idle air volume learning has not been performed yet.	YET
IDE AV LEAKN		Idle air volume learning has already been performed successfully.	CMPLT
TRVL AFTER MIL	Ignition switch: ON	Vehicle has traveled after MIL has turned ON.	0 - 65,535 km (0 - 40,723 miles)
A/F S1 HTR (B1)	Engine: After warming up, idle the (More than 140 seconds after star)		4 - 100%
AC PRESS SEN	Engine: Idle Both A/C switch and blower fan sw	witch: ON (Compressor operates)	1.0 - 4.0V
VHCL SPEED SE	Turn drive wheels and compare C dication.	ONSULT-III value with the speedometer in-	Almost the same speed as the speedometer indication
SET VHCL SPD	Engine: Running	ASCD: Operating	The preset vehicle speed is displayed
MAIN SW	Ignition switch: ON	MAIN switch: Pressed	ON
WALL OVV	- Ignition Switon. On	MAIN switch: Released	OFF
CANCEL SW	Ignition switch: ON	CANCEL switch: Pressed	ON
O, WIOLE OVV	igilition ownor. Or	CANCEL switch: Released	OFF
RESUME/ACC SW	Ignition switch: ON	RESUME/ACCELERATE switch: Pressed	ON
RESUME/ACC SW	- ignition switch. ON	RESUME/ACCELERATE switch: Released	OFF
SET SW	Ignition switch: ON	SET/COAST switch: Pressed	ON
OLI OVV	- Igrillion switch. On	SET/COAST switch: Released	OFF

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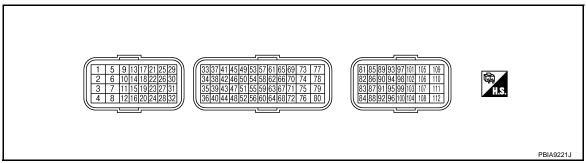
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Monitor Item	C	ondition	Values/Status		
BRAKE SW1	Ignition switch: ON	Brake pedal: Fully released	ON		
(ASCD brake switch)	Ignition switch. ON	Brake pedal: Slightly depressed	OFF		
BRAKE SW2	Ignition switch: ON	Brake pedal: Fully released	OFF		
(Stop lamp switch)	Ignition switch. ON	Brake pedal: Slightly depressed	ON		
VHCL SPD CUT	Ignition switch: ON		NON		
LO SPEED CUT	Ignition switch: ON	Ignition switch: ON			
AT OD MONITOR	Ignition switch: ON	Ignition switch: ON			
AT OD CANCEL	Ignition switch: ON	OFF			
CRUISE LAMP	Ignition switch: ON	MAIN switch: Pressed at the 1st time \rightarrow at the 2nd time	$ON \to OFF$		
	MAIN switch: ON	ASCD: Operating	ON		
SET LAMP	When vehicle speed: Between 40 km/h (25 MPH) and 144 km/h (89 MPH)	ASCD: Not operating	OFF		
A/F ADJ-B1	Engine: running	Engine: running			
	Ignition switch: ON	Accelerator pedal: Fully released	Less than 1.2V		
TMBL POS SEN	Engine coolant temperature: Be- tween 5°C (41°F) and 60°C (140°F)	Accelerator pedal: Slightly depressed	More than 2.9V		

^{*1:} Accelerator pedal position sensor 2 signal and throttle position sensor 2 signal are converted by ECM internally. Thus, they differ from ECM terminals voltage signal.

TERMINAL LAYOUT



PHYSICAL VALUES

NOTE:

- ECM is located behind the passenger side instrument lower panel. For this inspection, remove passenger side instrument lower panel.
- Specification data are reference values and are measured between each terminal and ground.
- Pulse signal is measured by CONSULT-III.

Term	inal No.	Description			Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
1	112 (B)	Tumble control valve motor	Output	 [Ignition switch OFF → ON] For a few seconds after turning ignition switch ON 	0 V ↓ BATTERY VOLTAGE (11 - 14 V) ↓ 0 V
(V) ((3)	(B) (Close)	 [Ignition switch ON → OFF] For a few seconds after turning ignition switch OFF 	0 V ↓ 1.5 - 2.0 V ↓ 0 V	

Termi	inal No.	Description			Value
+	-	Signal name	Input/ Output	Condition	Value (Approx.)
2 (P)	112 (B)	Throttle control motor power supply	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
3	112	Tumble control valve motor	Output	 [Ignition switch OFF → ON] For a few seconds after turning ignition switch ON 	0 V ↓ Approximately 0.5 V ↓ 0 V
(LG)	(B)	(Open)	·	 [Ignition switch ON → OFF] For a few seconds after turning ignition switch OFF 	BATTERY VOLTAGE (11 - 14 V)
4 (R)	112 (B)	A/F sensor 1 heater	Output	[Engine is running]Warm-up conditionIdle speed	2.9 - 8.8 V★ 50mSec/div 5V/div JMBIA0082GB
5 (GR)	6 (L)	Throttle control motor 1 (Open)	Output	[Ignition switch: ON] • Engine stopped • Shift lever: D • Accelerator pedal: Fully depressed	0 - 14 V★ 1mSec/div 5V/div JMBIA0083GB
6 (L)	5 (GR)	Throttle control motor 2 (Close)	Output	[Ignition switch: ON] • Engine stopped • Shift lever: D • Accelerator pedal: Fully released	0 - 14 V★ 1mSec/div 5V/div JMBIA0084GB
7 (BR)	112 (B)	Tumble control valve motor power supply	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
9 (R)		Ignition signal No. 3		[Engine is running] • Warm-up condition • Idle speed	0 - 0.1 V★ 50mSec/div
10 (W)	112	Ignition signal No. 2		NOTE: The pulse cycle changes depending on rpm at idle	2V/div JMBIA0900GB
11 (SB)	(B)	Ignition signal No. 1	Output		0 - 0.2 V★ 50mSec/div
21 (G)		Ignition signal No. 4		[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	2V/div JMBIA0901GB

< ECU DIAGNOSIS > [FOR CALIFORNIA]

Termi	inal No.	Description			Value	Λ									
+	_	Signal name	Input/ Output	Condition	(Approx.)	А									
12 (B) 16 (B)	_	ECM ground	_	_	_	EC									
13 (Y)	112 (B)	Heated oxygen sensor 2 heater	Output	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	10 V★ 50mSec/div 5V/div JMBIA0902GB										
				[Ignition switch: ON]Engine stopped[Engine is running]Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14 V)	F									
14 (GR)	112 (B)	Fuel pump relay	Fuel pump relay	Fuel pump relay	Fuel pump relay	Fuel pump relay	Fuel pump relay	Fuel pump relay	Fuel pump relay	Fuel pump relay	Fuel pump relay	Output	[Ignition switch: ON]For 1 second after turning ignition switch ON[Engine is running]	0 - 1.0 V	G
(OIV)	SK) (B)		[Engine is running]More than 1 second after turning ignition switch ON	BATTERY VOLTAGE (11 - 14 V)	F										
15 (V)	112 (B)	Throttle control motor relay	Output	[Ignition switch: $ON \rightarrow OFF$]	0 - 1.0 V ↓ BATTERY VOLTAGE (11 - 14 V)	I									
				[Ignition switch: ON]	0 - 1.0 V	J									
17 (SB)	112 (B)	Heated oxygen sensor 3 heater	Output	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met Engine: After warming up Driving for 3 minutes at a speed of 80 km/h (50 MPH) or more (Keep the vehicle speed as steady as possible during the cruising.) 	10 V★ 50mSec/div 5V/div JMBIA0037GB	K									
				[Ignition switch: ON] • Engine stopped [Engine is running] • Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14 V)	N									
	ECM relay (Self shut-off)	Output	[Engine is running][Ignition switch: OFF]A few seconds after turning ignition switch OFF	0 - 1.0 V	N										
(L)	(B)	(Self shut-off)		[Ignition switch: OFF] More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14 V)	0									

Termi	inal No.	Description			Value	
+	_	Signal name	Input/ Output	Condition	value (Approx.)	
25	112	112 EVAP canister purge vol-	Output -	[Engine is running]Idle speedAccelerator pedal: Not depressed even slightly, after engine starting	BATTERY VOLTAGE (11 - 14 V) 50mSec/div 20V/div JMBIA0087GB	
(Y)	(B)	ume control solenoid valve		[Engine is running] • Engine speed: About 2,	Engine speed: About 2,000 rpm (More than 100 seconds after start-	BATTERY VOLTAGE (11 - 14 V) ★ 50mSec/div 20V/div JMBIA0903GB
29 (P)		Fuel injector No. 4			BATTERY VOLTAGE (11 - 14 V)★	
30 (LG)	112	Fuel injector No. 3	Output -	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	50mSec/div 50mSec/div JMBIA0089GB	
31 (BR)	(B)	Fuel injector No. 2			BATTERY VOLTAGE (11 - 14 V)★	
32 (GR)	Fuel injector No. 1					[Engine is running]Warm-up conditionEngine speed: 2,000 rpm
33 (P)	35 (L)	Heated oxygen sensor 2	Input	 [Engine is running] Revving engine from idle to 3,000 rpm quickly after the following conditions are met Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	0 - 1.0 V	
34 (V)	35 (L)	Heated oxygen sensor 3	Input	 [Engine is running] Revving engine from idle to 3,000 rpm quickly after the following conditions are met Engine: After warming up Driving for 3 minutes at a speed of 80 km/h (50 MPH) or more (Keep the vehicle speed as steady as possible during the cruising.) 	0 - 1.0 V	

< ECU DIAGNOSIS >

[FOR CALIFORNIA]

Termi	nal No.	Description			Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
35 (L)	_	Sensor ground (Heated oxygen sensor 2, Heated oxygen sensor 3)	_	_	_
36 (R)	_	Sensor ground (Throttle position sensor)	_	_	_
37	36	Throttle position sensor 1	Input	[Ignition switch: ON] • Engine stopped • Shift lever: D • Accelerator pedal: Fully released	More than 0.36 V
(W)	(R)	'	•	[Ignition switch: ON]Engine stoppedShift lever: DAccelerator pedal: Fully depressed	Less than 4.75 V
38	36	Through position concer?	lanut	[Ignition switch: ON]Engine stoppedShift lever: DAccelerator pedal: Fully released	Less than 4.75 V
(G)	(R)	Throttle position sensor 2	Input	[Ignition switch: ON] • Engine stopped • Shift lever: D • Accelerator pedal: Fully depressed	More than 0.36 V
39 (Y)	40 (W)	Refrigerant pressure sensor	Input	 [Engine is running] Warm-up condition Both A/C switch and blower fan motor switch: ON (Compressor operates) 	1.0 - 4.0 V
40 (W)	_	Sensor ground (Refrigerant pressure sensor)	_	_	_
45 (V)	49 (LG)	A/F sensor 1 (bank 1)	Input	[Ignition switch: ON]	2.2 V
46 (P)	52 (O)	Engine coolant temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with engine coolant temperature.
47 (B)	36 (R)	Sensor power supply (Throttle position sensor)	_	[Ignition switch: ON]	5 V
49 (LG)	112 (B)	A/F sensor 1	Input	[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	1.8 V Output voltage varies with air fuel ratio.
50 (BR)	56 (R)	Intake air temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with intake air temperature.
52 (O)	_	Sensor ground (Tumble control valve position sensor, Engine coolant temperature sensor)	_	_	_
EA	5 0	Tumble control using a second		 [Ignition switch OFF → ON] For a few seconds after turning ignition switch ON 	0 V ↓ 0.7 V
54 (W)	52 (O)	Tumble control valve position sensor	Input	 [Ignition switch ON → OFF] For a few seconds after turning ignition switch OFF 	0.7 V ↓ 3.5 V ↓ 0 V

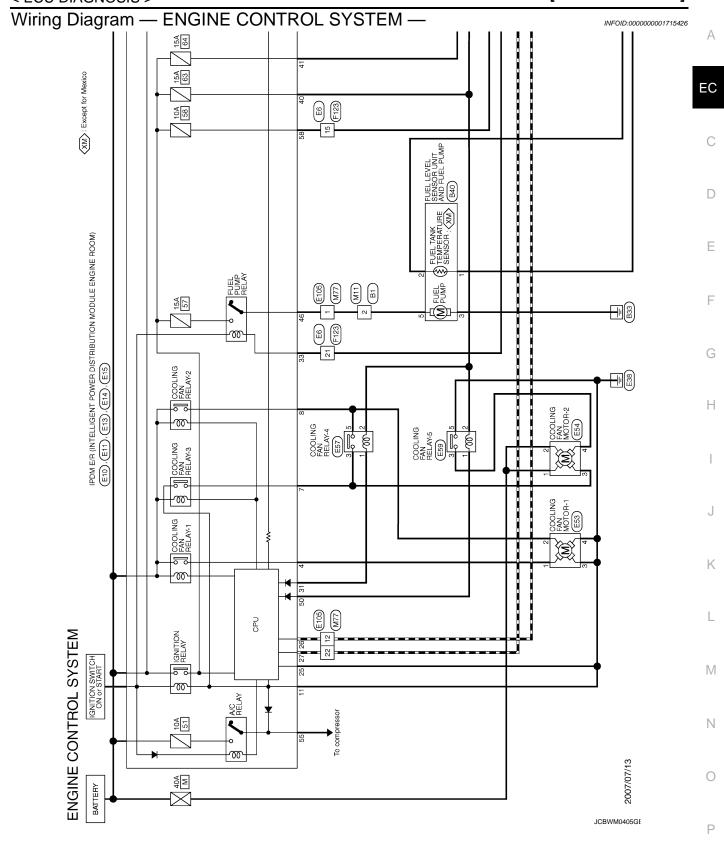
Term	inal No.	Description			Value							
+	_	Signal name	Input/ Output	Condition	(Approx.)							
56 (R)	_	Sensor ground (Mass air flow sensor, Intake air temperature sensor)	_	_	_							
58	56 (B)	Mass air flow sensor	Input	[Engine is running]Warm-up conditionIdle speed	0.8 - 1.2 V							
(L)	(R)			[Engine is running]Warm-up conditionEngine speed: 2,500 rpm	1.4 - 1.8 V							
59 (V)	64 (Y)	Sensor power supply [Camshaft position sensor (PHASE)]	_	[Ignition switch: ON]	5 V							
60 (B)	_	Sensor ground [Crankshaft position sensor (POS)]	_	_	_							
61 (W)	67 (—	Knock sensor	Input	[Engine is running] • Idle speed	2.5 V							
64 (Y)	_	Sensor ground [Camshaft position sensor (PHASE)]	_	_	_							
65	65 60	Crankshaft position consor	Crankshaft position sensor	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	3.0 V★ 2mSec/div 2V/div JMBIA0514GB							
(R)	(B)	(POS)	Input	mput	mput	mput	par				[Engine is running] • Engine speed: 2,000 rpm	3.0 V★ 2mSec/div 2v/div JMBIA0515GB
67 (—)	_	Sensor ground (Knock sensor)	_	_	_							
69		Camshaft position sensor	Input	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	1.0 - 4.0 V★ 10mSec/div 2V/div JMBIA0904GB							
(G)		три	[Engine is running] • Engine speed is 2,000 rpm	1.0 - 4.0 V★ 10mSec/div 2V/div JMBIA0905GB								

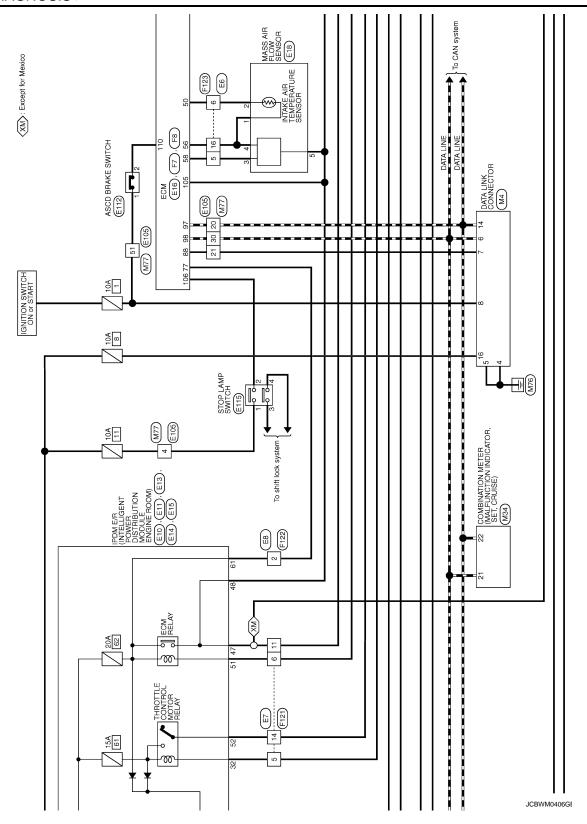
< ECU DIAGNOSIS > [FOR CALIFORNIA]

Termi	nal No.	Description			Value
+	-	Signal name	Input/ Output	Condition	value (Approx.)
72 (L)	40 (W)	Sensor power supply (Tumble control valve position sensor, PD sensor)	_	[Ignition switch: ON]	5 V
76 (P)	60 (B)	Sensor power supply [Crankshaft position sensor (POS)]	_	[Ignition switch: ON]	5 V
77 (R)	112 (B)	Power supply for ECM (Back-up)	Input	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14 V)
				[Engine is running] • Warm-up condition • Idle speed	0 V
78 (O)	112 (B)	Intake valve timing control solenoid valve	Output	[Engine is running]Warm-up conditionEngine speed: 2,000rpm	7 - 10 V★ 2mSec/div 5V/div JMBIA0906GB
81	84	Accelerator pedal position	lanut	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully released	0.5 - 1.0 V
(SB)	(Y)	sensor 1	Input	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully depressed	4.2 - 4.8 V
82	100	Accelerator pedal position	Input	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully released	0.25 - 0.5 V
(G)	(W)	sensor 2	mput	[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully depressed	2.0 - 2.5 V
83 (R)	84 (Y)	Sensor power supply (Accelerator pedal position sensor 1)	_	[Ignition switch: ON]	5 V
84 (Y)	_	Sensor ground (Accelerator pedal position sensor 1)	_	_	_
				[Ignition switch: ON] • ASCD steering switch: OFF	4 V
				[Ignition switch: ON] • MAIN switch: Pressed	0 V
85 (R)	92 (W)	ASCD steering switch	Input	[Ignition switch: ON] • CANCEL switch: Pressed	1 V
				[Ignition switch: ON] RESUME/ACCELERATE switch: Pressed	3 V
				[Ignition switch: ON] • SET/COAST switch: Pressed	2 V
86 (BR)	96 (P)	EVAP control system pres- sure sensor	Input	[Ignition switch: ON]	1.8 - 4.8 V
87 (V)	100 (W)	Sensor power supply (Accelerator pedal position sensor 2)	_	[Ignition switch: ON]	5 V

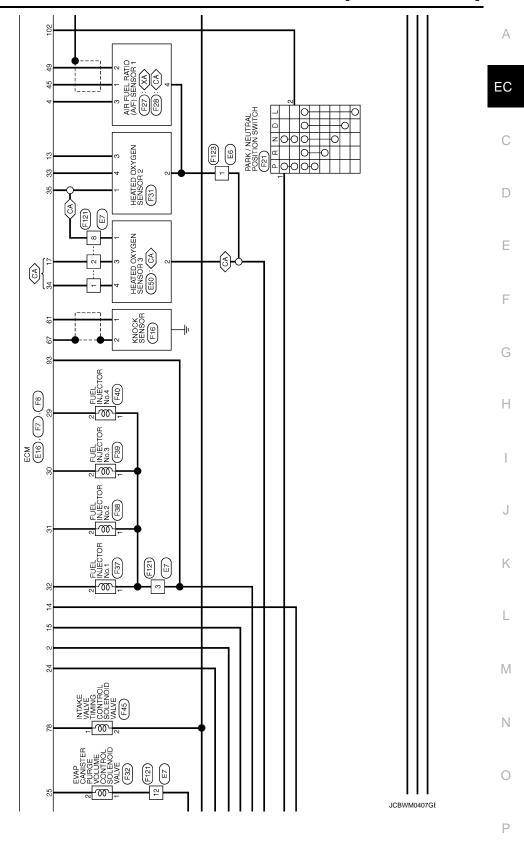
Termi	nal No.	Description			Value	
+	-	Signal name	Input/ Output	Condition	(Approx.)	
88 (L)	112 (B)	Data link connector	Input/ Output	[Ignition switch: ON] • GST: Disconnected	BATTERY VOLTAGE (11 - 14 V)	
91 (Y)	96 (P)	Sensor power supply (EVAP control system pressure sensor)	_	[Ignition switch: ON]	5 V	
92 (W)	_	Sensor ground (ASCD steering switch)	_	_	_	
		440		[Ignition switch: OFF]	0 V	
93 (O)	112 (B)	Ignition switch	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)	
95 (O)	104 (B)	Fuel tank temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with fue tank temperature.	
96 (P)	_	Sensor ground (EVAP control system pressure sensor)	_	_	_	
97 (P)	_	CAN communication line	_	_	_	
98 (L)	_	CAN communication line	_	_	_	
100 (W)	_	Sensor ground (Accelerator pedal position sensor 2)	_	_	_	
102 112	DND switch	Input	[Ignition switch: ON] • Shift lever: P or N	BATTERY VOLTAGE (11 - 14 V)		
(LG)	DIVID SWITCH		[Ignition switch: ON] • Shift lever: Except above	0 V		
104 (B)	_	Sensor ground (Fuel tank temperature sensor)	_	_	_	
105 (R)	112 (B)	Power supply for ECM	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)	
106	112	Stop lamp switch	Input	[Ignition switch: OFF] • Brake pedal: Fully released	0 V	
(Y)	(B)	Otop lamp switch	трис	[Ignition switch: OFF] • Brake pedal: Slightly depressed	BATTERY VOLTAGE (11 - 14 V)	
107 (B) 108 (B)	_	ECM ground	_	_	_	
109 (W)	112 (B)	EVAP canister vent control valve	Output	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)	
110	112	ASCD brake switch	Input	[Ignition switch: ON] • Brake pedal: Slightly depressed	0 V	
(GR)	(B)	AGOD DIAKE SWILLI	input	[Ignition switch: ON] • Brake pedal: Fully released	BATTERY VOLTAGE (11 - 14 V)	
111 (B) 112 (B)	_	ECM ground	_	_	_	

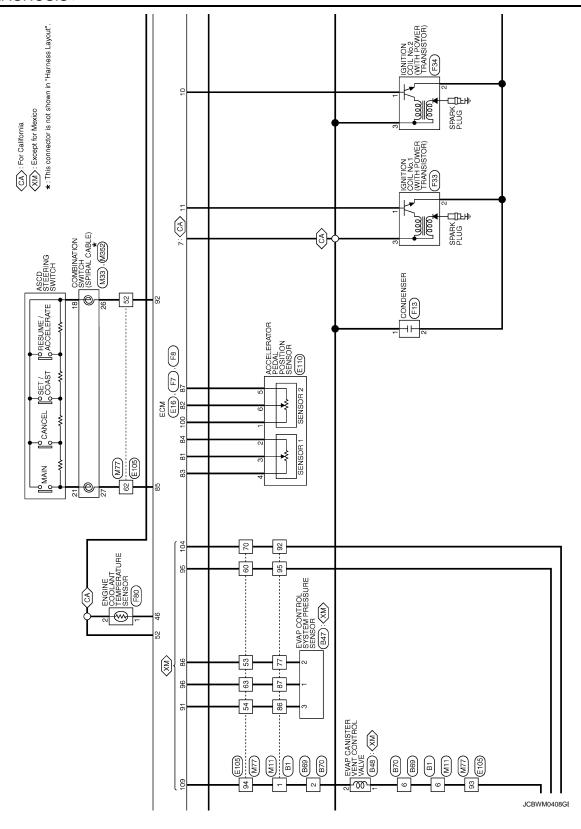
 $[\]bigstar$: Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)





⟨CA⟩: For California
⟨XA⟩: Except for California

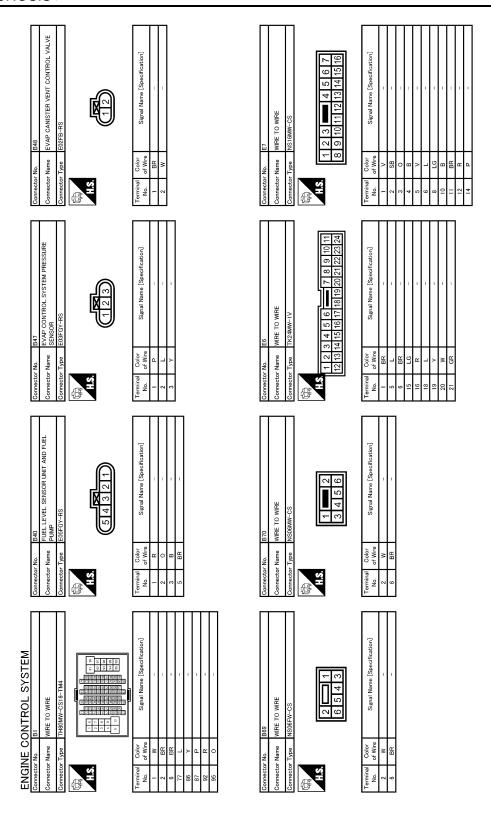




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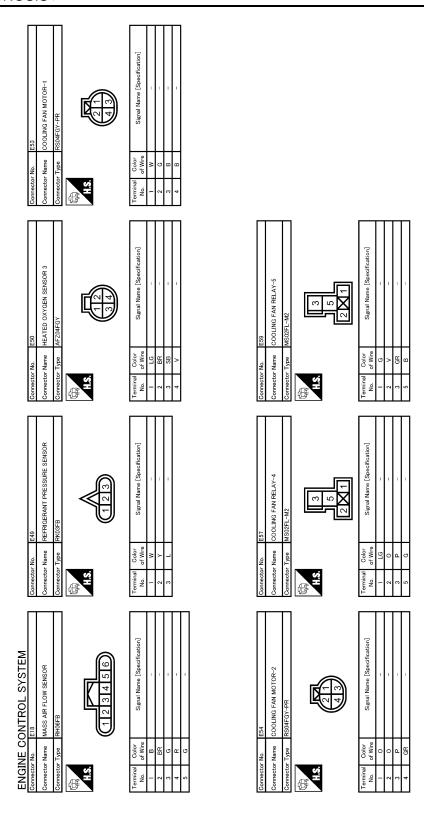
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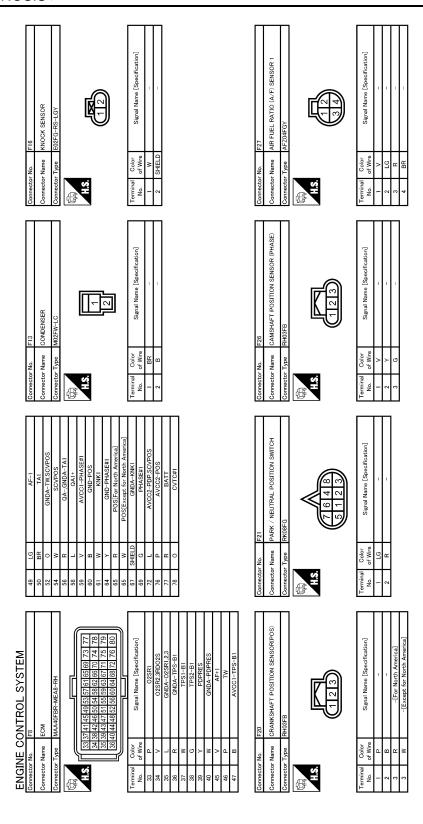
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Connector No. E13 Connector Name IPDM E/R (INTELLIGENT POWER Connector Type ITHIZPH-INH	Terminal Color No. of Wire 25 B	15 16 17 17 18 18 19 19 18 18 19 19	EC C
Connector No. E11 Connector Name DISTRABUTION MODULE ENGINE ROOM) Connector Type M06FB-LC H.S. TI 10 9 14 13 12	Terminal Color Signal Name [Specification] 10 B	Connector No. E16 Connector Name ECM Connector Type MAA24FB-MEA8-RH	E F G
Connector No. E10 Connector Name IPDM E.R. (NTELLIGENT POWER Connector Type M05FW-LC H.S. E10 E10 E10 E10 ENGINE ROOM) E10 ENGINE ROOM)	No. Color Signal Name [Specification] 1	Connector No. E15 Connector No. E15 Connector Name PDM E/R (NYTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	J K
ENGINE CONTROL SYSTEM Connector Name WIRE TO WIRE Connector Type MOZWW-LC MAS	Terminal Golor Signal Name [Specification] 2 R	Connector No. E14 Connector No. E14 Connector Name PDM E./R (NYTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	M N
			JCBWM0411GE



JCBWM0412GE

Connector No. E112 Connector Name ASCD BRAKE SWITCH Connector Type M0ZFBR-LC Terminal Color Signal Name [Specification] 1 L 2 GR		A EC
Commettor Na. Commettor Tay No. No. Commettor Tay Commetto		D
ACCELERATOR PEDAL POSITION SENSOR RH06FB [123456] Signal Name [Specification]	23 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Е
AATOR PEDAL POSITION S Signal Name [Specification]	O2HR1 PPR	F
		G
Connector No. Connector Name Connector Name Connector Type Connector No. Connector Type Connector No. C	13	
		Н
	Signal Name (Specification) Signal Name (Spe	1
	ECM MAAZAFGY-MEAS-LH MAAZAFGY-MEAS-LH [1 5 9 13 17 12 12 5 13 17 17 16 19 23 5 13 17 17 16 19 23 5 13 17 17 16 19 23 5 13 17 17 16 19 23 5 13 17 17 16 19 23 13 17 17 18 18 12 18 12 18 18 18 18 18 18 18 18 18 18 18 18 18	J
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Connector No. Connector Name Freminal Color No. I V Z P P P P P P P P P P P P P P P P P P	К
		L
Connector Name Control SySTEM Connector Name Connector Name Connector Type TH80FW-CS16-TM4 Connector Type TH80FW-CS16-TM4 Connector Type TH80FW-CS16-TM4 Connector Type C	MP SWITCH 3 4 1 2 Signal Name [Specification]	М
Eitos WIRE TO WIRE THROFW-CSIB-TM4 Signal Nam Signal Nam	Signal Name	N
Connector Name Connector Name Connector Name Connector Type Conn	Name Type Golor V V V V L L L L L L L L	0
Commetcy Com	Connecto Connecto Connecto Connecto Terminal No.	JCBWM0413GE
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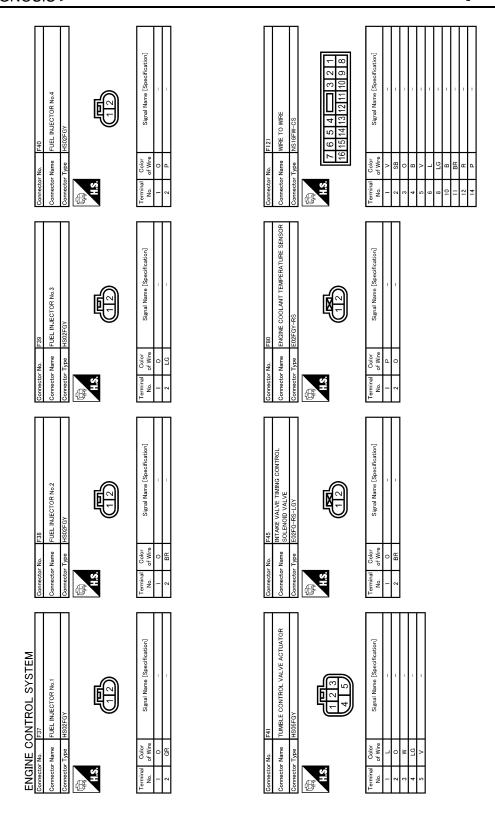


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Comector No. F:32 Comector Name CONTROL SOLENOID VALVE Connector Type E02FL-RS-LGY H.S.	Color	Cornector No. F36 Connector Name IGANTION COIL No.4 (WITH POWER TRANSISTOR) Gormector Type E03FGY-RS H.S.	Terminal Color Signal Name (Specification) 1 G		А ЕС С
Connector No. F31 Connector Name HEATED OXYGEN SENSOR 2 Connector Type AFZ04FB	Terminal Color Signal Name [Specification] Color No. Of Wire S S S S S S S S S	Connector No. F35 Connector Name (EWITION COIL No.3 (WITH POWER TRANSISTOR) Connector Type EGSFCY-RS H.S.	Terminal Color Signal Name [Specification] No. of Wire		E F G
Connector No. F29 Connector Name ELECTRIC THROTTLE CONTROL Connector Type RH06FB H.S.	Terminal Color Signal Name [Specification] Color No. of Wire S Color C	Connector No. F34 Connector Name E94 Connector Name E04TFON COIL No.2 (WITH POWER	Terminal Color Signal Name [Specification] Orlow Color Wire		J K
ENGINE CONTROL SYSTEM Commercor Name AIR FUEL RATIO (A/F) SENSOR I Commercor Type AFZO4FDGY H.S.	Committed Color Color No. of Wire Color No. of Wire Color Colo	Connector No. F33 Connector Name E33 Connector Type E03FGV-RS HAS	Terminal Color Signal Name [Specification] No. of Wire Signal Name [Specification] SB - SB -		M N
				JCBWM0415GE	Б

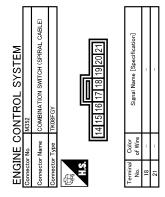
EC-457 Revision: 2008 January 2008 Rogue

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JCBWM0416GE

WHE TO WINE THROFW-CSIG-TM4	Signal Name [Specification]		A EC
Connector No. MII Connector Name WIFE TO WIFE Connector Type TH80PW-CS16-TM4 H.S. No. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Terminal Color No.	00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	C
M4 DATA LINK CONNECTOR BD16FW 9 10 11 12 13 14 15 6 7 18 1 2 3 4 5 6 7 18	Signal Name (Specification)	WRE CS16-TM4 CS16-TM4 Signal Name (Specification)	E
Connector No. M4 Connector Name DATA LINK Connector Type BD16FW H.S. (9 10 11	Color Color Simple Color Simple Color Co	Cornector No. M77	G
NRE IV 6 5 4 3 2 1 19 18 17 16 15 14 13 12	Signal Name (Specification)	SAE40FW SAE40FW SAE40FW Samal Name [Specification] CAN-H CAN-L	J
Connector No. F123 Connector Name WIRE TO WIRE Connector Type TK24FW-1V 11 10 9 8 7 12 22 22 21 20 19	Terminal Color No. of Wire No. of Wire Of Wire	M34 Connector No. M34 Connector Name COMBINATION MET	К
L SYSTEM	Signal Name (Specification)	M33 COMBINATION SWITCH (SPIRAL CABLE) TROBFGY-1V 24 25 26 27 31 32 33 34 Signal Name [Specification]	L M
ENGINE CONTROL SYSTEM Connector Name WIRE TO WIRE Connector Type MOZFW-LC H.S.	Terminal Color Sig	Connector No. M33	N O
			JCBWM0417GE



JCBWM0418GE

INFOID:0000000001715427

NON DTC RELATED ITEM

Fail Safe

[FOR CALIFORNIA]

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EC

D

Engine operating condition in fail-safe mode	Detected items	Remarks	Reference page
Engine speed will not rise more than 2,500 rpm due to the fuel cut	Malfunction indicator lamp circuit	When there is an open circuit on MIL circuit, the ECM cannot warn the driver by lighting up MIL when there is malfunction on engine control system. Therefore, when electrical controlled throttle and part of ECM related diagnoses are continuously detected as NG for 5 trips, ECM warns the driver that engine control system malfunctions and MIL circuit is open by means of operating fail-safe function. The fail-safe function also operates when above diagnoses except MIL circuit are detected and demands the driver to repair the malfunction.	EC-427

DTC RELATED ITEM

DTC No.	Detected items	Engine opera	ating condition in fail-safe mode			
P0011	Intake valve timing control	The signal is not energized to the intake valve timing control solenoid valve and the valve control does not function.				
P0102 P0103	Mass air flow sensor circuit	Engine speed will not rise more that	an 2,400 rpm due to the fuel cut.			
P0117 P0118	Engine coolant tempera- ture sensor circuit		determined by ECM based on the following conditions. oolant temperature decided by ECM.			
		Condition	Engine coolant temperature decided (CONSULT-III display)			
		Just as ignition switch is turned ON or START	40°C (104°F)			
		Approx. 4 minutes or more after starting engine	80°C (176°F)			
		Except as shown above	40 - 80°C (104 - 176°F) (Depends on the time)			
		When the fail-safe system for engine coolant temperature sensor is activated, the cooling fan operates while engine is running.				
P0122 P0123 P0222 P0223 P2132 P2133 P2135	Throttle position sensor	The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees. The ECM regulates the opening speed of the throttle valve to be slower than the normal condition. So, the acceleration will be poor.				
P0500	Vehicle speed sensor	When the fail-safe system for vehic (Highest) while engine is running.	le speed sensor is activated, the cooling fan operates			
P0643	Sensor power supply	ECM stops the electric throttle confixed opening (approx. 5 degrees)	trol actuator control, throttle valve is maintained at a by the return spring.			
P0605	ECM	(When ECM calculation function is ECM stops the electric throttle conf fixed opening (approx. 5 degrees) ECM deactivates ASCD operation.	trol actuator control, throttle valve is maintained at a			
P1805	Brake switch	ECM controls the electric throttle cosmall range. Therefore, acceleration will be poo	ontrol actuator by regulating the throttle opening to a r.			
		Vehicle condition	Driving condition			
		When engine is idling	Normal			
		When accelerating	Poor acceleration			
P2100 P2103	Throttle control motor relay	ECM stops the electric throttle confixed opening (approx. 5 degrees)	trol actuator control, throttle valve is maintained at a by the return spring.			
P2101	Electric throttle control function	ECM stops the electric throttle confixed opening (approx. 5 degrees)	trol actuator control, throttle valve is maintained at a			

< ECU DIAGNOSIS > [FOR CALIFORNIA]

DTC No.	Detected items	Engine operating condition in fail-safe mode
P2118	Throttle control motor	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.
P2119	Electric throttle control actuator	(When electric throttle control actuator does not function properly due to the return spring malfunction:) ECM controls the electric throttle actuator by regulating the throttle opening around the idle position. The engine speed will not rise more than 2,000 rpm.
		(When throttle valve opening angle in fail-safe mode is not in specified range:) ECM controls the electric throttle control actuator by regulating the throttle opening to 20 degrees or less.
		(When ECM detects the throttle valve is stuck open:) While the vehicle is driving, it slows down gradually by fuel cut. After the vehicle stops, the engine stalls. The engine can restart in N or P (CVT), Neutral (M/T) position, and engine speed will not exceed 1,000 rpm or more.
P2122 P2123 P2127 P2128 P2138	Accelerator pedal position sensor	The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees. The ECM regulates the opening speed of the throttle valve to be slower than the normal condition. So, the acceleration will be poor.

DTC Inspection Priority Chart

INFOID:0000000001715428

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

[FOR CALIFORNIA]

Priority	Detected items (DTC)	A
1	 U1000 U1001 CAN communication line P0101 P0102 P0103 Mass air flow sensor 	-
	 P0112 P0113 P0127 Intake air temperature sensor P0117 P0118 P0125 Engine coolant temperature sensor P0122 P0123 P0222 P0223 P1225 P1226 P2135 Throttle position sensor 	EC
	 P0128 Thermostat function P0181 P0182 P0183 Fuel tank temperature sensor P0327 P0328 Knock sensor P0335 Crankshaft position sensor (POS) 	С
	 P0335 Crankshaft position sensor (PO3) P0340 Camshaft position sensor (PHASE) P0460 P0461 P0462 P0463 Fuel level sensor P0500 Vehicle speed sensor P0605 P0607 ECM 	D
	 P0643 Sensor power supply P0705 P0850 Park/neutral position (PNP) switch P1610 - P1615 NATS P2122 P2123 P2127 P2128 P2138 Accelerator pedal position sensor 	Е
2	 P0031 P0032 Air fuel ratio (A/F) sensor 1 heater P0037 P0038 Heated oxygen sensor 2 heater P0043 P0044 Heated oxygen sensor 3 heater 	F
	 P0075 Intake valve timing control solenoid valve P0130 P0131 P0132 P0133 P2A00 Air fuel ratio (A/F) sensor 1 P0137 P0138 P0139 Heated oxygen sensor 2 P0143 P0144 P0145 P0146 Heated oxygen sensor 3 	G
	 P0441 EVAP control system purge flow monitoring P0443 P0444 P0445 EVAP canister purge volume control solenoid valve P0447 P0448 EVAP canister vent control valve P0451 P0452 P0453 EVAP control system pressure sensor 	Н
	 P0603 ECM power supply P0710 P0715 P0720 P0740 P0744 P0745 P0746 P0776 P0778 P0840 P0845 P1740 P1777 P1778 CVT related sensors, solenoid valves and switches 	I
	 P1217 Engine over temperature (OVERHEAT) P1805 Brake switch P2004 Tumble control valve motor P2014 Tumble control valve position sensor 	J
	 P2100 P2103 Throttle control motor relay P2101 Electric throttle control function P2118 Throttle control motor 	K
3	 P0011 Intake valve timing control P0171 P0172 Fuel injection system function P0300 - P0304 Misfire P0420 Three way catalyst function 	L
	 P0442 P0456 EVAP control system (SMALL LEAK, VERY SMALL LEAK) P0455 EVAP control system (GROSS LEAK) P0506 P0507 Idle speed control system 	M
	 P1148 Closed loop control P1212 TCS communication line P1421 Cold start control P1564 ASCD steering switch 	Ν
	 P1572 ASCD brake switch P1574 ASCD vehicle speed sensor P1715 Primary speed sensor P2119 Electric throttle control actuator P2423 HC adsorption catalyst 	0

DTC Index

×:Applicable —: Not applicable

14	DTC	* 1				5 (
Items (CONSULT-III screen terms)	CONSULT-III GST* ²	ECM*3	SRT code	Trip	MIL	Reference page
CAN COMM CIRCUIT	U1000	1000*4	_	1	×	EC-128
CAN COMM CIRCUIT	U1001	1001*4	_	2	_	EC-128
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	P0000	0000	_	_	Flashing* ⁷	-
INT/V TIM CONT-B1	P0011	0011	_	2	×	EC-129
A/F SEN1 HTR (B1)	P0031	0031	_	2	×	EC-133
A/F SEN1 HTR (B1)	P0032	0032	_	2	×	EC-133
HO2S2 HTR (B1)	P0037	0037	_	2	×	EC-136
HO2S2 HTR (B1)	P0038	0038	_	2	×	EC-136
HO2S3 HTR (B1)	P0043	0043	_	2	×	EC-139
HO2S3 HTR (B1)	P0044	0044	_	2	×	EC-139
INT/V TIM V/CIR-B1	P0075	0075	_	2	×	EC-142
MAF SEN/CIRCUIT-B1	P0101	0101	_	2	×	EC-145
MAF SEN/CIRCUIT-B1	P0102	0102	_	1	×	EC-152
MAF SEN/CIRCUIT-B1	P0103	0103	_	1	×	EC-152
IAT SEN/CIRCUIT-B1	P0112	0112	_	2	×	EC-157
IAT SEN/CIRCUIT-B1	P0113	0113	_	2	×	EC-157
ECT SEN/CIRC	P0117	0117	_	1	×	EC-160
ECT SEN/CIRC	P0118	0118	_	1	×	EC-160
TP SEN 2/CIRC-B1	P0122	0122	_	1	×	EC-163
TP SEN 2/CIRC-B1	P0123	0123	_	1	×	EC-163
ECT SENSOR	P0125	0125	_	2	×	EC-166
IAT SENSOR-B1	P0127	0127	_	2	×	EC-169
THERMSTAT FNCTN	P0128	0128	_	2	×	EC-171
A/F SENSOR1 (B1)	P0130	0130	_	2	×	EC-173
A/F SENSOR1 (B1)	P0131	0131	_	2	×	EC-177
A/F SENSOR1 (B1)	P0132	0132	_	2	×	EC-180
A/F SENSOR1 (B1)	P0133	0133	×	2	×	EC-183
HO2S2 (B1)	P0137	0137	×	2	×	EC-188
HO2S2 (B1)	P0138	0138	×	2	×	EC-194
HO2S2 (B1)	P0139	0139	×	2	×	EC-201
HO2S3 (B1)	P0143	0143	×	2	×	EC-207
HO2S3 (B1)	P0144	0144	×	2	×	EC-212
HO2S3 (B1)	P0145	0145	×	2	×	EC-217
HO2S3 (B1)	P0146	0146	_	2	×	EC-222
FUEL SYS-LEAN-B1	P0171	0171	_	2	×	EC-227
FUEL SYS-RICH-B1	P0172	0172	_	2	×	EC-231
FTT SENSOR	P0181	0181	_	2	×	EC-235
FTT SEN/CIRCUIT	P0182	0182	_	2	×	EC-238

[FOR CALIFORNIA]

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Items	DTC	*1				Reference
(CONSULT-III screen terms)	CONSULT-III GST* ²	ECM* ³	SRT code	Trip	MIL	page
FTT SEN/CIRCUIT	P0183	0183		2	×	EC-238
TP SEN 1/CIRC-B1	P0222	0222	_	1	×	EC-241
TP SEN 1/CIRC-B1	P0223	0223	_	1	×	EC-241
MULTI CYL MISFIRE	P0300	0300	_	2	×	EC-244
CYL 1 MISFIRE	P0301	0301	_	2	×	EC-244
CYL 2 MISFIRE	P0302	0302	_	2	×	EC-244
CYL 3 MISFIRE	P0303	0303	_	2	×	EC-244
CYL 4 MISFIRE	P0304	0304	_	2	×	EC-244
KNOCK SEN/CIRC-B1	P0327	0327	_	2	_	EC-250
KNOCK SEN/CIRC-B1	P0328	0328	_	2	_	EC-250
CKP SEN/CIRCUIT	P0335	0335	_	2	×	EC-252
CMP SEN/CIRC-B1	P0340	0340	_	2	×	EC-256
TW CATALYST SYS-B1	P0420	0420	×	2	×	EC-260
EVAP PURG FLOW/MON	P0441	0441	×	2	×	EC-264
EVAP SMALL LEAK	P0442	0442	×	2	×	EC-269
PURG VOLUME CONT/V	P0443	0443	_	2	×	EC-275
PURG VOLUME CONT/V	P0444	0444	_	2	×	EC-279
PURG VOLUME CONT/V	P0445	0445	_	2	×	EC-279
VENT CONTROL VALVE	P0447	0447	_	2	×	EC-282
VENT CONTROL VALVE	P0448	0448	_	2	×	EC-286
EVAP SYS PRES SEN	P0451	0451	_	2	×	EC-290
EVAP SYS PRES SEN	P0452	0452	_	2	×	EC-293
EVAP SYS PRES SEN	P0453	0453	_	2	×	EC-298
EVAP GROSS LEAK	P0455	0455	_	2	×	EC-304
EVAP VERY SML LEAK	P0456	0456	×* ⁶	2	×	EC-310
FUEL LEV SEN SLOSH	P0460	0460	_	2	×	EC-317
FUEL LEVEL SENSOR	P0461	0461	_	2	×	EC-318
FUEL LEVL SEN/CIRC	P0462	0462	_	2	×	EC-320
FUEL LEVL SEN/CIRC	P0463	0463	_	2	×	EC-320
VEH SPEED SEN/CIRC*5	P0500	0500	_	2	×	EC-322
ISC SYSTEM	P0506	0506	_	2	×	EC-324
ISC SYSTEM	P0507	0507	_	2	×	EC-326
ECM BACK UP/CIRCUIT	P0603	0603	_	2	×	EC-328
ECM	P0605	0605	_	1 or 2	× or —	EC-330
ECM	P0607	0607	_	1	×	EC-332
SENSOR POWER/CIRC	P0643	0643	_	1	×	EC-333
PNP SW/CIRC	P0705	0705	_	2	×	TM-52
ATF TEMP SEN/CIRC	P0710	0710	_	1	×	<u>TM-55</u>
INPUT SPD SEN/CIRC	P0715	0715	_	2	×	<u>TM-57</u>
VEH SPD SEN/CIR AT*5	P0720	0720	_	2	×	TM-61
TCC SOLENOID/CIRC	P0740	0740	_	2	×	TM-67
A/T TCC S/V FNCTN	P0744	0744	_	2	×	TM-69

[FOR CALIFORNIA]

Itomo	DTC*1					Reference
Items (CONSULT-III screen terms)	CONSULT-III GST* ²	ECM*3	SRT code	Trip	MIL	Reference page
L/PRESS SOL/CIRC	P0745	0745	_	2	×	<u>TM-71</u>
PRS CNT SOL/A FCTN	P0746	0746	_	1	×	<u>TM-73</u>
PRS CNT SOL/B FCTN	P0776	0776	_	2	×	<u>TM-75</u>
PRS CNT SOL/B CIRC	P0778	0778	_	2	×	<u>TM-78</u>
TR PRS SENS/A CIRC	P0840	0840	_	2	×	<u>TM-85</u>
TR PRS SENS/B CIRC	P0845	0845	_	2	×	<u>TM-91</u>
P-N POS SW/CIRCUIT	P0850	0850	_	2	×	EC-335
CLOSED LOOP-B1	P1148	1148	_	1	×	EC-338
TCS/CIRC	P1212	1212	_	2	_	EC-339
ENG OVER TEMP	P1217	1217	_	1	×	EC-340
CTP LEARNING-B1	P1225	1225	_	2	_	EC-344
CTP LEARNING-B1	P1226	1226	_	2	_	EC-346
COLD START CONTROL	P1421	1421	_	2	×	EC-348
ASCD SW	P1564	1564	_	1	_	EC-350
ASCD BRAKE SW	P1572	1572	_	1	_	EC-353
ASCD VHL SPD SEN	P1574	1574	_	1	_	EC-358
LOCK MODE	P1610	1610	_	2	_	SEC-33*8 SEC-181*9
ID DISCORD,IMMU-ECM	P1611	1611	_	2	_	SEC-34*8 SEC-182*9
CHAIN OF ECM-IMMU	P1612	1612	_	2	_	SEC-36*8 SEC-184*9
CHAIN OF IMMU-KEY	P1614	1614	_	2	_	SEC-37*8 SEC-185*9
DIFFERENCE OF KEY	P1615	1615	_	2	_	SEC-39*8 SEC-187*9
IN PULY SPEED	P1715	1715	_	2	_	EC-360
LU-SLCT SOL/CIRC	P1740	1740	_	2	×	TM-106
STEP MOTOR CIRC	P1777	1777	_	1	×	TM-109
STEP MOTOR FNCT	P1778	1778	_	2	×	<u>TM-112</u>
BRAKE SW/CIRCUIT	P1805	1805	_	2	_	EC-362
TUMBLE CONT/V	P2004	2004	_	2	×	EC-364
TUMBLE POS SEN	P2014	2014	_	2	_	EC-369
ETC MOT PWR-B1	P2100	2100	_	1	×	EC-372
ETC FNCTN/CIRC-B1	P2101	2101	_	1	×	EC-374
ETC MOT PWR	P2103	2103	_	1	×	EC-372
ETC MOT-B1	P2118	2118	_	1	×	EC-378
ETC ACTR-B1	P2119	2119	_	1	×	EC-380
APP SEN 1/CIRC	P2122	2122	_	1	×	EC-382
APP SEN 1/CIRC	P2123	2123	_	1	×	EC-382
APP SEN 2/CIRC	P2127	2127	_	1	×	EC-385
APP SEN 2/CIRC	P2128	2128	_	1	×	EC-385

< ECU DIAGNOSIS > [FOR CALIFORNIA]

Items (CONSULT-III screen terms)	DTC*1					Reference
	CONSULT-III GST* ²	ECM* ³	SRT code	Trip	MIL	page
TP SENSOR-B1	P2135	2135	_	1	×	EC-389
APP SENSOR	P2138	2138	_	1	×	EC-392
HC ADS CATALYST-B1	P2423	2423	×	2	×	EC-396
A/F SENSOR1 (B1)	P2A00	2A00	_	2	×	EC-400

^{*1: 1}st trip DTC No. is the same as DTC No.

How to Set SRT Code

INFOID:000000001715430

To set all SRT codes, self-diagnosis for the items indicated above must be performed one or more times. Each diagnosis may require a long period of actual driving under various conditions.

(P)WITH CONSULT-III

Perform corresponding DTC CONFIRMATION PROCEDURE one by one based on Performance Priority in the table on "SRT Item".

®WITHOUT CONSULT-III

The most efficient driving pattern in which SRT codes can be properly set is explained on the next page. The driving pattern should be performed one or more times to set all SRT codes.

Revision: 2008 January EC-467 2008 Rogue

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^{*2:} This number is prescribed by SAE J2012.

^{*3:} In Diagnostic Test Mode II (Self-diagnostic results), this number is controlled by NISSAN.

^{*4:} The troubleshooting for this DTC needs CONSULT-III.

^{*5:} When the fail-safe operations for both self-diagnoses occur, the MIL illuminates.

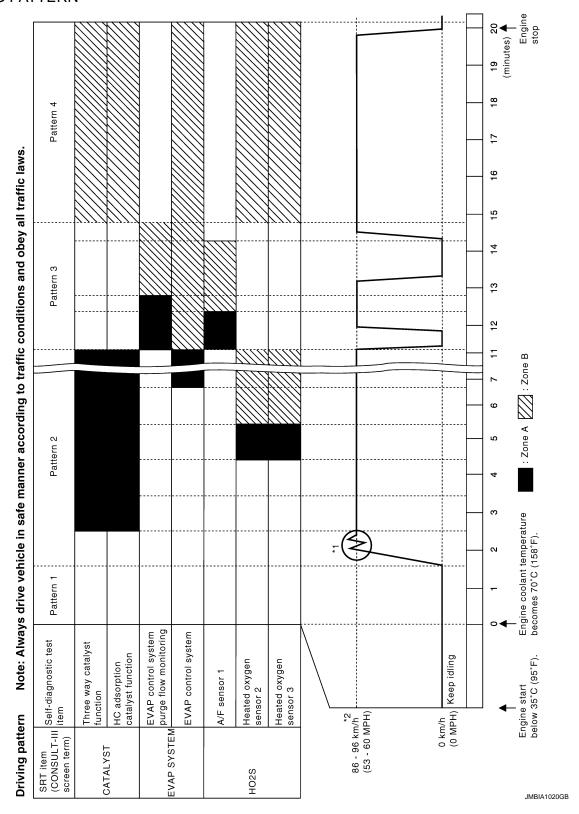
^{*6:} SRT code will not be set if the self-diagnostic result is NG.

^{*7:} When the ECM is in the mode of displaying SRT status, MIL may flash. For the details, refer to "How to Display SRT Status".

^{*8:} Models with intelligent key system

^{*8:} Models without intelligent key system

DRIVING PATTERN



- The time required for each diagnosis varies with road surface conditions, weather, altitude, individual driving habits, etc.
 - Zone A refers to the range where the time, required for the diagnosis under normal conditions*, is the shortest.
 - Zone B refers to the range where the diagnosis can still be performed if the diagnosis is not completed within zone A.
- *: Normal conditions refer to the following:

- Sea level
- Flat road
- Ambient air temperature: 20 30°C (68 86°F)
- Diagnosis is performed as quickly as possible under normal conditions.
 Under different conditions [For example: ambient air temperature other than 20 30°C (68 86°F)], diagnosis may also be performed.

Pattern 1:

- The engine is started at the engine coolant temperature of -10 to 35°C (14 to 95°F)
 [where the voltage between the ECM terminals 46 (Engine coolant temperature sensor signal) and 52
 (Sensor ground) is 3.0 4.3V].
- The engine must be operated at idle speed until the engine coolant temperature is greater than 70°C (158°F) [where the voltage between the ECM terminals 46 (Engine coolant temperature sensor signal) and 52 (Sensor ground) is lower than 1.4V].
- The engine is started at the fuel tank temperature of warmer than 0°C (32°F) [where the voltage between the ECM terminal 95 (Fuel tank temperature sensor signal) and 104 (Sensor ground) is less than 4.1V].

Pattern 2:

When steady-state driving is performed again even after it is interrupted, each diagnosis can be conducted.
 In this case, the time required for diagnosis may be extended.
 Pattern 3:

Operate vehicle following the driving pattern shown in the figure.

 Release the accelerator pedal during decelerating vehicle speed from 90 km/h (56 MPH) to 0 km/h (0 MPH).

Pattern 4:

- The accelerator pedal must be held very steady during steadystate driving.
- If the accelerator pedal is moved, the test must be conducted all over again.

*1: Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH), then release the accelerator pedal and keep it released for more than 10 seconds. Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH) again.



Suggested Transmission Gear Position for CVT Models Set the selector lever in the D position.

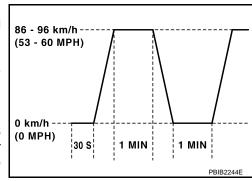
Test Value and Test Limit

The following is the information specified in Service \$06 of SAE J1979.

The test value is a parameter used to determine whether a system/circuit diagnostic test is OK or NG while being monitored by the ECM during self-diagnosis. The test limit is a reference value which is specified as the maximum or minimum value and is compared with the test value being monitored.

These data (test value and test limit) are specified by On Board Monitor ID (OBDMID), Test ID (TID), Unit and Scaling ID and can be displayed on the GST screen.

The items of the test value and test limit will be displayed with GST screen which items are provided by the ECM. (e.g., if the bank 2 is not applied on this vehicle, only the items of the bank 1 is displayed)



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				Tes	alue and t limit display)				
Item	OBD- MID	Self-diagnostic test item	DTC	TID	Unit and Scaling ID	Description			
			P0131	83H	0BH	Minimum sensor output voltage for test cycle			
			P0131	84H	0BH	Maximum sensor output voltage for test cycl			
			P0130	85H	0BH	Minimum sensor output voltage for test cycle			
			P0130	86H	0BH	Maximum sensor output voltage for test cycl			
	01H	Air fuel ratio (A/F) sensor 1	P0133	87H	04H	Response rate: Response ratio (Lean to Rich			
	ОІП	(Bank 1)	P0133	88H	04H	Response rate: Response ratio (Rich to Lear			
			P2A00	89H	84H	The amount of shift in air fuel ratio			
			P2A00	8AH	84H	The amount of shift in air fuel ratio			
11000			P0130	8BH	0BH	Difference in sensor output voltage			
HO2S			P0133	8CH	83H	Response gain at the limited frequency			
			P0138	07H	0CH	Minimum sensor output voltage for test cycl			
	0011	Heated oxygen sensor 2	P0137	08H	0CH	Maximum sensor output voltage for test cyc			
	02H	(Bank 1)	P0138	80H	0CH	Sensor output voltage			
			P0139	81H	0CH	Difference in sensor output voltage			
			P0143	07H	0CH	Minimum sensor output voltage for test cyc			
	0011	Heated oxygen sensor 3	P0144	08H	0CH	Maximum sensor output voltage for test cyc			
	03H	(Bank 1)	P0146	80H	0CH	Sensor output voltage			
			P0145	81H	0CH	Difference in sensor output voltage			
			P0151	83H	0BH	Minimum sensor output voltage for test cyc			
			P0151	84H	0BH	Maximum sensor output voltage for test cyc			
			P0150	85H	0BH	Minimum sensor output voltage for test cyc			
			P0150	86H	0BH	Maximum sensor output voltage for test cyc			
	0511	Air fuel ratio (A/F) sensor 1	P0153	87H	04H	Response rate: Response ratio (Lean to Ric			
	05H	(Bank 2)	P0153	88H	04H	Response rate: Response ratio (Rich to Lea			
			P2A03	89H	84H	The amount of shift in air fuel ratio			
			P2A03	8AH	84H	The amount of shift in air fuel ratio			
			P0150	8BH	0BH	Difference in sensor output voltage			
HO2S			P0153	8CH	83H	Response gain at the limited frequency			
			P0158	07H	0CH	Minimum sensor output voltage for test cycl			
	0011	Heated oxygen sensor 2	P0157	08H	0CH	Maximum sensor output voltage for test cyc			
	06H	(Bank 2)	P0158	80H	0CH	Sensor output voltage			
			P0159	81H	0CH	Difference in sensor output voltage			
			P0163	07H	0CH	Minimum sensor output voltage for test cyc			
		Heated oxygen sensor 3	P0164	08H	0CH	Maximum sensor output voltage for test cyc			
	07H	(Bank2)	P0166	80H	0CH	Sensor output voltage			
			P0165	81H	0CH	Difference in sensor output voltage			

[FOR CALIFORNIA]

	OBD-			Tes	alue and t limit display)			
EVAP SYSTEM C2 SEN-SOR	MID	Self-diagnostic test item	DTC	TID	Unit and Scaling ID	Description		
			P0420	80H	01H	O2 storage index		
	21H	Three way catalyst func- tion (Bank1)	P0420	82H	01H	Switching time lag engine exhaust index value		
		tion (Banki)	P2423	83H	0CH	Difference in 3rd O2 sensor output voltage		
CATA-			P2423	84H	84H	O2 storage index in HC trap catalyst		
LYST			P0430	80H	01H	O2 storage index		
	22H	Three way catalyst func-	P0430	82H	01H	Switching time lag engine exhaust index value		
		tion (Bank2)	P2424	83H	0CH	Difference in 3rd O2 sensor output voltage		
			P2424	84H	84H	O2 storage index in HC trap catalyst		
-			P0400	80H	96H	Low Flow Faults: EGR temp change rate (short term)		
			P0400	81H	96H	Low Flow Faults: EGR temp change rate (long term)		
EGR SYSTEM	31H ECR tunction	P0400	82H	96H	Low Flow Faults: Difference between max EGR temp and EGR temp under idling condition			
			P0400	83H	96H	Low Flow Faults: Max EGR temp		
			P1402	84H	96H	High Flow Faults: EGR temp increase rate		
	39H	EVAP control system leak (Cap Off)	P0455	80H	0CH	Difference in pressure sensor output voltage before and after pull down		
E) (A B	3ВН	EVAP control system leak (Small leak)	P0442	80H	05H	Leak area index (for more than 0.04inch)		
SYSTEM		EVAP control system	P0456	80H	05H	Leak area index (for more than 0.02inch)		
	3CH	(Very small leak)	P0456	81H	FDH	Maximum internal pressure of EVAP system during monitoring		
	3DH	Purge flow system	P0441	83H	0CH	Difference in pressure sensor output voltage before and after vent control value close		
	41H	A/F sensor 1 heater (Bank 1)	Low Input:P0031 High Input:P0032	81H	0BH	Converted value of Heater electric current to voltage		
	42H	Heated oxygen sensor 2 (Bank 1)	Low Input:P0037 High Input:P0038	80H	0CH	Converted value of Heater electric current to voltage		
O2 SEN- SOR	43H	Heated oxygen sensor 3 (Bank 1)	P0043	80H	0CH	Converted value of Heater electric current to voltage		
HEATER	45H	A/F sensor 1 heater (Bank 2)	Low Input:P0051 High Input:P0052	81H	0BH	Converted value of Heater electric current to voltage		
	46H	Heated oxygen sensor 2 (Bank 2)	Low Input:P0057 High Input:P0058	80H	0CH	Converted value of Heater electric current to voltage		
	47H	Heated oxygen sensor 3 (Bank 2)	P0063	80H	0CH	Converted value of Heater electric current to voltage		

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< ECU DIAGNOSIS > [FOR CALIFORNIA]

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	OBD-			Tes	alue and t limit display)	
Item	MID	Self-diagnostic test item	DTC	TID	Unit and Scaling ID	Description
			P0411	80H	01H	Secondary Air Injection System Incorrect Flow Detected
	EC-		Bank1: P0491 Bank2: P0492	81H	01H	Secondary Air Injection System Insufficient Flow
SEC-			P2445	82H	01H	Secondary Air Injection System Pump Stuck Off
OND-	71H	Secondary Air system	P2448	83H	01H	Secondary Air Injection System High Airflow
ARY AIR			Bank1: P2440 Bank2: P2442	84H	01H	Secondary Air Injection System Switching Valve Stuck Open
			P2440	85H	01H	Secondary Air Injection System Switching Valve Stuck Open
			P2444	86H	01H	Secondary Air Injection System Pump Stuck On
	81H	Fuel injection system	P0171 or P0172	80H	2FH	Long term fuel trim
FUEL	ОΙП	function (Bank 1)	P0171 or P0172	81H	24H	The number of lambda control clamped
SYSTEM	82H	Fuel injection system	P0174 or P0175	80H	2FH	Long term fuel trim
	UZΠ	function (Bank 2)	P0174 or P0175	81H	24H	The number of lambda control clamped

< ECU DIAGNOSIS > [FOR CALIFORNIA]

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	OBD-			Tes	alue and t limit display)		Α
Item	MID	Self-diagnostic test item	DTC	TID	Unit and Scaling ID	Description	EC
			P0301	80H	24H	Misfiring counter at 1000rev of the first cylinder	C
			P0302	81H	24H	Misfiring counter at 1000rev of the second cylinder	
			P0303	82H	24H	Misfiring counter at 1000rev of the third cylinder	
			P0304	83H	24H	Misfiring counter at 1000rev of the fourth cylinder	Е
			P0305	84H	24H	Misfiring counter at 1000rev of the fifth cylinder	
			P0306	85H	24H	Misfiring counter at 1000rev of the sixth cylinder	F
			P0307	86H	24H	Misfiring counter at 1000rev of the seventh cylinder	G
			P0308	87H	24H	Misfiring counter at 1000rev of the eighth cylinder	
MOEIDE		M Kinto Q For Looking	P0300	88H	24H	Misfiring counter at 1000rev of the multiple cylinders	-
MISFIRE	A1H	Multiple Cylinder Misfire	P0301	89H	24H	Misfiring counter at 200rev of the first cylinder	
			P0302	8AH	24H	Misfiring counter at 200rev of the second cylinder	
			P0303	8BH	24H	Misfiring counter at 200rev of the third cylinder	
			P0304	8CH	24H	Misfiring counter at 200rev of the fourth cylinder	
			P0305	8DH	24H	Misfiring counter at 200rev of the fifth cylinder	k
			P0306	8EH	24H	Misfiring counter at 200rev of the fifth cylinder	
			P0307	8FH	24H	Misfiring counter at 200rev of the fifth cylinder	1
			P0308	90H	24H	Misfiring counter at 200rev of the fifth cylinder	
			P0300	91H	24H	Misfiring counter at 1000rev of the single cylinder	N
			P0300	92H	24H	Misfiring counter at 200rev of the single cylinder	
			P0300	93H	24H	Misfiring counter at 200rev of the multiple cylinders	N

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	OBD-	Self-diagnostic test item		Tes	alue and t limit display)	
Item	MID		DTC	TID	Unit and Scaling ID	Description
	A2H	No.1 Cylinder Misfire	P0301	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0301	0CH	24H	Misfire counts for last/current driving cycles
•	АЗН	No.2 Cylinder Misfire	P0302	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0302	0CH	24H	Misfire counts for last/current driving cycles
	A4H	No.3 Cylinder Misfire	P0303	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0303	0CH	24H	Misfire counts for last/current driving cycles
	A5H	No.4 Cylinder Misfire	P0304	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
MISFIRE			P0304	0CH	24H	Misfire counts for last/current driving cycles
MISTIRE	A6H	No.5 Cylinder Misfire	P0305	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0305	0CH	24H	Misfire counts for last/current driving cycles
	A7H	No.6 Cylinder Misfire	P0306	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0306	0CH	24H	Misfire counts for last/current driving cycles
	A8H	No.7 Cylinder Misfire	P0307	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0307	0CH	24H	Misfire counts for last/current driving cycles
	А9Н	No.8 Cylinder Misfire	P0308	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0308	0CH	24H	Misfire counts for last/current driving cycles

[FOR CALIFORNIA]

SYMPTOM DIAGNOSIS

ENGINE CONTROL SYSTEM SYMPTOMS

Symptom Table

SYSTEM — BASIC ENGINE CONTROL SYSTEM

							S	MPT	OM						
		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warrant	y symptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	НА	
Fuel	Fuel pump circuit	1	1	2	3	2		2	2			3		2	EC-419
	Fuel pressure regulator system	3	3	4	4	4	4	4	4	4		4			EC-486
	Fuel injector circuit	1	1	2	3	2		2	2			2			EC-416
	Evaporative emission system	3	3	4	4	4	4	4	4	4		4			EC-72
Air	Positive crankcase ventilation system	3	3	4	4	4	4	4	4	4		4	1		EC-433
	Incorrect idle speed adjustment						1	1	1	1		1			EC-26
	Electric throttle control actuator	1	1	2	3	3	2	2	2	2		2		2	EC-374 EC-380
Ignition	Incorrect ignition timing adjustment	3	3	1	1	1		1	1			1			EC-26
	Ignition circuit	1	1	2	2	2		2	2			2			EC-422
Main po	wer supply and ground circuit	2	2	3	3	3		3	3		2	3			EC-124
Mass ai	r flow sensor circuit	1			2										EC-145 EC-152
Engine	coolant temperature sensor circuit						3			3					EC-160 EC-166
Air fuel	ratio (A/F) sensor 1 circuit		1	2	3	2		2	2			2			EC-173 EC-177 EC-180 EC-183 EC-400
Throttle	position sensor circuit						2			2					EC-163 EC-241 EC-344 EC-346 EC-389
Accelera	ator pedal position sensor circuit			3	2	1									EC-382 EC-385 EC-392
Knock s	sensor circuit			2								3			EC-250

Revision: 2008 January EC-475 2008 Rogue

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	HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty symptom code	AA	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА	
Crankshaft position sensor (POS) circuit	2	2												EC-252
Camshaft position sensor (PHASE) circuit	3	2												EC-256
Vehicle speed signal circuit		2	3		3						3			EC-322
ECM	2	2	3	3	3	3	3	3	3	3	3			EC-328 EC-330
Intake valve timing control solenoid valve circuit		3	2		1	3	2	2	3		3			EC-142
PNP switch circuit			3		3		3	3			3			EC-335
Refrigerant pressure sensor circuit		2				3			3		4			EC-434
Electrical load signal circuit							3							EC-414
Tumble control valve motor					4	4								EC-365
Tumble control valve position sensor					4	4								EC-369
Air conditioner circuit	2	2	3	3	3	3	3	3	3		3		2	HAC-20
ABS actuator and electric unit (control unit)			4											BRC-15 BRC-94

^{1 - 6:} The numbers refer to the order of inspection.

SYSTEM — ENGINE MECHANICAL & OTHER

							S١	/MPT	MC							А
						Z					IIGH					
		(EXCP. HA)		_		ACCELERATION					REH	_		<u></u>		EC
		:XCP		SPOT		ELEF					RATU	NOIL	NO	CHARGE)		
		RT (E		LAT 8	SPARK KNOCK/DETONATION	ACC)LE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	CHA		С
		START/RESTART		HESITATION/SURGING/FLAT	ONA	POWER/POOR	щ	ING		SLOW/NO RETURN TO IDLE	R TEI	SNO	NSU	DEAD (UNDER	Reference page	
		RT/RE		JRGI	/DET	ER/P	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	<u>N</u>	URN	ATEI	JEL C	00 7	N) C	pago	D
		STA	ENGINE STALL	IS/NC	lock	MOG	:/LO)LE/F	IDLING VIBRATION	RET	TS/W	ÆFL	/E OI	DEAI		
		ON/O	NE S	TATIC	X X	OF	IDLE	ЭНГ	G VIE	ON/N	KHEA	SSIV	SSIV	ERY		Е
		HARD/NO	ING!	ESI.	SPAR	LACK OF	HGH HGH	ROUC	DLIN	SLOV	OVEF	XCE	XCE	BATTERY		
Warranty s	ymptom code	AA	AB	AC	AD	AE	AF	AG	– AH	AJ	AK	AL	AM	НА		F
Fuel	Fuel tank														<u>FL-17</u>	ı
		5			_	_									FL-20	
	Fuel piping		_	5	5	5		5	5			5			<u>FL-6</u>	G
	Vapor lock		5												_	÷
	Valve deposit Poor fuel (Heavy weight gasoline, Low octane)	5		5	5	5		5	5			5			_	Н
Air	Air duct														EM-28	
7	Air cleaner														EM-28	-
	Air leakage from air duct (Mass air flow sensor — electric throttle control actuator)		5	5		5		5	5			5			EM-28	J
	Electric throttle control actuator	5			5		5			5					EM-29	
	Air leakage from intake manifold/ Collector/Gasket														<u>EM-31</u>	K
Cranking	Battery	1	1	1		1		1	1					1	PG-88	
	Generator circuit	'	'	'		'		1	'					'	CHG-18	L
	Starter circuit	3										1			STR-5	_
	Signal plate	6													<u>EM-94</u>	D /I
	PNP switch	4													<u>TM-53</u>	M
Engine	Cylinder head	5	5	5	5	5		5	5			5			<u>EM-83</u>	
	Cylinder head gasket										4		3			Ν
	Cylinder block															
	Piston												4			
	Piston ring	6	6	6	6	6		6	6			6			EM-94	0
	Connecting rod															
	Bearing															Р
	Crankshaft															.
Valve mecha-	Timing chain														<u>EM-75</u>	
nism	Camshaft														<u>EM-52</u>	.
	Intake valve timing control	5	5	5	5	5		5	5			5		<u> </u>	<u>EM-75</u>	
	Intake valve												3		<u>EM-83</u>	
	Exhaust valve														_	

							S	/MPT	ОМ						
		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty	symptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	НА	
Exhaust	Exhaust manifold/Tube/Muffler/ Gasket Three way catalyst	5	5	5	5	5		5	5			5			EM-33 EX-4
	HC adsorption catalyst														EC-396
Lubrica- tion	Oil pan/Oil strainer/Oil pump/Oil filter/Oil gallery/Oil cooler Oil level (Low)/Filthy oil	5	5	5	5	5		5	5			5			LU-5 LU-8 LU-9 LU-12
Cooling	Radiator/Hose/Radiator filler cap														CO-13 CO-13
	Thermostat									5					<u>CO-26</u>
	Water pump	5	5	5	5	5		5	5		4	5			<u>CO-24</u>
	Water gallery	5	Э	Э	5	5		Э	5		4	5			<u>CO-2</u>
	Cooling fan														<u>CO-22</u>
	Coolant level (Low)/Contaminated coolant									5					<u>CO-9</u>
NVIS (NIS NATS)	SAN Vehicle Immobilizer System —	1	1												SEC-15 SEC-169

^{1 - 6:} The numbers refer to the order of inspection.

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

[FOR CALIFORNIA]

NORMAL OPERATING CONDITION

Description INFOID:000000001715433

FUEL CUT CONTROL (AT NO LOAD AND HIGH ENGINE SPEED)

If the engine speed is above 1,800 rpm under no load (for example, the selector lever position is neutral and engine speed is over 1,800 rpm) fuel will be cut off after some time. The exact time when the fuel is cut off varies based on engine speed.

Fuel cut will be operated until the engine speed reaches 1,500 rpm, then fuel cut will be cancelled. **NOTE:**

This function is different from deceleration control listed under Multiport Fuel Injection (MFI) System, <u>EC-38</u>. "System Description".

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PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIRBAG" and "SEAT BELT" of this Service Manual.

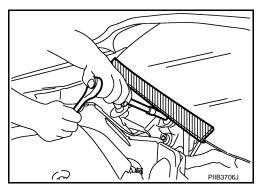
WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SRS AIRBAG".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

Precaution for Procedure without Cowl Top Cover

INFOID:0000000003251694

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



Precautions For Xenon Headlamp Service

INFOID:0000000003251703

WARNING:

Comply with the following warnings to prevent any serious accident.

- Disconnect the battery cable (negative terminal) or the power supply fuse before installing, removing, or touching the xenon headlamp (bulb included). The xenon headlamp contains high-voltage generated parts.
- Never work with wet hands.
- Check the xenon headlamp ON-OFF status after assembling it to the vehicle. Never turn the xenon headlamp ON in other conditions. Connect the power supply to the vehicle-side connector. (Turning it ON outside the lamp case may cause fire or visual impairments.)
- Never touch the bulb glass immediately after turning it OFF. It is extremely hot.

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

- Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)
- Never perform HID circuit inspection with a tester.
- Never touch the xenon bulb glass with hands. Never put oil and grease on it.
- Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.
- Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).

On Board Diagnostic (OBD) System of Engine and CVT

INFOID:0000000001715437

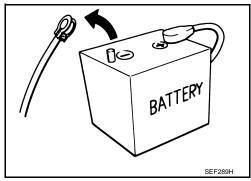
The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

CAUTION:

- Be sure to turn the ignition switch OFF and disconnect the negative battery cable before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MIL to light up.
- Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will
 cause the MIL to light up due to the open circuit. (Be sure the connector is free from water, grease,
 dirt, bent terminals, etc.)
- Certain systems and components, especially those related to OBD, may use a new style slide-locking type harness connector. For description and how to disconnect, refer to PG-78, "Description".
- Be sure to route and secure the harnesses properly after work. The interference of the harness with a bracket, etc. may cause the MIL to light up due to the short circuit.
- Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube
 may cause the MIL to light up due to the malfunction of the EVAP system or fuel injection system,
 etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the ECM and TCM (Transmission control module) before returning the vehicle to the customer.

General Precautions

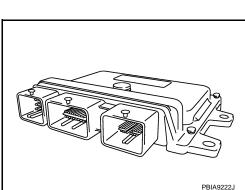
- Always use a 12 volt battery as power source.
- Do not attempt to disconnect battery cables while engine is running.
- Before connecting or disconnecting the ECM harness connector, turn ignition switch OFF and disconnect negative battery cable. Failure to do so may damage the ECM because battery voltage is applied to ECM even if ignition switch is turned OFF.
- Before removing parts, turn ignition switch OFF and then disconnect battery ground cable.



- Do not disassemble ECM.
- If a battery cable is disconnected, the memory will return to the ECM value.

The ECM will now start to self-control at its initial value. Engine operation can vary slightly when the terminal is disconnected. However, this is not an indication of a malfunction. Do not replace parts because of a slight variation.

- If the battery is disconnected, the following emission-related diagnostic information will be lost within 24 hours.
- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- Freeze frame data
- 1st trip freeze frame data
- System readiness test (SRT) codes
- Test values



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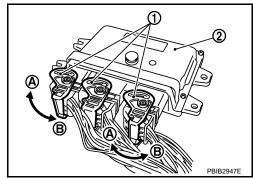
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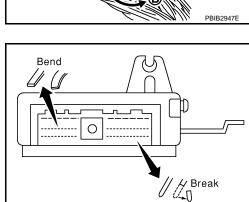
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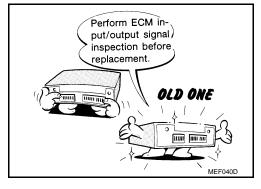
- When connecting ECM harness connector (1), fasten (B) it securely with a lever as far as it will go as shown in the figure.
 - 2. ECM
 - A. Loosen

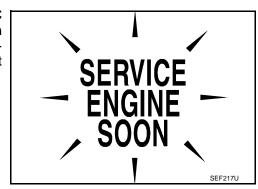


- When connecting or disconnecting pin connectors into or from ECM, take care not to damage pin terminals (bend or break).
 - Make sure that there are not any bends or breaks on ECM pin terminal, when connecting pin connectors.
- Securely connect ECM harness connectors.
 A poor connection can cause an extremely high (surge) voltage to develop in coil and condenser, thus resulting in damage to ICs.
- Keep engine control system harness at least 10 cm (4 in) away from adjacent harness, to prevent engine control system malfunctions due to receiving external noise, degraded operation of ICs, etc.
- Keep engine control system parts and harness dry.
- Before replacing ECM, perform ECM Terminals and Reference Value inspection and make sure ECM functions properly. Refer to EC-436, "Reference Value".
- Handle mass air flow sensor carefully to avoid damage.
- Do not clean mass air flow sensor with any type of detergent.
- Do not disassemble electric throttle control actuator.
- Even a slight leak in the air intake system can cause serious incidents.
- Do not shock or jar the camshaft position sensor (PHASE), crankshaft position sensor (POS).
- After performing each TROUBLE DIAGNOSIS, perform DTC CONFIRMATION PROCEDURE or Component Function Check. The DTC should not be displayed in the DTC CONFIRMA-TION PROCEDURE if the repair is completed. The Component Function Check should be a good result if the repair is completed.



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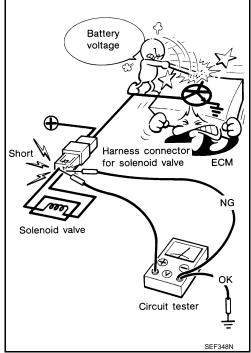




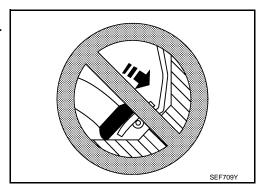
 When measuring ECM signals with a circuit tester, never allow the two tester probes to contact.

Accidental contact of probes will cause a short circuit and damage the ECM power transistor.

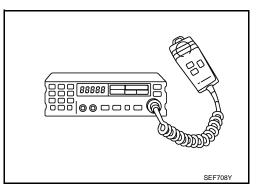
 Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.



- Do not operate fuel pump when there is no fuel in lines.
- Tighten fuel hose clamps to the specified torque.
- Do not depress accelerator pedal when starting.
- Immediately after starting, do not rev up engine unnecessarily.
- Do not rev up engine just prior to shutdown.



- When installing C.B. ham radio or a mobile phone, be sure to observe the following as it may adversely affect electronic control systems depending on installation location.
- Keep the antenna as far as possible from the electronic control units.
- Keep the antenna feeder line more than 20 cm (8 in) away from the harness of electronic controls.
 Do not let them run parallel for a long distance.
- Adjust the antenna and feeder line so that the standing-wave ratio can be kept smaller.
- Be sure to ground the radio to vehicle body.



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PREPARATION

PREPARATION

Special Service Tools

INFOID:0000000001715439

NOTE:

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name		Description
(J-44321) Fuel pressure gauge kit	LEC642	Checking fuel pressure

Commercial Service Tools

INFOID:0000000001715440

Tool name (Kent-Moore No.)		Description
Leak detector i.e.: (J-41416)	S-NT703	Locating the EVAP leak
EVAP service port adapter i.e.: (J-41413-OBD)	S-NT704	Applying positive pressure through EVAP service port
Fuel filler cap adapter i.e.: (MLR-8382)	S-NT815	Checking fuel tank vacuum relief valve opening pressure
Socket wrench	19 mm (0.75 in) More than 32 mm (1.26 in)	Removing and installing engine coolant temperature sensor

PREPARATION

< PREPARATION > [FOR CALIFORNIA]

Tool name (Kent-Moore No.)		Description	A
Oxygen sensor thread cleaner i.e.: (J-43897-18) (J-43897-12)	a Mating surface shave cylinder	Reconditioning the exhaust system threads before installing a new oxygen sensor. Use with antiseize lubricant shown below. a: 18 mm diameter with pitch 1.5 mm for Zirconia Oxygen Sensor b: 12 mm diameter with pitch 1.25 mm for Titania Oxygen Sensor	E
Anti-seize lubricant i.e.: (Permatex TM 133AR or equivalent meeting MIL specifica-		Lubricating oxygen sensor thread cleaning tool when reconditioning exhaust system threads.	
tion MIL-A-907)	S-NT779		E

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ON-VEHICLE MAINTENANCE

FUEL PRESSURE

Inspection INFOID:0000000001715441

FUEL PRESSURE RELEASE

(P) With CONSULT-III

- 1. Turn ignition switch ON.
- Perform "FUEL PRESSURE RELEASE" in "WORK SUPPORT" mode with CONSULT-III.
- 3. Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.

With CONSULT-III

- 1. Remove fuel pump fuse located in IPDM E/R.
- Start engine.
- 3. After engine stalls, crank it two or three times to release all fuel pressure.
- 4. Turn ignition switch OFF.
- 5. Reinstall fuel pump fuse after servicing fuel system.

FUEL PRESSURE CHECK

CAUTION:

Before disconnecting fuel line, release fuel pressure from fuel line to eliminate danger. NOTE:

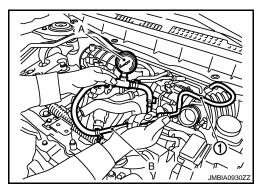
- Prepare pans or saucers under the disconnected fuel line because the fuel may spill out. The fuel pressure cannot be completely released because S35 models do not have fuel return system.
- Use Fuel Pressure Gauge Kit [SST (J-44321)] to check fuel pressure.
- 1. Release fuel pressure to zero.
- 2. Install fuel pressure gauge adapter [SST (J-44321-6)] (B) with fuel pressure gauge (A).
 - Fuel feed hose (1)
- 3. Turn ignition switch ON and check for fuel leakage.
- Start engine and check for fuel leakage.
- 5. Read the indication of fuel pressure gauge.

At idling : Approximately 350 kPa (3.57 kg/cm², 51 psi)

If result is unsatisfactory, check fuel hoses and fuel tubes for clogging.

If OK, Replace "fuel filter and fuel pump assembly".

If NG, Repair or replace.



EVAP LEAK CHECK

Inspection INFOID:000000001715442

CAUTION:

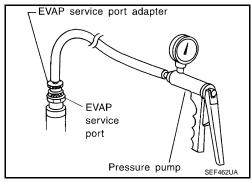
- Do not use compressed air or a high pressure pump.
- Do not exceed 4.12 kPa (0.042 kg/cm², 0.6 psi) of pressure in EVAP system. NOTE:

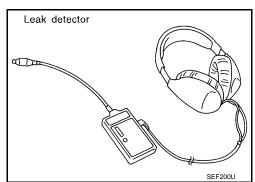
Do not start engine.

 Improper installation of EVAP service port adapter (commercial service tool) to the EVAP service port may cause a leak.

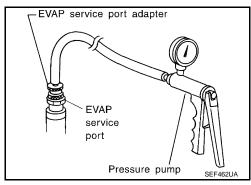
(P) WITH CONSULT-III

- 1. To locate the EVAP leak, install EVAP service port adapter (commercial service tool) and pressure pump to EVAP service port.
- 2. Turn ignition switch ON.
- 3. Select the "EVAP SYSTEM CLOSE" of "WORK SUPPORT" mode with CONSULT-III.
- 4. Touch "START". A bar graph (Pressure indicating display) will appear on the screen.
- 5. Apply positive pressure to the EVAP system until the pressure indicator reaches the middle of the bar graph.
- Remove EVAP service port adapter (commercial service tool) and hose with pressure pump.
- Locate the leak using a leak detector (commercial service tool).
 Refer to <u>EC-72</u>, "System Diagram".





- To locate the EVAP leak, install EVAP service port adapter (commercial service tool) and pressure pump to EVAP service port.
- 2. Apply battery voltage between the terminals of EVAP canister vent control valve to make a closed EVAP system.
- To locate the leak, deliver positive pressure to the EVAP system until pressure gauge points reach 1.38 to 2.76 kPa (0.014 to 0.028 kg/cm², 0.2 to 0.4 psi).
- 4. Remove EVAP service port adapter (commercial service tool) and hose with pressure pump.



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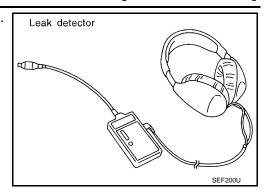
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EVAP LEAK CHECK

< ON-VEHICLE MAINTENANCE >

[FOR CALIFORNIA]

 Locate the leak using a leak detector (commercial service tool). Refer to <u>EC-72</u>, "System Diagram".



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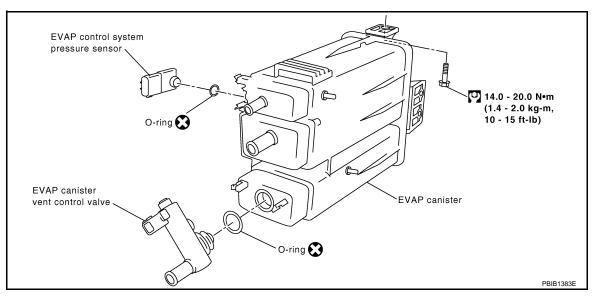
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ON-VEHICLE REPAIR

EVAP CANISTER

Exploded View



Removal and Installation

INFOID:0000000001715444

REMOVAL

- 1. Lift up the vehicle.
- 2. Remove EVAP canister fixing bolt.
- 3. Remove EVAP canister.

NOTE:

The EVAP canister vent control valve and EVAP canister system pressure sensor can be removed without removing the EVAP canister.

INSTALLATION

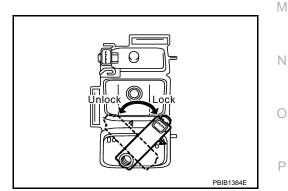
Install in the reverse order of removal.

NOTE:

Tighten EVAP canister fixing bolt to the specified torque.

DISASSEMBLY

- Turn EVAP canister vent control valve counterclockwise.
- 2. Remove the EVAP canister vent control valve.



ASSEMBLY

Assemble in the reverse order of disassembly.

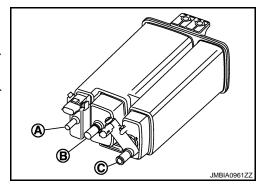
CAUTION:

Always replace O-ring with a new one.

Inspection INFOID:0000000001715445

Check EVAP canister as follows:

- 1. Block port (B).
- 2. Blow air into port (A) and check that it flows freely out of port (C).
- 3. Release blocked port (B).
- 4. Apply vacuum pressure to port (B) and check that vacuum pressure exists at the ports (A) and (C).
- 5. Block port (A) and (B).
- 6. Apply pressure to port (C) and check that there is no leakage.



SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[FOR CALIFORNIA]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Idle Speed

Transmission	Condition	Specification
CVT	No load* (in P or N position)	700 ± 50 rpm

^{*:} Under the following conditions

• A/C switch: OFF

- Electric load: OFF (Lights, heater fan & rear window defogger)
- · Steering wheel: Kept in straight-ahead position

Ignition Timing

Transmission	Condition	Specification
CVT	No load* (in P or N position)	15 ± 5° BTDC

^{*:} Under the following conditions

- · A/C switch: OFF
- Electric load: OFF (Lights, heater fan & rear window defogger)
- Steering wheel: Kept in straight-ahead position

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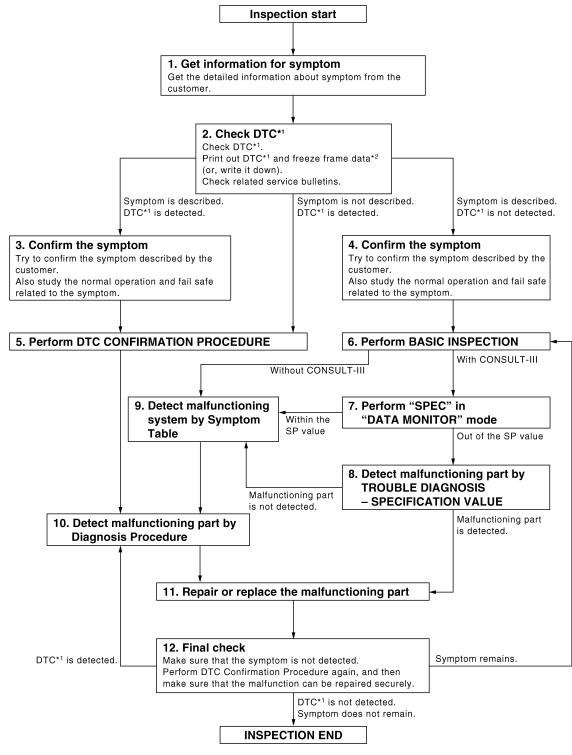
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BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

OVERALL SEQUENCE



^{*1:} Include 1st trip DTC.

JMBIA0078GB

^{*2:} Include 1st trip freeze frame data.

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[FOR USA (FEDERAL) AND CANADA]

1.GET INFORMATION FOR SYMPTOM

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the "Diagnostic Work Sheet". (Refer to EC-494, "Diagnostic Work Sheet".)

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>> GO TO 2.

2.CHECK DTC

- 1. Check DTC.
- 2. Perform the following procedure if DTC is displayed.
- Record DTC and freeze frame data. (Print them out with CONSULT-III or GST.)
- Erase DTC. (Refer to EC-559, "Diagnosis Description".)
- Study the relationship between the cause detected by DTC and the symptom described by the customer. (Symptom Table is useful. Refer to <u>EC-904, "Symptom Table"</u>.)
- Check related service bulletins for information.

Is any symptom described and is any DTC detected?

Symptom is described, DTC is detected>>GO TO 3.

Symptom is described, DTC is not detected>>GO TO 4.

Symptom is not described, DTC is detected>>GO TO 5.

3.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer (except MIL ON).

Also study the normal operation and fail safe related to the symptom. Refer to EC-908. "Description" and EC-890, "Fail Safe".

Diagnosis Work Sheet is useful to verify the incident.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

4. CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

Also study the normal operation and fail safe related to the symptom. Refer to EC-908, "Description" and EC-890. "Fail Safe".

Diagnosis Work Sheet is useful to verify the incident.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 6.

$oldsymbol{5}$.PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC CONFIRMATION PROCEDURE for the displayed DTC, and then make sure that DTC is detected again.

If two or more DTCs are detected, refer to EC-892, "DTC Inspection Priority Chart" and determine trouble diagnosis order.

NOTE:

- Freeze frame data is useful if the DTC is not detected.
- Perform Component Function Check if DTC CONFIRMATION PROCEDURE is not included on Service Manual. This simplified check procedure is an effective alternative though DTC cannot be detected during this check.

If the result of Component Function Check is NG, it is the same as the detection of DTC by DTC CONFIR-MATION PROCEDURE.

Is DTC detected?

YES >> GO TO 10.

NO >> Check according to GI-41, "Intermittent Incident".

6.PERFORM BASIC INSPECTION

Perform EC-496, "BASIC INSPECTION: Special Repair Requirement".

Do you have CONSULT-III?

EC-493 Revision: 2008 January 2008 Rogue

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[FOR USA (FEDERAL) AND CANADA]

YES >> GO TO 7. NO >> GO TO 9.

7.PERFORM SPEC IN DATA MONITOR MODE

(P)With CONSULT-III

Make sure that "MAS A/F SE-B1", "B/FUEL SCHDL" and "A/F ALPHA-B1" are within the SP value using CON-SULT-III in "SPEC" of "DATA MONITOR" mode. Refer to <u>EC-582</u>, "Component Function Check".

Is the measurement value within the SP value?

YES >> GO TO 9. NO >> GO TO 8.

8.DETECT MALFUNCTIONING PART BY TROUBLE DIAGNOSIS - SPECIFICATION VALUE

Detect malfunctioning part according to EC-583, "Diagnosis Procedure".

Is malfunctioning part detected?

YES >> GO TO 11. NO >> GO TO 9.

9. DETECT MALFUNCTIONING SYSTEM BY SYMPTOM TABLE

Detect malfunctioning system according to <u>EC-904</u>. "Symptom Table" based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptom.

>> GO TO 10.

10. DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

Inspect according to Diagnosis Procedure of the system.

NOTE:

NO

The Diagnosis Procedure in EC section described based on open circuit inspection. A short circuit inspection is also required for the circuit check in the Diagnosis Procedure. For details, refer to Circuit Inspection in GI-44, "Circuit Inspection".

Is malfunctioning part detected?

YES >> GO TO 11.

>> Monitor input data from related sensors or check the voltage of related ECM terminals using CON-SULT-III. Refer to <u>EC-867</u>, "Reference Value".

11. REPAIR OR REPLACE THE MALFUNCTIONING PART

- 1. Repair or replace the malfunctioning part.
- Reconnect parts or connectors disconnected during Diagnosis Procedure again after repair and replacement.
- 3. Check DTC. If DTC is displayed, erase it. Refer to EC-559, "Diagnosis Description".

>> GO TO 12.

12. FINAL CHECK

When DTC was detected in step 2, perform DTC CONFIRMATION PROCEDURE or Component Function Check again, and then make sure that the malfunction have been repaired securely.

When symptom was described from the customer, refer to confirmed symptom in step 3 or 4, and make sure that the symptom is not detected.

Is DTC detected and does symptom remain?

YES-1 >> DTC is detected: GO TO 10.

YES-2 >> Symptom remains: GO TO 6.

NO >> Before returning the vehicle to the customer, make sure to erase unnecessary DTC in ECM and TCM (Transmission Control Module). (Refer to EC-559, "Diagnosis Description".) If the completion of SRT is needed, drive vehicle under the specific DRIVING PATTERN in EC-896, "How to Set SRT Code".

Diagnostic Work Sheet

INFOID:0000000002988789

DESCRIPTION

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[FOR USA (FEDERAL) AND CANADA]

There are many operating conditions that lead to the malfunction of engine components. A good grasp of such conditions can make troubleshooting faster and more accurate.

In general, each customer feels differently about an incident. It is important to fully understand the symptoms or conditions for a customer complaint.

Utilize a diagnostic worksheet like the one on the next page in order to organize all the information for troubleshooting.

Some conditions may cause the MIL to come on steady or blink and DTC to be detected. Examples:

- Vehicle ran out of fuel, which caused the engine to misfire.
- Fuel filler cap was left off or incorrectly screwed on, allowing fuel to evaporate into the atmosphere.

KEY POINTS

WHAT Vehicle & engine model
WHEN Date, Frequencies
WHERE..... Road conditions
HOW Operating conditions,
Weather conditions,

Symptoms

SEF907L

WORKSHEET SAMPLE

Customer na	me MR/MS	Model & Year	VIN	
Engine #		Trans.	Mileage	
Incident Date	•	Manuf. Date	In Service Date	
Fuel and fuel	filler cap	☐ Vehicle ran out of fuel causing misfire ☐ Fuel filler cap was left off or incorrectly screwed on.		
Symptoms	☐ Startability	☐ Impossible to start ☐ No combustion ☐ Partial combustion ☐ Partial combustion affected by throttle position ☐ Partial combustion NOT affected by throttle position ☐ Possible but hard to start ☐ Others []		
	☐ Idling	☐ No fast idle ☐ Unstable ☐ H☐ Others [High idle ☐ Low idle	
	☐ Driveability	☐ Stumble ☐ Surge ☐ Knock ☐ Lack of power ☐ Intake backfire ☐ Exhaust backfire ☐ Others []		
	☐ Engine stall	☐ At the time of start ☐ While idling ☐ While accelerating ☐ While dece	elerating	
Incident occurrence		☐ Just after delivery ☐ Recently ☐ In the morning ☐ At night ☐ In the daytime		
Frequency		☐ All the time ☐ Under certain conditions ☐ Sometimes		
Weather conditions		☐ Not affected		
	Weather	☐ Fine ☐ Raining ☐ Snowing	Others [
	Temperature	☐ Hot ☐ Warm ☐ Cool ☐	Cold ☐ Humid °F	
Engine conditions		☐ Cold ☐ During warm-up ☐	After warm-up	
		Engine speed 0 2,000	4,000 6,000 8,000 rpm	
Road conditions		☐ In town ☐ In suburbs ☐ Hig	nhway	
Driving conditions		 Not affected At starting While idling While accelerating While cruising While decelerating While turning (RH/LH) 		
		Vehicle speed	30 40 50 60 MPH	
Malfunction in	ndicator lamp	☐ Turned on ☐ Not turned on		

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Revision: 2008 January EC-495 2008 Rogue

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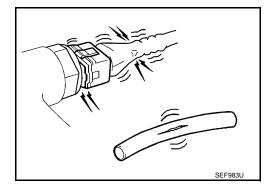
INSPECTION AND ADJUSTMENT BASIC INSPECTION

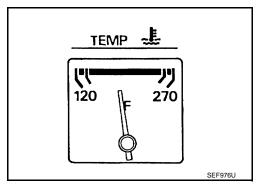
BASIC INSPECTION: Special Repair Requirement

INFOID:0000000002988790

1. INSPECTION START

- 1. Check service records for any recent repairs that may indicate a related malfunction, or a current need for scheduled maintenance.
- 2. Open engine hood and check the following:
- Harness connectors for improper connections
- Wiring harness for improper connections, pinches and cut
- Vacuum hoses for splits, kinks and improper connections
- Hoses and ducts for leaks
- Air cleaner clogging
- Gasket
- 3. Confirm that electrical or mechanical loads are not applied.
- Headlamp switch is OFF.
- Air conditioner switch is OFF.
- Rear window defogger switch is OFF.
- Steering wheel is in the straight-ahead position, etc.
- 4. Start engine and warm it up until engine coolant temperature indicator points the middle of gauge. Ensure engine stays below 1,000 rpm.

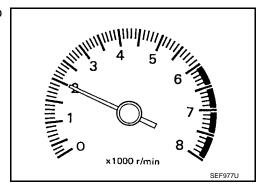




- 5. Run engine at about 2,000 rpm for about 2 minutes under no load.
- 6. Make sure that no DTC is displayed with CONSULT-III or GST.

Is any DTC detected?

YES >> GO TO 2. NO >> GO TO 3.



2. REPAIR OR REPLACE

Repair or replace components as necessary according to corresponding Diagnosis Procedure.

>> GO TO 3

3. CHECK TARGET IDLE SPEED

1. Run engine at about 2,000 rpm for about 2 minutes under no load.

< BASIC INSPECTION >

[FOR USA (FEDERAL) AND CANADA]

Rev engine (2,000 to 3,000 rpm) two or three times under no load, then run engine at idle speed for about 1 minute.

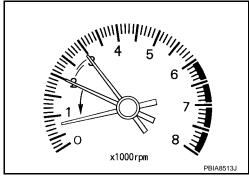
Check idle speed.

For procedure, refer to EC-500, "IDLE SPEED: Special Repair Requirement".

For specification, refer to EC-920, "Idle Speed".

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 4.



f 4.PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Stop engine.

2. Perform EC-501, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 5.

${f 5}$.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 6.

O.PERFORM IDLE AIR VOLUME LEARNING

Perform EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 7.

NO >> Follow the instruction of Idle Air Volume Learning. Then GO TO 4.

7.CHECK TARGET IDLE SPEED AGAIN

Start engine and warm it up to normal operating temperature.

2. Check idle speed.

For procedure, refer to EC-500, "IDLE SPEED: Special Repair Requirement".

For specification, refer to EC-920, "Idle Speed".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 8.

8.DETECT MALFUNCTIONING PART

Check the Following.

Check camshaft position sensor (PHASE) and circuit. Refer to <u>EC-699</u>, "DTC Logic".

Check crankshaft position sensor (POS) and circuit. Refer to EC-695, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace. Then GO TO 4.

9.CHECK ECM FUNCTION

Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)

NOTE:

Use the specified bolts described in parts information certainly when installing the ECM, or violates the Canada law.

2. Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs. Refer to EC-499, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> GO TO 4.

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2008 Rogue

[FOR USA (FEDERAL) AND CANADA]

< BASIC INSPECTION >

10. CHECK IGNITION TIMING

1. Run engine at idle.

2. Check ignition timing with a timing light.

For procedure, refer to EC-500, "IGNITION TIMING: Special Repair Requirement".

For specification, refer to EC-920, "Ignition Timing".

Is the inspection result normal?

YES >> GO TO 19. NO >> GO TO 11.

11. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Stop engine.

2. Perform EC-501, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 12.

12. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 13.

13. PERFORM IDLE AIR VOLUME LEARNING

Perform EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 14.

NO >> Follow the instruction of Idle Air Volume Learning. Then GO TO 4.

14. CHECK TARGET IDLE SPEED AGAIN

- 1. Start engine and warm it up to normal operating temperature.
- 2. Check idle speed.

For procedure, refer to EC-500, "IDLE SPEED: Special Repair Requirement".

For specification, refer to EC-920, "Idle Speed".

Is the inspection result normal?

YES >> GO TO 15. NO >> GO TO 17.

15. CHECK IGNITION TIMING AGAIN

1. Run engine at idle.

2. Check ignition timing with a timing light.

For procedure, refer to EC-500, "IGNITION TIMING: Special Repair Requirement".

For specification, refer to EC-920, "Ignition Timing".

Is the inspection result normal?

YES >> GO TO 19. NO >> GO TO 16.

16. CHECK TIMING CHAIN INSTALLATION

Check timing chain installation. Refer to EM-69, "Removal and Installation".

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair the timing chain installation. Then GO TO 4.

17. DETECT MALFUNCTIONING PART

Check the following.

- Check camshaft position sensor (PHASE) and circuit. Refer to <u>EC-699</u>, "<u>DTC Logic"</u>.
- Check crankshaft position sensor (POS) and circuit. Refer to EC-695, "DTC Logic".

Is the inspection result normal?

< BASIC INSPECTION >

[FOR USA (FEDERAL) AND CANADA]

YES >> GO TO 18.

NO >> Repair or replace. Then GO TO 4.

18. CHECK ECM FUNCTION

 Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)

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NOTE:

Use the specified bolts described in parts information certainly when installing the ECM, or violates the Canada law.

2. Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs. Refer to EC-499, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> GO TO 4.

19. INSPECTION END

If ECM is replaced during this BASIC INSPECTION procedure, go to <u>EC-499</u>, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

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>> INSPECTION END

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Description

When replacing ECM, this procedure must be performed.

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement

Н

1. PERFORM INITIALIZATION OF NATS SYSTEM AND REGISTRATION OF ALL NATS IGNITION KEY IDS

Refer to <u>SEC-9</u>, "ECM RE-COMMUNICATING FUNCTION: Special Repair Requirement" (With Intelligent key system), <u>SEC-168</u>, "ECM RE-COMMUNICATING FUNCTION: Special Repair Requirement" (Without Intelligent key system).

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>> GO TO 2.

2.PERFORM VIN REGISTRATION

Refer to EC-500, "VIN REGISTRATION: Special Repair Requirement".

>> GO TO 3.

3.perform accelerator pedal released position learning

Refer to EC-501, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

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>> GO TO 4.

4. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

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>> GO TO 5.

5. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END
IDLE SPEED

Revision: 2008 January EC-499 2008 Rogue

IDLE SPEED: Description

INFOID:00000000002988793

This describes how to check the idle speed. For the actual procedure, follow the instructions in "BASIC INSPECTION".

IDLE SPEED: Special Repair Requirement

INFOID:0000000002988794

1. CHECK IDLE SPEED

With CONSULT-III

Check idle speed in "DATA MONITOR" mode with CONSULT-III.

With GST

Check idle speed with Service \$01 of GST.

>> INSPECTION END

IGNITION TIMING

IGNITION TIMING: Description

INFOID:0000000002988795

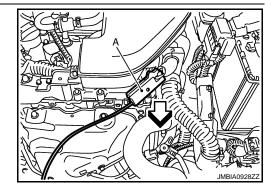
This describes how to check the ignition timing. For the actual procedure, follow the instructions in "BASIC INSPECTION".

IGNITION TIMING: Special Repair Requirement

INFOID:0000000002988796

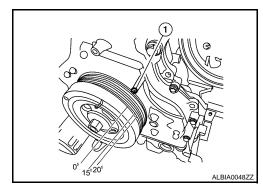
1. CHECK IGNITION TIMING

- 1. Attach timing light (A) to No. 1 ignition coil wire as shown.
- <⊐: Vehicle front



- 2. Check ignition timing.
- Timing indicator (1)

>> INSPECTION END



VIN REGISTRATION

VIN REGISTRATION: Description

INFOID:0000000002988797

VIN Registration is an operation to registering VIN in ECM. It must be performed each time ECM is replaced.

Accurate VIN which is registered in ECM may be required for Inspection & Maintenance (I/M).

VIN REGISTRATION: Special Repair Requirement

INFOID:0000000002988798

1. CHECK VIN

< BASIC INSPECTION >

[FOR USA (FEDERAL) AND CANADA]

Check the VIN of the vehicle and note it. Refer to GI-22, "Information About Identification or Model Code".

>> GO TO 2.

2.PERFORM VIN REGISTRATION

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(P)With CONSULT-III

- 1. Turn ignition switch ON and engine stopped.
- 2. Select "VIN REGISTRATION" in "WORK SUPPORT" mode.
- 3. Follow the instruction of CONSULT-III display.

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>> END

ACCELERATOR PEDAL RELEASED POSITION LEARNING

ACCELERATOR PEDAL RELEASED POSITION LEARNING: Description INFOID:000000002988799

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Accelerator Pedal Released Position Learning is a function of ECM to learn the fully released position of the accelerator pedal by monitoring the accelerator pedal position sensor output signal. It must be performed each time harness connector of accelerator pedal position sensor or ECM is disconnected.

ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement

1.START

- Make sure that accelerator pedal is fully released.
- 2. Turn ignition switch ON and wait at least 2 seconds.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON and wait at least 2 seconds.
- 5. Turn ignition switch OFF and wait at least 10 seconds.

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>> END

THROTTLE VALVE CLOSED POSITION LEARNING

THROTTLE VALVE CLOSED POSITION LEARNING: Description

INFOID:0000000002988801

Throttle Valve Closed Position Learning is a function of ECM to learn the fully closed position of the throttle valve by monitoring the throttle position sensor output signal. It must be performed each time harness connector of electric throttle control actuator or ECM is disconnected.

THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement

INFOID:0000000002988802

1.START

- Make sure that accelerator pedal is fully released.
- 2. Turn ignition switch ON.

3. Turn ignition switch OFF and wait at least 10 seconds.

Make sure that throttle valve moves during above 10 seconds by confirming the operating sound.

>> END

IDLE AIR VOLUME LEARNING

IDLE AIR VOLUME LEARNING: Description

INFOID:0000000002988803

Idle Air Volume Learning is a function of ECM to learn the idle air volume that keeps each engine idle speed within the specific range. It must be performed under any of the following conditions:

- Each time electric throttle control actuator or ECM is replaced.
- Idle speed or ignition timing is out of specification.

< BASIC INSPECTION >

[FOR USA (FEDERAL) AND CANADA]

IDLE AIR VOLUME LEARNING: Special Repair Requirement

INFOID:000000000298880

1.PRECONDITIONING

Make sure that all of the following conditions are satisfied.

Learning will be cancelled if any of the following conditions are missed for even a moment.

- Battery voltage: More than 12.9V (At idle)
- Engine coolant temperature: 70 100°C (158 212°F)
- PNP switch: ON
- · Electric load switch: OFF

(Air conditioner, headlamp, rear window defogger)

On vehicles equipped with daytime light systems, if the parking brake is applied before the engine is started the headlamp will not be illuminated.

- Steering wheel: Neutral (Straight-ahead position)
- · Vehicle speed: Stopped
- Transmission: Warmed-up
- With CONSULT-III: Drive vehicle until "ATF TENP SEN" in "DATA MONITOR" mode of "CVT" system indicates less than 0.9V.
- Without CONSULT-III: Drive vehicle for 10 minutes.

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

2. IDLE AIR VOLUME LEARNING

(II) With CONSULT-III

- Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-501</u>, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".
- 2. Perform Throttle Valve Closed Position Learning. Refer to <u>EC-501</u>, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 3. Start engine and warm it up to normal operating temperature.
- 4. Select "IDLE AIR VOL LEARN" in "WORK SUPPORT" mode.
- 5. Touch "START" and wait 20 seconds.

Is "CMPLT" displayed on CONSULT-III screen?

YES >> GO TO 4. NO >> GO TO 5.

3.IDLE AIR VOLUME LEARNING

®Without CONSULT-III

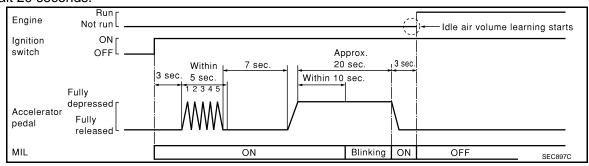
NOTE:

- It is better to count the time accurately with a clock.
- It is impossible to switch the diagnostic mode when an accelerator pedal position sensor circuit has a malfunction.
- Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-501</u>, "ACCELERATOR PEDAL <u>RELEASED POSITION LEARNING</u>: <u>Special Repair Requirement"</u>.
- Perform Throttle Valve Closed Position Learning. Refer to <u>EC-501</u>, "THROTTLE VALVE CLOSED POSI-TION LEARNING: Special Repair Requirement".
- Start engine and warm it up to normal operating temperature.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 6. Repeat the following procedure quickly five times within 5 seconds.
- Fully depress the accelerator pedal.
- Fully release the accelerator pedal.
- 7. Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 20 seconds until the MIL stops blinking and turned ON.
- Fully release the accelerator pedal within 3 seconds after the MIL turned ON.
- Start engine and let it idle.

[FOR USA (FEDERAL) AND CANADA]

< BASIC INSPECTION >

10. Wait 20 seconds.



>> GO TO 4.

4. CHECK IDLE SPEED AND IGNITION TIMING

Rev up the engine two or three times and make sure that idle speed and ignition timing are within the specifications.

ITEM	SPECIFICATION	
Idle speed	700 ± 50 rpm (in P or N position)	
Ignition timing	15 ± 5° (in P or N position)	

Is the inspection result normal?

YES >> INSPECTION END

${f 5}$.DETECT MALFUNCTIONING PART

Check the following

- Check that throttle valve is fully closed.
- Check PCV valve operation.
- Check that downstream of throttle valve is free from air leakage.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning part.

$oldsymbol{6}.$ DETECT MALFUNCTIONING PART

Engine component parts and their installation condition are questionable. Check and eliminate the cause of the incident.

It is useful to perform "TROUBLE DIAGNOSIS - SPECIFICATION VALUE". Refer to EC-582, "Description". If any of the following conditions occur after the engine has started, eliminate the cause of the incident and perform Idle Air Volume Learning all over again:

- · Engine stalls.
- · Erroneous idle.

>> INSPECTION END

MIXTURE RATIO SELF-LEARNING VALUE CLEAR

MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Description

This describes how to erase the mixture ratio self-learning value. For the actual procedure, follow the instructions in "Diagnosis Procedure".

MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement

1.START

(P)With CONSULT-III

- Start engine and warm it up to normal operating temperature.
- Select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CONSULT-III.

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< BASIC INSPECTION >

[FOR USA (FEDERAL) AND CANADA]

3. Clear mixture ratio self-learning value by touching "CLEAR".

With GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF.
- 3. Disconnect mass air flow sensor harness connector.
- 4. Restart engine and let it idle for at least 5 seconds.
- 5. Stop engine and reconnect mass air flow sensor harness connector.
- 6. Select Service \$03 with GST. Make sure DTC P0102 is detected.
- 7. Select Service \$04 with GST to erase the DTC P0102.

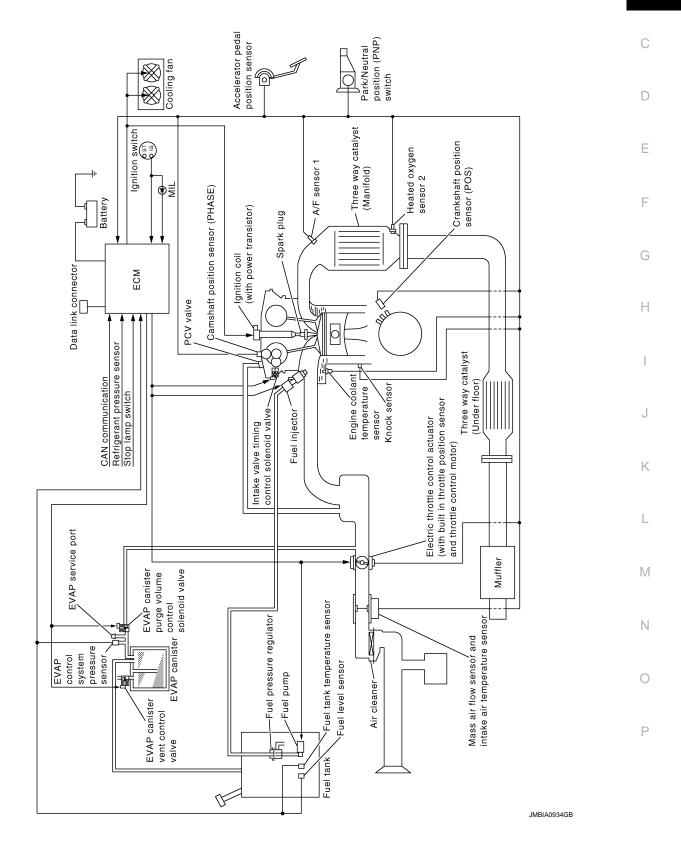
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FUNCTION DIAGNOSIS

ENGINE CONTROL SYSTEM

System Diagram EC

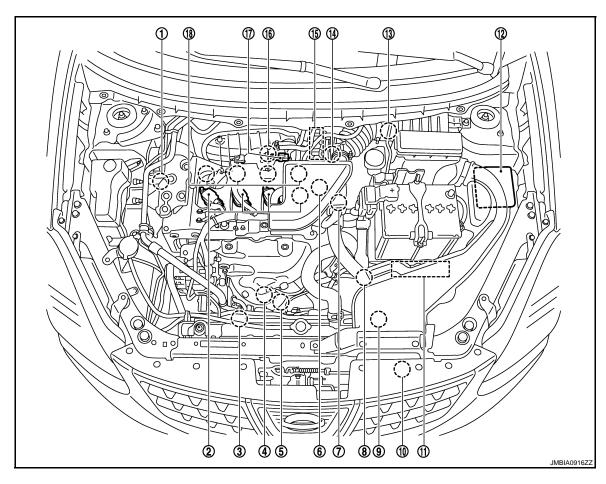


System Description

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ECM performs various controls such as fuel injection control and ignition timing control.

Component Parts Location

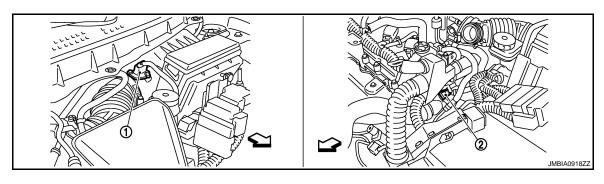


- Intake valve timing control solenoid valve
- 4. Air fuel ratio (A/F) sensor 1
- 7. Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air temperature sensor)
- 16. Knock sensor

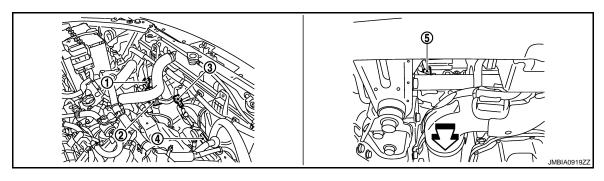
- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- 8. Park/neutral position (PNP) switch
- 11. ECM
- Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS)
- 3. Cooling fan motor-2
- 6. Camshaft position sensor (PHASE)
- 9. Cooling fan motor-1
- 12. IPDM E/R
- Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- EVAP canister purge volume control 18. Fuel injector solenoid valve
- JMBIA0917ZZ

- 1. Electric throttle control actuator
- 4 Valaiala faant
- 2. Camshaft position sensor (PHASE)

√ Vehicle front

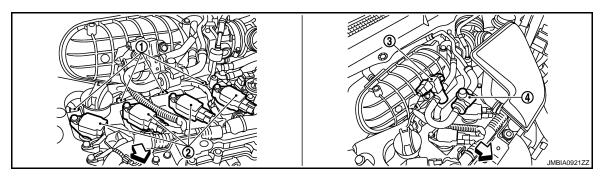


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



- 1. Fuel injector
- 4. EVAP service port
- ⟨
 ⇒ Vehicle front

- 2. Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve

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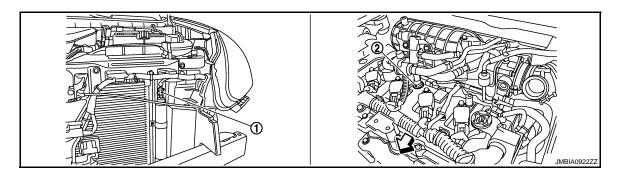
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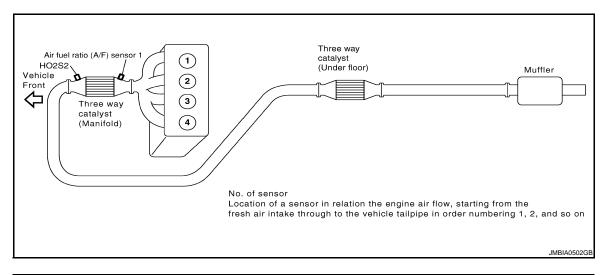
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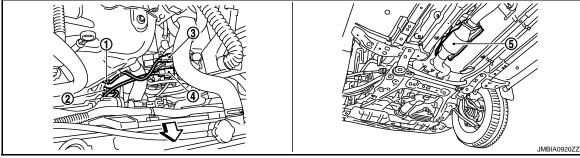
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1. Refrigerant pressure sensor

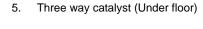
2. PCV valve

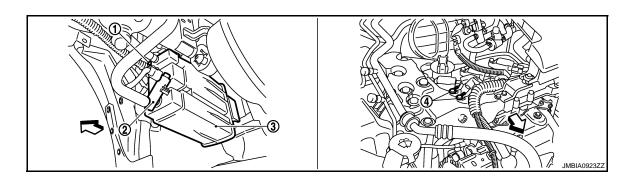




- 1. Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector





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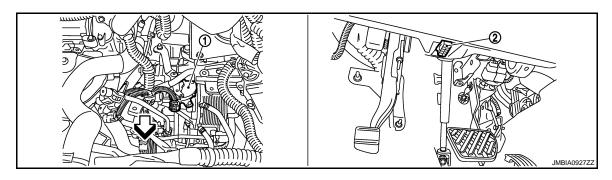
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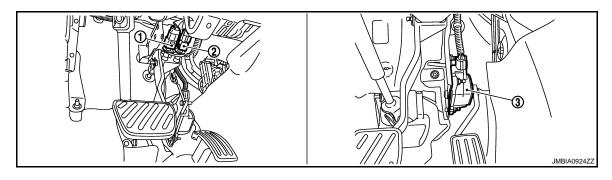
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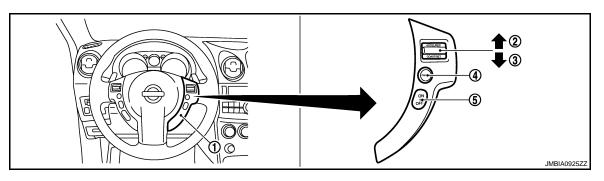
- . EVAP control system pressure sen- 2. EVAP canister vent control valve 3. EVAP canister
- 4. Body ground



- 1. Park/neutral position (PNP) switch
- 2. Data link connector

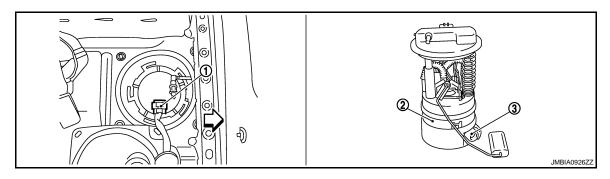


- Stop lamp switch
- 2. ASCD brake switch
- 3. Accelerator pedal position sensor



- ASCD steering switch
 SET/COAST switch
- 2. CANSEL switch
- 5. MAIN switch

3. RESUME/ACCERELATE switch



ENGINE CONTROL SYSTEM



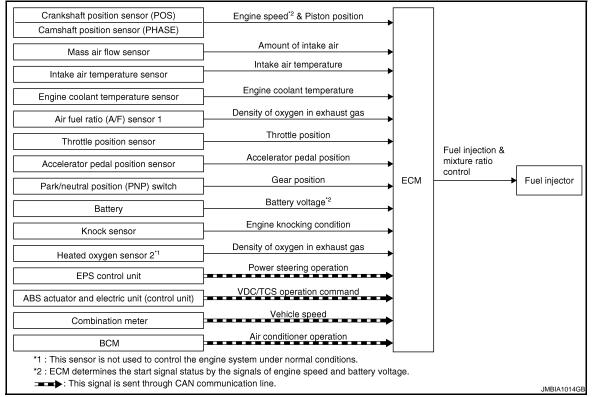
[FOR USA (FEDERAL) AND CANADA]

1. Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

Component	Reference		
A/F sensor 1	EC-636, "Description"		
A/F sensor 1 heater	EC-599, "Description"		
Accelerator pedal position sensor	EC-817, "Description"		
ASCD brake switch	EC-796, "Description"		
ASCD steering switch	EC-793, "Description"		
ASCD vehicle speed sensor	EC-801, "Description"		
Camshaft position sensor (PHASE)	EC-699, "Description"		
Crankshaft position sensor (POS)	EC-695, "Description"		
Cooling fan motor	EC-538, "System Description"		
Electric throttle control actuator	EC-815, "Description"		
Engine coolant temperature sensor	EC-623, "Description"		
EVAP canister purge volume control solenoid valve	EC-719, "Description"		
EVAP canister vent control valve	EC-726, "Description"		
EVAP control system pressure sensor	EC-734, "Description"		
Fuel injector	EC-847, "Description"		
Fuel level sensor	EC-760, "Description"		
Fuel pump	EC-850, "Description"		
Fuel tank temperature sensor	EC-678, "Description"		
Heated oxygen sensor 2	EC-651, "Description"		
Heated oxygen sensor 2 heater	EC-602, "Description"		
Ignition signal	EC-853, "Description"		
Intake air temperature sensor	EC-620, "Description"		
Intake valve timing control solenoid valve	EC-553, "System Description"		
Knock sensor	EC-693, "Description"		
Mass air flow sensor	EC-608, "Description"		
Park/neutral position switch	EC-778, "Description"		
PCV valve	EC-864, "Description"		
Refrigerant pressure sensor	EC-865, "Description"		
Stop lamp switch	EC-805, "Description"		
Throttle control motor	EC-813, "Description"		
Throttle control motor relay	EC-807, "Description"		
Throttle position sensor	EC-626, "Description"		
Vehicle speed sensor	EC-765, "Description"		

System Diagram



System Description

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INPUT/OUTPUT SIGNAL CHART

Sensor	Input Signal to ECM	ECM function	Actuator	·
Crankshaft position sensor (POS)	Engine speed*3			
Camshaft position sensor (PHASE) Mass air flow sensor	Piston position			
	Amount of intake air			
Intake air temperature sensor	Intake air temperature			
Engine coolant temperature sensor	Engine coolant temperature			
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas			
Throttle position sensor	Throttle position		Fuel injector	
Accelerator pedal position sensor	Accelerator pedal position	Fuel injection		
Park/neutral position (PNP) switch	Gear position	& mixture ratio control		
Battery	Battery voltage*3			
Knock sensor	Engine knocking condition			
Heated oxygen sensor 2*1	Density of oxygen in exhaust gas			
EPS control unit	Power steering operation*2			
3S actuator and electric unit (control unit)	ABS operation command*2			
Combination meter	Vehicle speed*2			
ВСМ	Air conditioner operation*2			

^{*1:} This sensor is not used to control the engine system under normal conditions.

^{*2:} This signal is sent to the ECM through CAN communication line.

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

*3: ECM determines the start signal status by the signals of engine speed and battery voltage.

SYSTEM DESCRIPTION

The amount of fuel injected from the fuel injector is determined by the ECM. The ECM controls the length of time the valve remains open (injection pulse duration). The amount of fuel injected is a program value in the ECM memory. The program value is preset by engine operating conditions. These conditions are determined by input signals (for engine speed and intake air) from the crankshaft position sensor (POS), camshaft position sensor (PHASE) and the mass air flow sensor.

VARIOUS FUEL INJECTION INCREASE/DECREASE COMPENSATION

In addition, the amount of fuel injected is compensated to improve engine performance under various operating conditions as listed below.

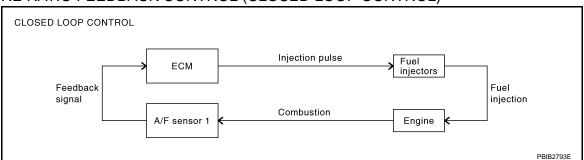
<Fuel increase>

- During warm-up
- When starting the engine
- During acceleration
- Hot-engine operation
- When selector lever is changed from N to D
- · High-load, high-speed operation

<Fuel decrease>

- During deceleration
- · During high engine speed operation

MIXTURE RATIO FEEDBACK CONTROL (CLOSED LOOP CONTROL)



The mixture ratio feedback system provides the best air-fuel mixture ratio for driveability and emission control. The three way catalyst (manifold) can then better reduce CO, HC and NOx emissions. This system uses A/F sensor 1 in the exhaust manifold to monitor whether the engine operation is rich or lean. The ECM adjusts the injection pulse width according to the sensor voltage signal. For more information about A/F sensor 1, refer to EC-636, "DTC Logic". This maintains the mixture ratio within the range of stoichiometric (ideal air-fuel mixture).

This stage is referred to as the closed loop control condition.

Heated oxygen sensor 2 is located downstream of the three way catalyst (manifold). Even if the switching characteristics of A/F sensor 1 shift, the air-fuel ratio is controlled to stoichiometric by the signal from heated oxygen sensor 2.

Open Loop Control

The open loop system condition refers to when the ECM detects any of the following conditions. Feedback control stops in order to maintain stabilized fuel combustion.

- Deceleration and acceleration
- High-load, high-speed operation
- Malfunction of A/F sensor 1 or its circuit
- Insufficient activation of A/F sensor 1 at low engine coolant temperature
- High engine coolant temperature
- During warm-up
- After shifting from N to D
- When starting the engine

MIXTURE RATIO SELF-LEARNING CONTROL

The mixture ratio feedback control system monitors the mixture ratio signal transmitted from A/F sensor 1. This feedback signal is then sent to the ECM. The ECM controls the basic mixture ratio as close to the theoretical mixture ratio as possible. However, the basic mixture ratio is not necessarily controlled as originally

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

designed. Both manufacturing differences (i.e., mass air flow sensor hot wire) and characteristic changes during operation (i.e., fuel injector clogging) directly affect mixture ratio.

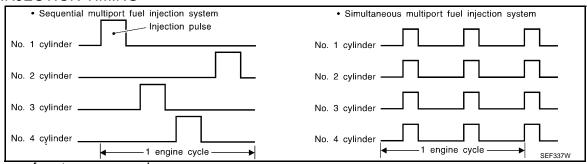
Accordingly, the difference between the basic and theoretical mixture ratios is monitored in this system. This is then computed in terms of "injection pulse duration" to automatically compensate for the difference between the two ratios.

"Fuel trim" refers to the feedback compensation value compared against the basic injection duration. Fuel trim includes short term fuel trim and long term fuel trim.

"Short term fuel trim" is the short-term fuel compensation used to maintain the mixture ratio at its theoretical value. The signal from A/F sensor 1 indicates whether the mixture ratio is RICH or LEAN compared to the theoretical value. The signal then triggers a reduction in fuel volume if the mixture ratio is rich, and an increase in fuel volume if it is lean.

"Long term fuel trim" is overall fuel compensation carried out long-term to compensate for continual deviation of the short term fuel trim from the central value. Such deviation will occur due to individual engine differences, wear over time and changes in the usage environment.

FUEL INJECTION TIMING



Two types of systems are used.

- Sequential Multiport Fuel Injection System
 - Fuel is injected into each cylinder during each engine cycle according to the firing order. This system is used when the engine is running.
- Simultaneous Multiport Fuel Injection System
 - Fuel is injected simultaneously into all four cylinders twice each engine cycle. In other words, pulse signals of the same width are simultaneously transmitted from the ECM.
 - The four injectors will then receive the signals two times for each engine cycle.
 - This system is used when the engine is being started and/or if the fail-safe system (CPU) is operating.

FUEL SHUT-OFF

Fuel to each cylinder is cut off during deceleration, operation of the engine at excessively high speeds or operation of the vehicle at excessively high speeds.

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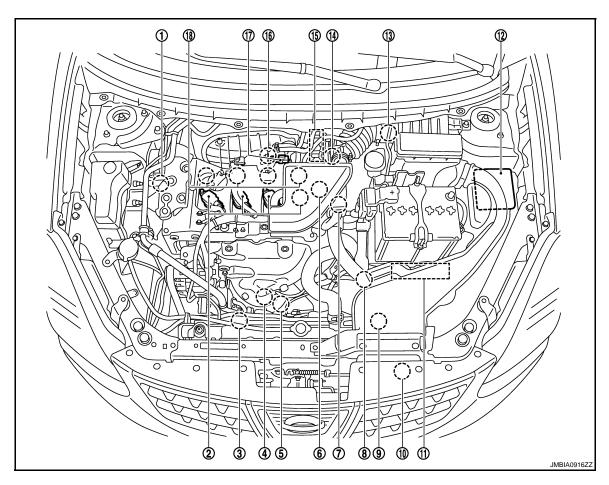
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Component Parts Location

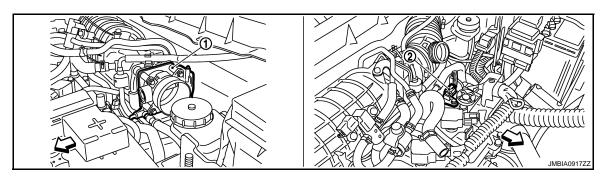
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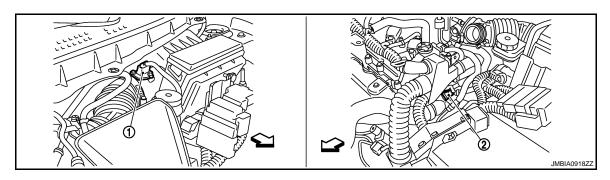
- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS) temperature sensor)
- 16. Knock sensor

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.

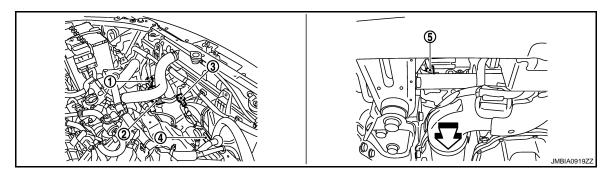
- Cooling fan motor-2 3.
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- 12. IPDM E/R
- 15. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 17. EVAP canister purge volume control 18. Fuel injector solenoid valve



- Electric throttle control actuator
- Camshaft position sensor (PHASE)

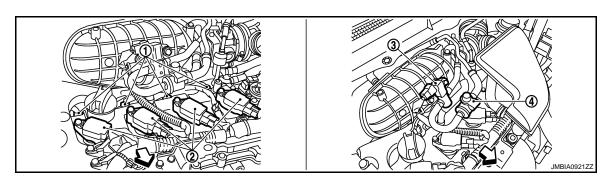


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- ✓ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



- 1. Fuel injector
- 4. EVAP service port
- ⟨
 ⇒ Vehicle front

- 2. Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve

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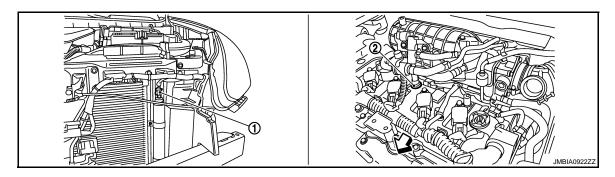
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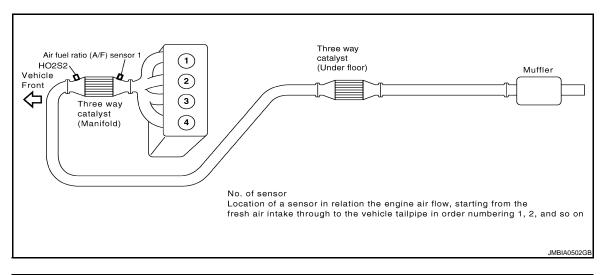
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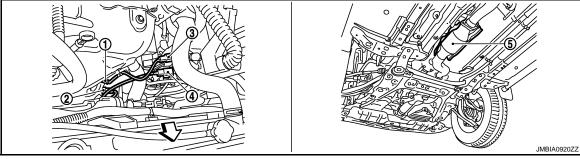
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1. Refrigerant pressure sensor

2. PCV valve





- 1. Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2

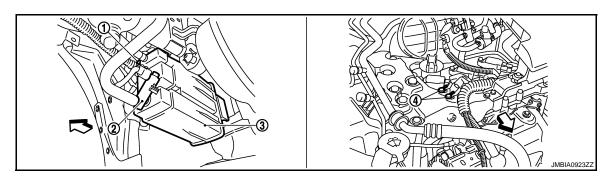
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Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector
- ⟨ Vehicle front



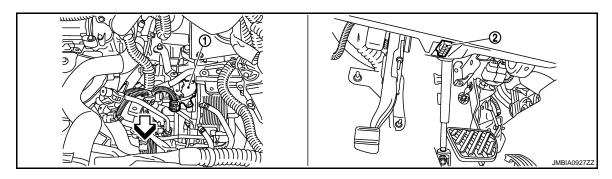
Three way catalyst (Under floor)



[FOR USA (FEDERAL) AND CANADA]

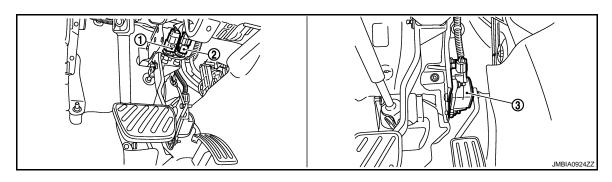
- < FUNCTION DIAGNOSIS >
 - EVAP control system pressure sen- 2. EVAP canister vent control valve
- 3. EVAP canister

- Body ground

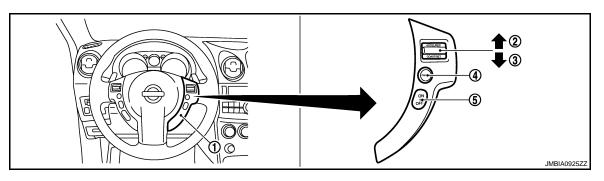


- Park/neutral position (PNP) switch
- 2. Data link connector

Vehicle front



- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor

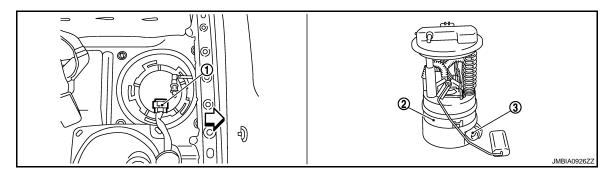


ASCD steering switch 1.

SET/COAST switch

- CANSEL switch
 - MAIN switch

RESUME/ACCERELATE switch



EC-517 Revision: 2008 January 2008 Rogue

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< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

1. Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

Component	Reference
A/F sensor 1	EC-636, "Description"
Accelerator pedal position sensor	EC-817, "Description"
Camshaft position sensor (PHASE)	EC-699, "Description"
Crankshaft position sensor (POS)	EC-695, "Description"
Engine coolant temperature sensor	EC-623, "Description"
Fuel injector	EC-847, "Description"
Heated oxygen sensor 2	EC-602, "Description"
Intake air temperature sensor	EC-620, "Description"
Knock sensor	EC-693, "Description"
Mass air flow sensor	EC-608, "Description"
Park/neutral position switch	EC-778, "Description"
Throttle position sensor	EC-626, "Description"
Vehicle speed sensor	EC-765, "Description"

ELECTRIC IGNITION SYSTEM

System Diagram

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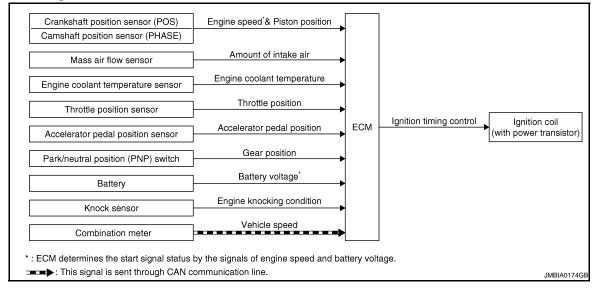
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System Description

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INPUT/OUTPUT SIGNAL CHART

Sensor	Input Signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS)	Engine speed*2			
Camshaft position sensor (PHASE)	Piston position		Ignition coil (with power transistor)	
Mass air flow sensor	Amount of intake air			
Engine coolant temperature sensor	Engine coolant temperature			
Throttle position sensor	Throttle position	Ignition timing		
Accelerator pedal position sensor	Accelerator pedal position	control		
Battery	Battery voltage*2			
Knock sensor	Engine knocking			
Park/neutral position (PNP) switch	Gear position			
Combination meter	Vehicle speed*1			

^{*1:} This signal is sent to the ECM through CAN communication line.

SYSTEM DESCRIPTION

Firing order: 1 - 3 - 4 - 2

The ignition timing is controlled by the ECM to maintain the best air-fuel ratio for every running condition of the engine. The ignition timing data is stored in the ECM.

The ECM receives information such as the injection pulse width and camshaft position sensor (PHASE) signal. Computing this information, ignition signals are transmitted to the power transistor.

During the following conditions, the ignition timing is revised by the ECM according to the other data stored in the ECM.

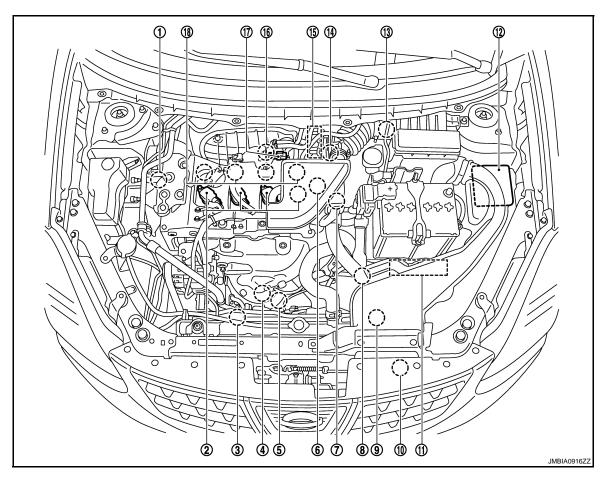
- At starting
- During warm-up
- At idle
- At low battery voltage
- During acceleration

The knock sensor retard system is designed only for emergencies. The basic ignition timing is programmed within the anti-knocking zone, if recommended fuel is used under dry conditions. The retard system does not

^{*2:} ECM determines the start signal status by the signals of engine speed and battery voltage.

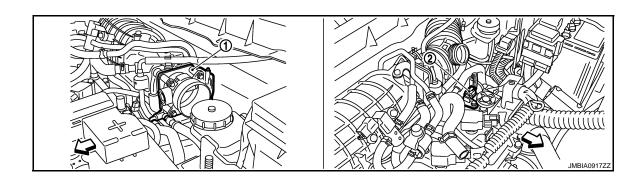
operate under normal driving conditions. If engine knocking occurs, the knock sensor monitors the condition. The signal is transmitted to the ECM. The ECM retards the ignition timing to eliminate the knocking condition.

Component Parts Location



- Intake valve timing control solenoid valve
- Air fuel ratio (A/F) sensor 1 4.
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- temperature sensor)
- 16. Knock sensor

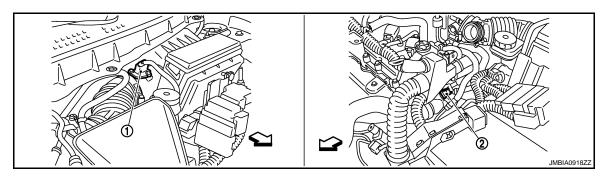
- Ignition coil (with power transistor) 2. and spark plug
- Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.
- 11. **ECM**
- 13. Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS)
- 3. Cooling fan motor-2
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- IPDM E/R
- 15. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 17. EVAP canister purge volume control 18. Fuel injector solenoid valve



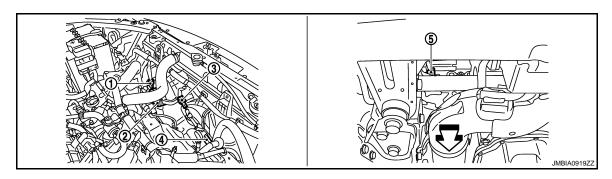
- Electric throttle control actuator

2. Camshaft position sensor (PHASE)

Vehicle front

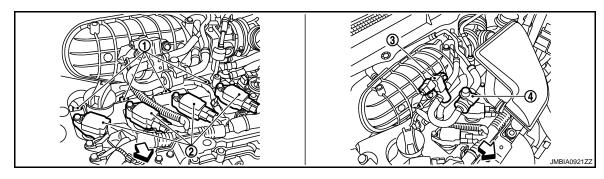


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- Cooling fan motor-1 harness connector
- Cooling fan motor-2
- Vehicle front

- 2. Cooling fan motor-1
- Crankshaft position sensor (POS) 5.
- Cooling fan motor-2 harness connector



- Fuel injector
- EVAP service port
- ⟨
 ⇒ Vehicle front

- Ignition coil (with power transistor) 2. and spark plug
- EVAP canister purge volume control solenoid valve

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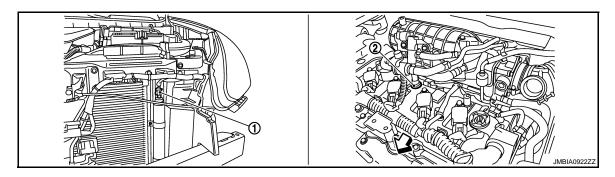
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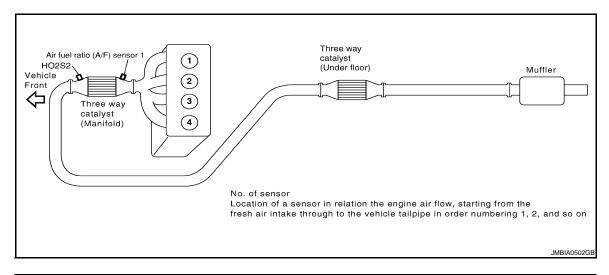
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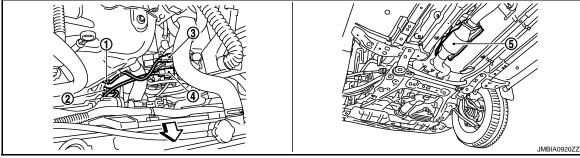
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1. Refrigerant pressure sensor

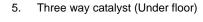
2. PCV valve

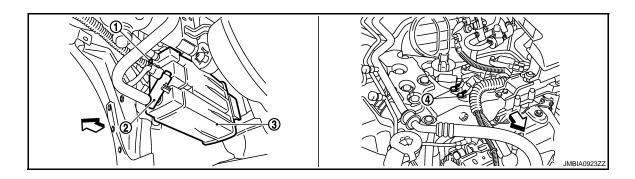




- 1. Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- 3. Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector





ELECTRIC IGNITION SYSTEM

[FOR USA (FEDERAL) AND CANADA]

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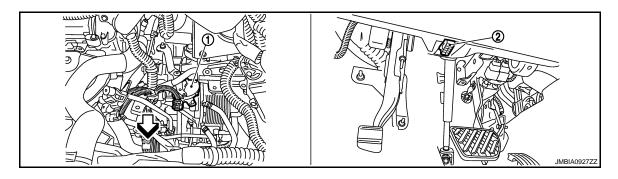
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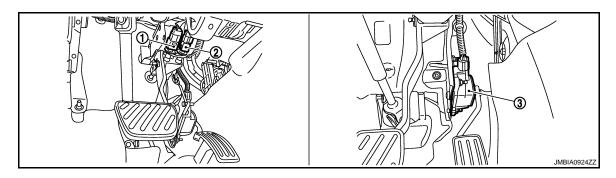
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- EVAP control system pressure sen- 2. EVAP canister vent control valve
- EVAP canister

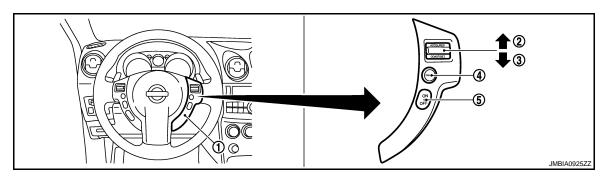
- 4. Body ground



- 1. Park/neutral position (PNP) switch
- 2. Data link connector



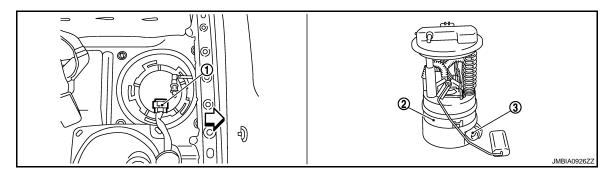
- 1. Stop lamp switch
- 2. ASCD brake switch
- 3. Accelerator pedal position sensor



- 1. ASCD steering switch
- 2. CANSEL switch

3. RESUME/ACCERELATE switch

- 4. SET/COAST switch
- 5. MAIN switch



Revision: 2008 January EC-523 2008 Rogue

ELECTRIC IGNITION SYSTEM

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

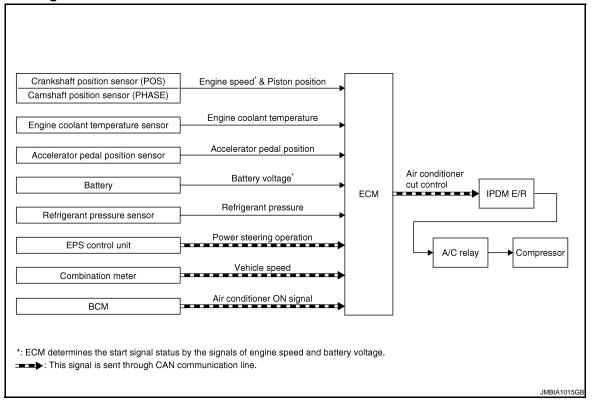
1. Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

Component	Reference
Accelerator pedal position sensor	EC-817, "Description"
Camshaft position sensor (PHASE)	EC-699, "Description"
Crankshaft position sensor (POS)	EC-695, "Description"
Engine coolant temperature sensor	EC-623, "Description"
Ignition signal	EC-853, "Description"
Knock sensor	EC-693, "Description"
Mass air flow sensor	EC-608, "Description"
Park/neutral position switch	EC-778, "Description"
Throttle position sensor	EC-626, "Description"
Vehicle speed sensor	EC-765, "Description"

AIR CONDITIONING CUT CONTROL

System Diagram



System Description

INPUT/OUTPUT SIGNAL CHART

Sensor	Input Signal to ECM	ECM function	Actuator		
Accelerator pedal position sensor	Accelerator pedal position				
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*2				
Engine coolant temperature sensor	Engine coolant temperature		IPDM E/R		
Battery	Battery voltage*2	Air conditioner	↓ Air conditioner relay ↓		
Refrigerant pressure sensor	Refrigerant pressure	cut control			
EPS control unit	Power steering operation*1	Power steering operation*1 Vehicle speed*1			
Combination meter	Vehicle speed*1				
BCM	Air conditioner ON signal*1				

^{*1:} This signal is sent to the ECM through CAN communication line.

SYSTEM DESCRIPTION

This system improves engine operation when the air conditioner is used. Under the following conditions, the air conditioner is turned off.

- When the accelerator pedal is fully depressed.
- When cranking the engine.
- · At high engine speeds.
- When the engine coolant temperature becomes excessively high.
- When operating power steering during low engine speed or low vehicle speed.
- · When engine speed is excessively low.

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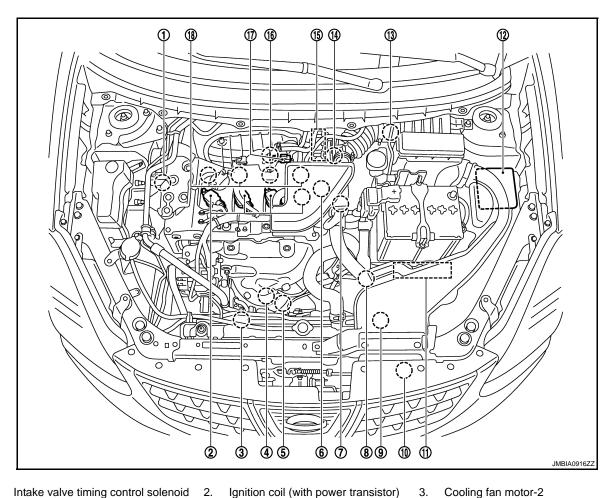
Revision: 2008 January EC-525 2008 Rogue

^{*2:} ECM determines the start signal status by the signals of engine speed and battery voltage.

• When refrigerant pressure is excessively low or high.

Component Parts Location

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- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor 7.
- 10. Refrigerant pressure sensor
- temperature sensor)
- 16. Knock sensor

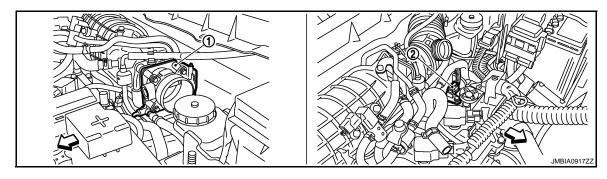
- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- 8. Park/neutral position (PNP) switch
- 11. ECM
- 13. Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS)
- Cooling fan motor-1

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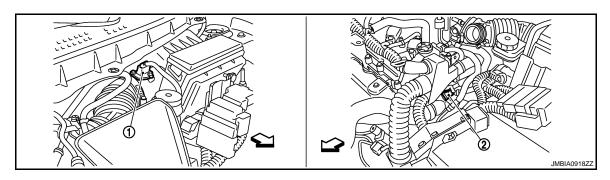
- 15. Electric throttle control actuator and throttle control motor)
- 17. EVAP canister purge volume control 18. Fuel injector solenoid valve
- 12. IPDM E/R
 - (with built in throttle position sensor

Camshaft position sensor (PHASE)

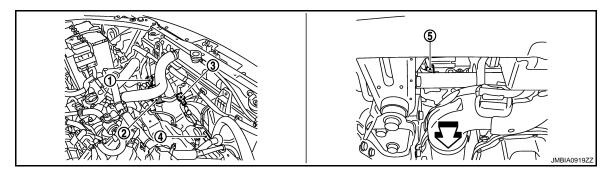


- Electric throttle control actuator

Camshaft position sensor (PHASE)

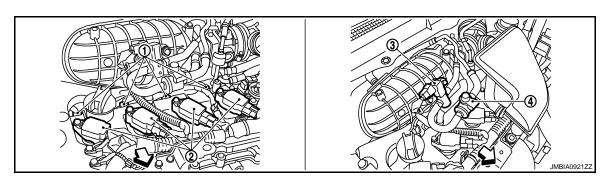


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- √ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



- Fuel injector
- 4. EVAP service port
- ⟨
 ⇒ Vehicle front

- 2. Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve

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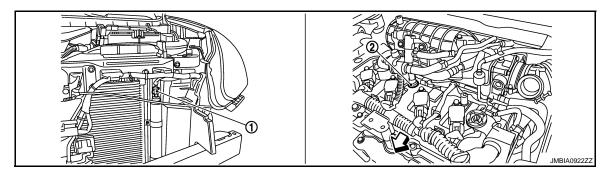
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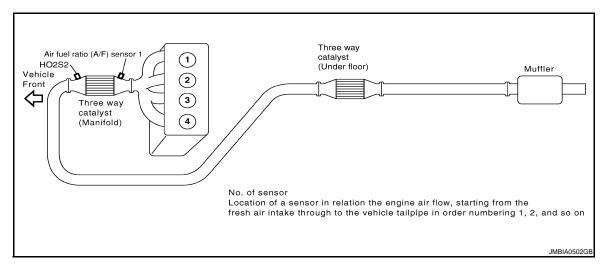
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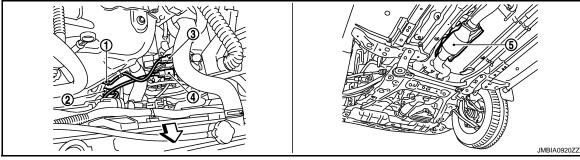
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- 1. Refrigerant pressure sensor
- 2. PCV valve

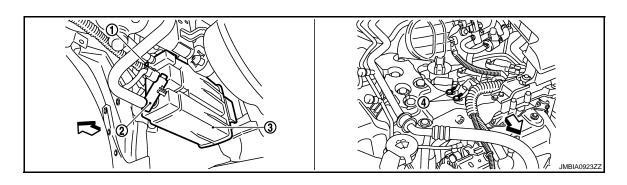




- 1. Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- 3. Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector

5. Three way catalyst (Under floor)

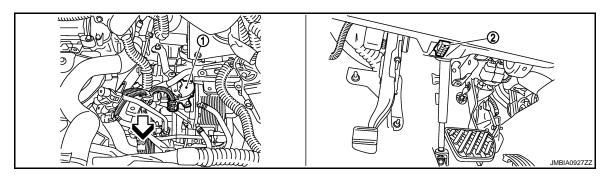


AIR CONDITIONING CUT CONTROL

[FOR USA (FEDERAL) AND CANADA]

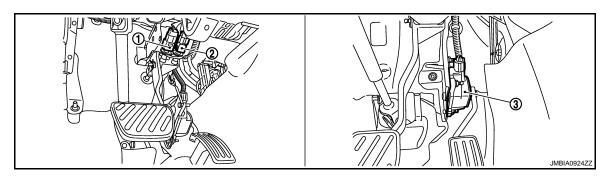
- EVAP control system pressure sen- 2. EVAP canister vent control valve
- 3. EVAP canister

- Body ground

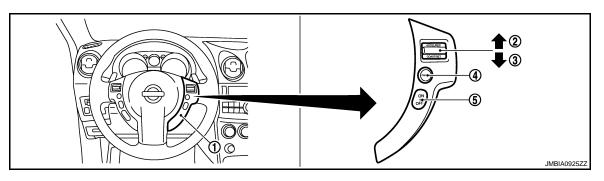


- Park/neutral position (PNP) switch
- 2. Data link connector

Vehicle front



- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor

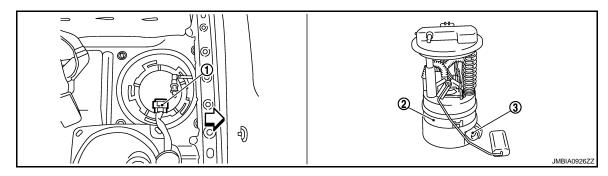


ASCD steering switch 1.

SET/COAST switch

- CANSEL switch
 - MAIN switch

RESUME/ACCERELATE switch



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AIR CONDITIONING CUT CONTROL

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

1. Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

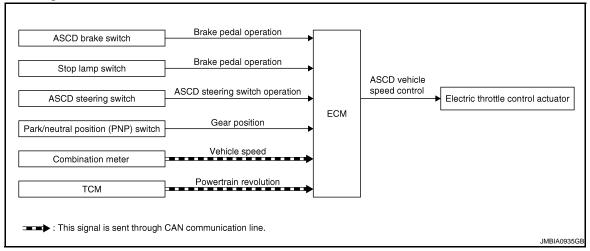
Component	Reference
Accelerator pedal position sensor	EC-817, "Description"
Camshaft position sensor (PHASE)	EC-699, "Description"
Crankshaft position sensor (POS)	EC-695, "Description"
Engine coolant temperature sensor	EC-623, "Description"
Refrigerant pressure sensor	EC-865, "Description"
Vehicle speed sensor	EC-765, "Description"

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

System Diagram



System Description

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator	
ASCD brake switch	Brake pedal operation			
Stop lamp switch	Brake pedal operation		Electric throttle control actuator	
ASCD steering switch	ASCD steering switch operation	ASCD vehicle speed control		
Park/neutral position (PNP) switch	Gear position	ASCD verilicle speed control		
Combination meter	Vehicle speed*			
TCM	Powertrain revolution*			

^{*:} This signal is sent to the ECM through CAN communication line

BASIC ASCD SYSTEM

Refer to Owner's Manual for ASCD operating instructions.

Automatic Speed Control Device (ASCD) allows a driver to keep vehicle at predetermined constant speed without depressing accelerator pedal. Driver can set vehicle speed in advance between approximately 40 km/ h (25 MPH) and 144 km/h (89 MPH).

ECM controls throttle angle of electric throttle control actuator to regulate engine speed.

Operation status of ASCD is indicated by CRUISE lamp and SET lamp in combination meter. If any malfunction occurs in ASCD system, it automatically deactivates control.

NOTE:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

SET OPERATION

Press MAIN switch. (The CRUISE lamp in combination meter illuminates.)

When vehicle speed reaches a desired speed between approximately 40 km/h (25 MPH) and 144 km/h (89 MPH), press SET/COAST switch. (Then SET lamp in combination meter illuminates.)

ACCELERATE OPERATION

If the RESUME/ACCELERATE switch is pressed during cruise control driving, increase the vehicle speed until the switch is released or vehicle speed reaches maximum speed controlled by the system. And then ASCD will keep the new set speed.

CANCEL OPERATION

When any of following conditions exist, cruise operation will be canceled.

- CANCEL switch is pressed
- More than 2 switches at ASCD steering switch are pressed at the same time (Set speed will be cleared)
- · Brake pedal is depressed

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[FOR USA (FEDERAL) AND CANADA]

- Selector lever is changed to N, P, R position
- Vehicle speed decreased to 13 km/h (8 MPH) lower than the set speed
- TCS system is operated

When the ECM detects any of the following conditions, the ECM will cancel the cruise operation and inform the driver by blinking indicator lamp.

• Engine coolant temperature is slightly higher than the normal operating temperature, CRUISE lamp may blink slowly.

When the engine coolant temperature decreases to the normal operating temperature, CRUISE lamp will stop blinking and the cruise operation will be able to work by pressing SET/COAST switch or RESUME/ACCELERATE switch.

Malfunction for some self-diagnoses regarding ASCD control: SET lamp will blink quickly.

If MAIN switch is turned to OFF during ASCD is activated, all of ASCD operations will be canceled and vehicle speed memory will be erased.

COAST OPERATION

When the SET/COAST switch is pressed during cruise control driving, decrease vehicle set speed until the switch is released. And then ASCD will keep the new set speed.

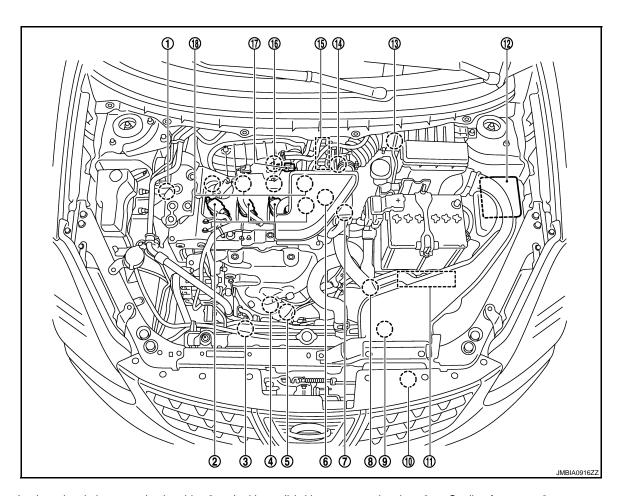
RESUME OPERATION

When the RESUME/ACCELERATE switch is pressed after cancel operation other than pressing MAIN switch is performed, vehicle speed will return to last set speed. To resume vehicle set speed, vehicle condition must meet following conditions.

- Brake pedal is released
- Selector lever is in other than P and N positions
- Vehicle speed is greater than 40 km/h (25 MPH) and less than 144 km/h (89 MPH)

Component Parts Location

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- Intake valve timing control solenoid valve
- 4. Air fuel ratio (A/F) sensor 1
- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Cooling fan motor-2
- Camshaft position sensor (PHASE)

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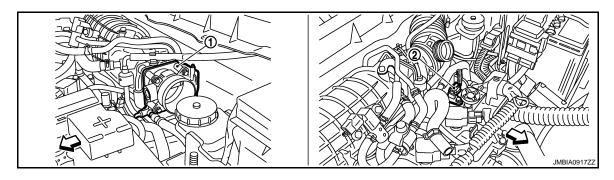
< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- temperature sensor)
- Park/neutral position (PNP) switch 8.
- **ECM** 11.
- Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS)
- Cooling fan motor-1
- 12. IPDM E/R
- 15. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)

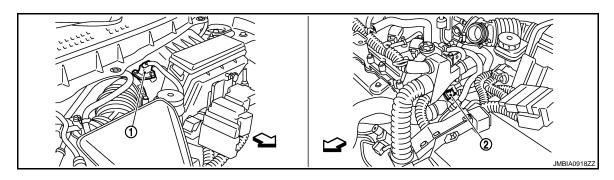
16. Knock sensor

- 17. EVAP canister purge volume control 18. Fuel injector solenoid valve

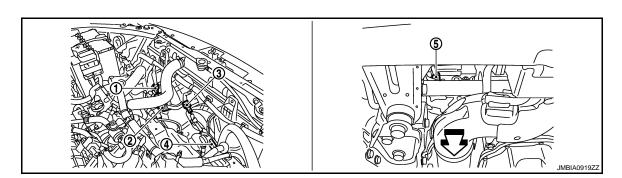


- Electric throttle control actuator
- Camshaft position sensor (PHASE)

Vehicle front



- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- 1. Cooling fan motor-1 harness con-
- Cooling fan motor-2
- Vehicle front

- 2. Cooling fan motor-1
- Crankshaft position sensor (POS) 5.
- Cooling fan motor-2 harness connector

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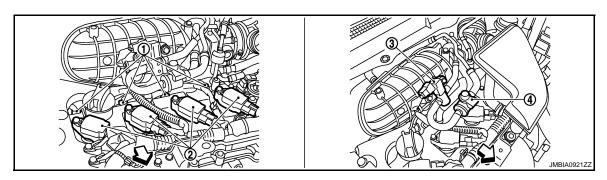
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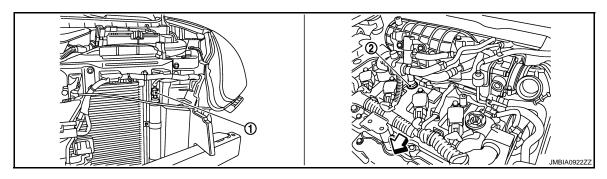
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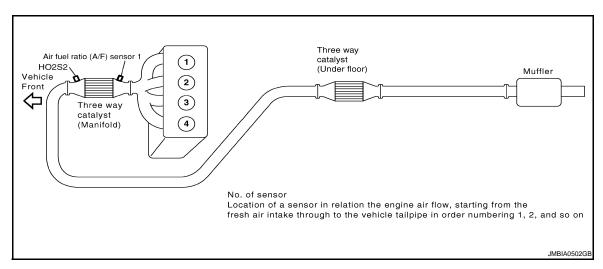
1. Fuel injector

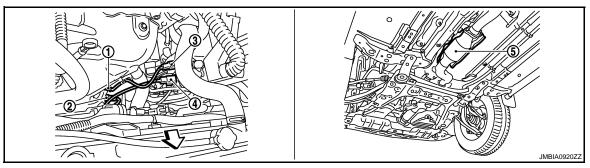
- Ignition coil (with power transistor) and spark plug
- 3. EVAP canister purge volume control solenoid valve

- 4. EVAP service port



- 1. Refrigerant pressure sensor
- 2. PCV valve



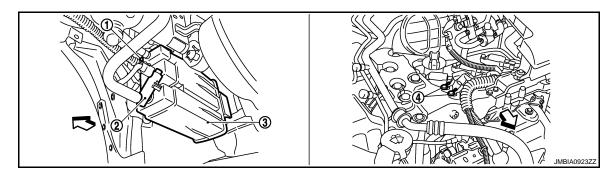


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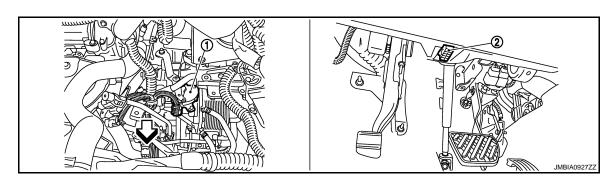
- Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- Air fuel ratio (A/F) sensor 1 harness connector

- Heated oxygen sensor 2 harness connector
- 5. Three way catalyst (Under floor)



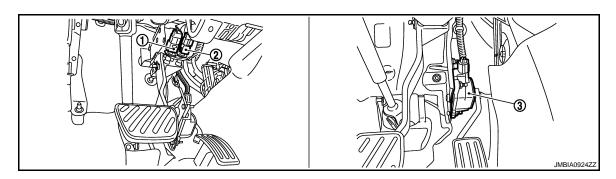
- EVAP control system pressure sen- 2. EVAP canister vent control valve
- **EVAP** canister 3.

- Body ground
- Vehicle front



- Park/neutral position (PNP) switch
- Data link connector

Vehicle front



- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor

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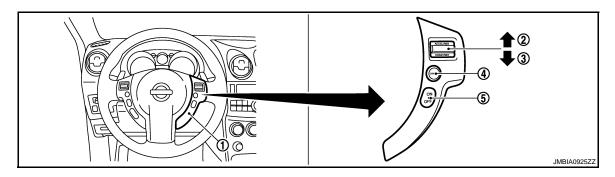
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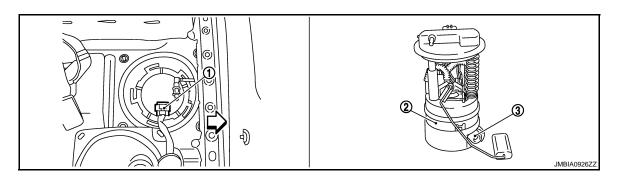
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[FOR USA (FEDERAL) AND CANADA]



- ASCD steering switch
 SET/COAST switch
- 2. CANSEL switch
- 5. MAIN switch

3. RESUME/ACCERELATE switch



- Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

Component	Reference
ASCD steering switch	EC-793, "Description"
ASCD clutch switch	EC-796, "Description"
ASCD brake switch	EC-796, "Description"
Stop lamp switch	EC-805, "Description"
Electric throttle control actuator	EC-815, "Description"
ASCD indicator	EC-837, "Description"

CAN COMMUNICATION

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

CAN COMMUNICATION

System Description

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

Refer to LAN-23, "CAN Communication Signal Chart", about CAN communication for detail..

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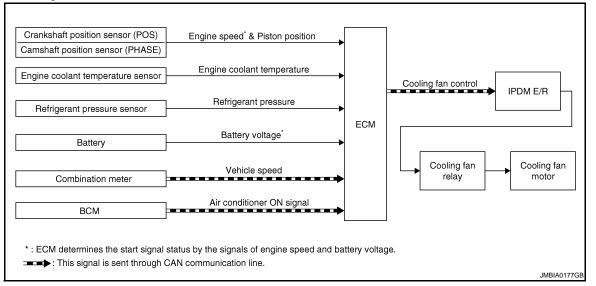
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COOLING FAN CONTROL

System Diagram

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System Description

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INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*1			
Engine coolant temperature sensor	Engine coolant temperature		IPDM E/R ↓ Cooling fan relay ↓ Cooling fan motor	
Refrigerant pressure sensor	Refrigerant pressure	Cooling fan		
Battery	Battery voltage*1	control		
Combination meter	Vehicle speed*2			
BCM	Air conditioner ON signal*2			

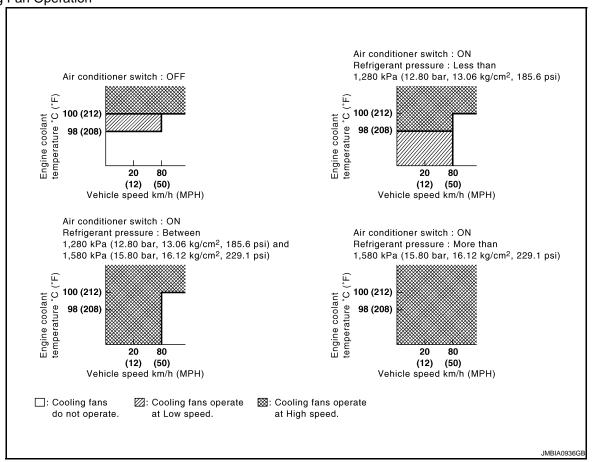
^{*1:} The ECM determines the start signal status by the signals of engine speed and battery voltage.

SYSTEM DESCRIPTION

ECM controls cooling fan speed corresponding to vehicle speed, engine coolant temperature, refrigerant pressure, air conditioner ON signal. Then control system has 3-step control [HIGH/LOW/OFF].

^{*2:} This signal is sent to ECM through CAN communication line.

Cooling Fan Operation



Cooling Fan Relay Operation

The ECM controls cooling fan relays through CAN communication line.

Cooling fan speed	Cooling fan relay				
Cooling lan speed	1	2	3	4	5
Stop (OFF)	OFF	OFF	OFF	OFF	OFF
Low (LOW)	OFF	OFF	OFF	ON	OFF
High (HI)	ON	ON	ON	OFF	ON

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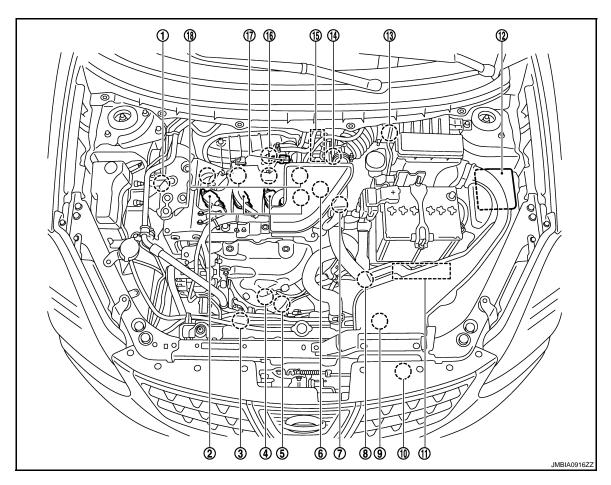
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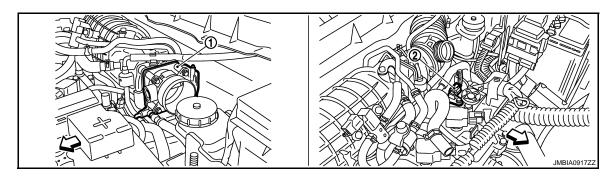
Component Parts Location



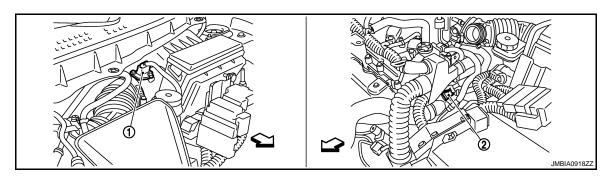
- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS) temperature sensor)
- 16. Knock sensor

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.

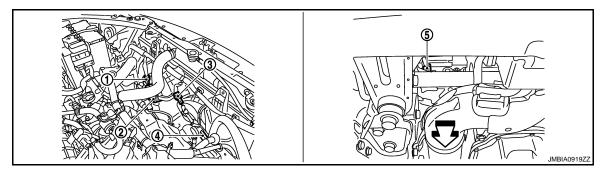
- Cooling fan motor-2 3.
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- IPDM E/R
- 15. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 17. EVAP canister purge volume control 18. Fuel injector solenoid valve



- Electric throttle control actuator
- Camshaft position sensor (PHASE)

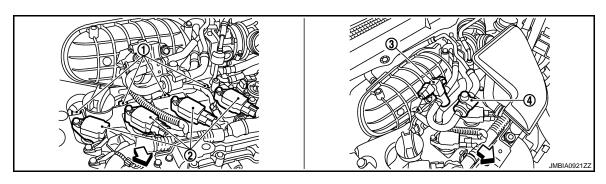


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- ∠ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- 3. Cooling fan motor-2 harness connector



- 1. Fuel injector
- 4. EVAP service port
- ⟨
 ⇒ Vehicle front

- 2. Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve

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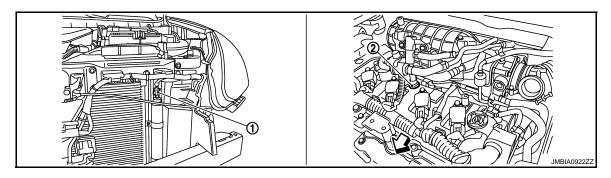
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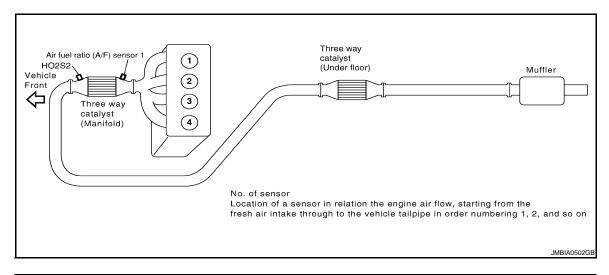
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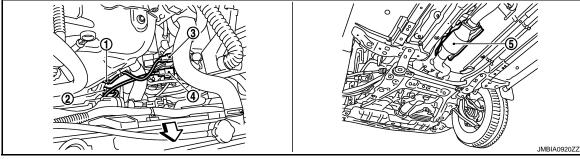
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- 1. Refrigerant pressure sensor
- 2. PCV valve





Three way catalyst (Under floor)

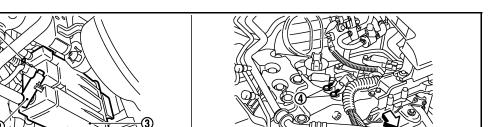
- 1. Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2

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3. Air fuel ratio (A/F) sensor 1 harness connector

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- 4. Heated oxygen sensor 2 harness connector



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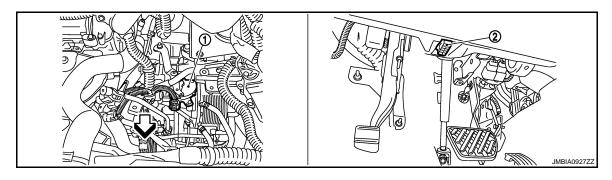
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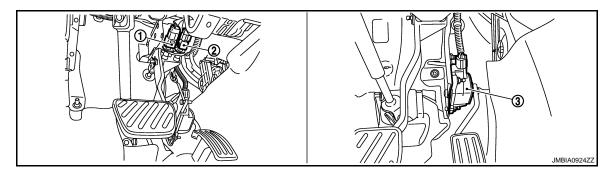
- EVAP control system pressure sen- 2. EVAP canister vent control valve
- 3. EVAP canister

- Body ground

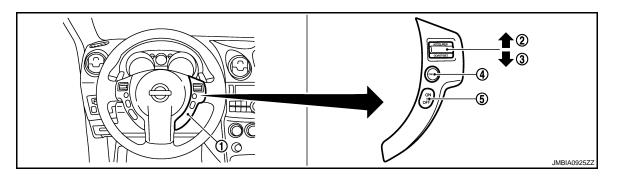


- Park/neutral position (PNP) switch
- 2. Data link connector

Vehicle front



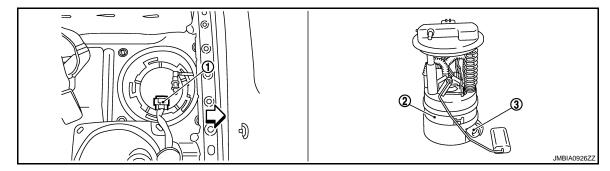
- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor



- ASCD steering switch 1.
- CANSEL switch 2.

RESUME/ACCERELATE switch

- SET/COAST switch
- MAIN switch



COOLING FAN CONTROL



[FOR USA (FEDERAL) AND CANADA]

1. Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

INFOID:0000000002988831

Component	Reference
Camshaft position sensor (PHASE)	EC-699, "Description"
Crankshaft position sensor (POS)	EC-695, "Description"
Cooling fan motor	EC-538, "System Description"
Engine coolant temperature sensor	EC-623, "Description"
Refrigerant pressure sensor	EC-865, "Description"
Vehicle speed sensor	EC-765, "Description"

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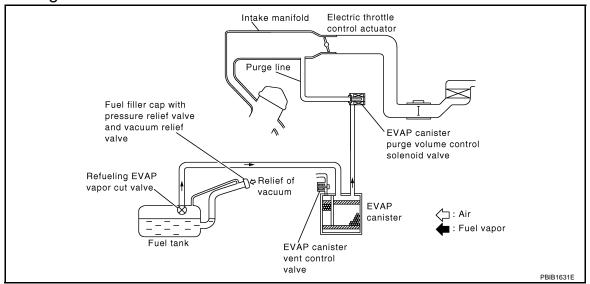
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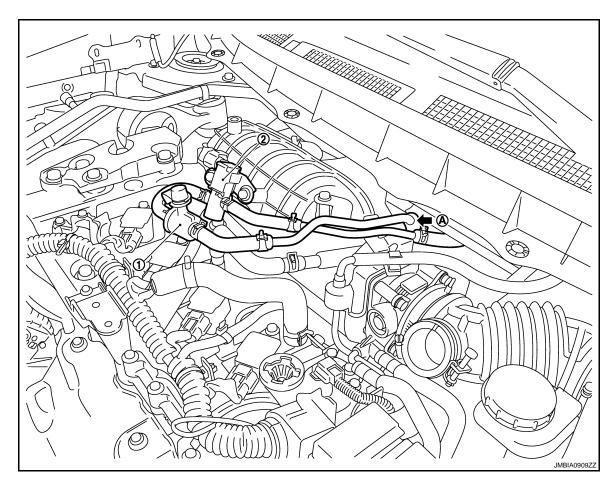
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EVAPORATIVE EMISSION SYSTEM

System Diagram



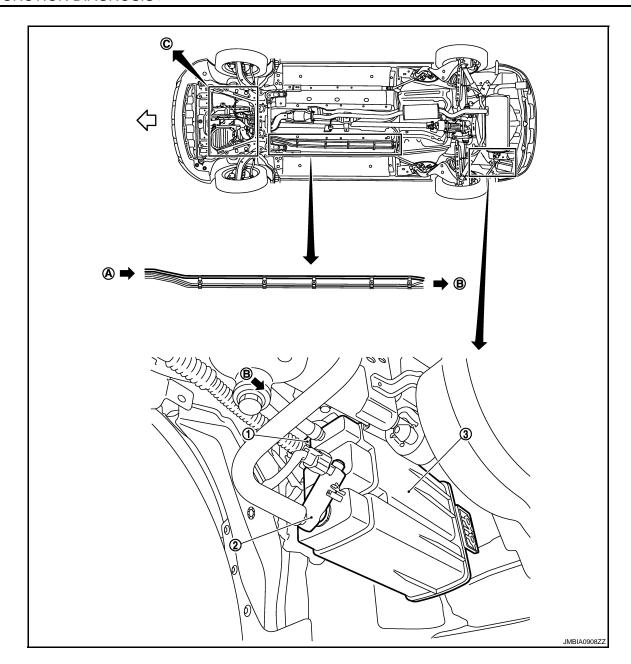
EVAPORATIVE EMISSION LINE DRAWING



- EVAP service port
- EVAP canister purge volume control solenoid valve

A. From next figure

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- 1. EVAP control system pressure sensor 2.
- 2. EVAP canister vent control valve
 - B. To/From B in this figure
- 3. EVAP canister
- C. Refer to previous figure

NOTE:

Do not use soapy water or any type of solvent while installing vacuum hose or purge hoses.

System Description

A. To previous figure

INFOID:0000000002988833

INPUT/OUTPUT SIGNAL CHART

EVAPORATIVE EMISSION SYSTEM

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Sensor	Input signal to ECM	ECM function	Actuator		
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*1				
Mass air flow sensor	Amount of intake air			ŀ	
Engine coolant temperature sensor	Engine coolant temperature				
Battery	Battery voltage*1				
Throttle position sensor	Throttle position	EVAP canister	EVAP canister purge vol-		
Accelerator pedal position sensor	Accelerator pedal position	purge flow control	ume control solenoid valve		
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)				
Fuel tank temperature sensor	Fuel temperature in fuel tank				
EVAP control system pressure sensor	Pressure in purge line				
Combination meter	Vehicle speed*2				

^{*1:} ECM determines the start signal status by the signals of engine speed and battery voltage.

SYSTEM DESCRIPTION

The evaporative emission system is used to reduce hydrocarbons emitted into the atmosphere from the fuel system. This reduction of hydrocarbons is accomplished by activated charcoals in the EVAP canister.

The fuel vapor in the sealed fuel tank is led into the EVAP canister which contains activated carbon and the vapor is stored there when the engine is not operating or when refueling to the fuel tank.

The vapor in the EVAP canister is purged by the air through the purge line to the intake manifold when the engine is operating. EVAP canister purge volume control solenoid valve is controlled by ECM. When the engine operates, the flow rate of vapor controlled by EVAP canister purge volume control solenoid valve is proportionally regulated as the air flow increases.

EVAP canister purge volume control solenoid valve also shuts off the vapor purge line during decelerating.

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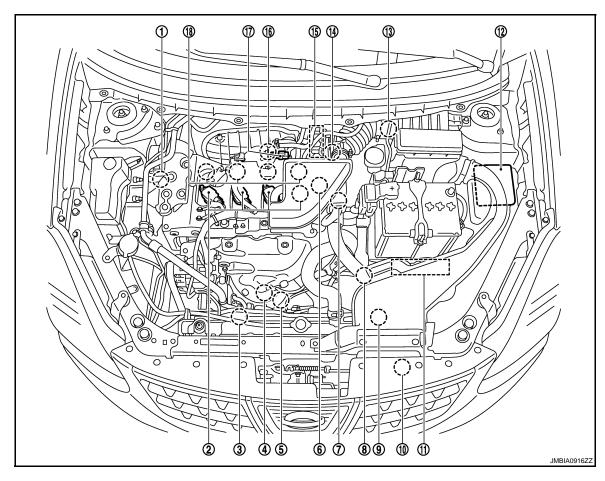
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^{*2:} This signal is sent to the ECM through CAN communication line.

Component Parts Location

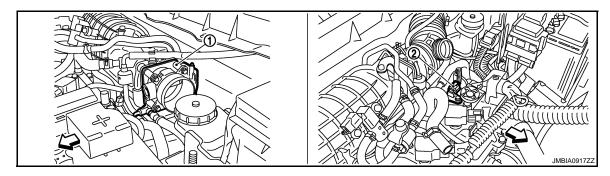
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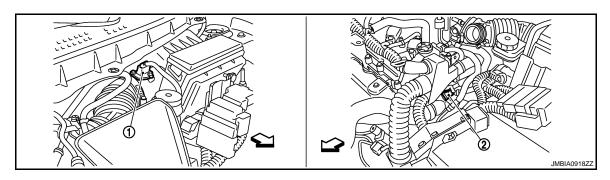
- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS) temperature sensor)
- 16. Knock sensor

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.

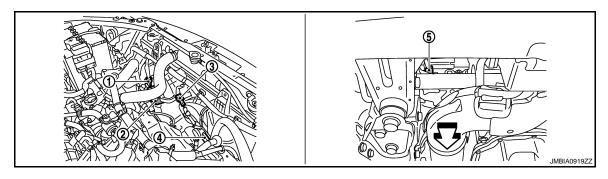
- Cooling fan motor-2 3.
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- 12. IPDM E/R
- 15. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 17. EVAP canister purge volume control 18. Fuel injector solenoid valve



- Electric throttle control actuator
- Camshaft position sensor (PHASE)

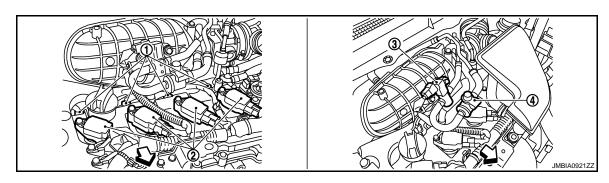


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- √ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



- 1. Fuel injector
- 4. EVAP service port
- ⟨
 ⇒ Vehicle front

- 2. Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve

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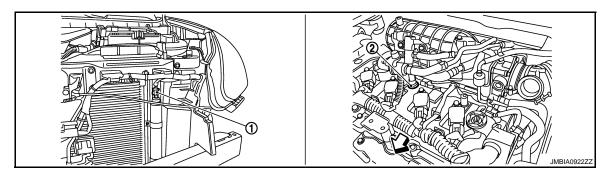
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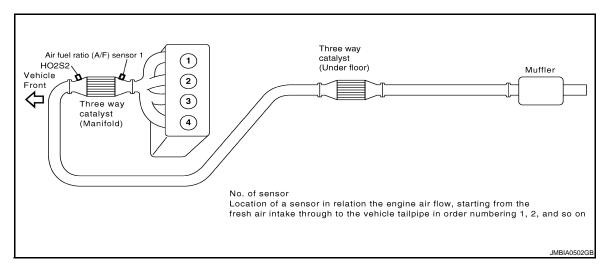
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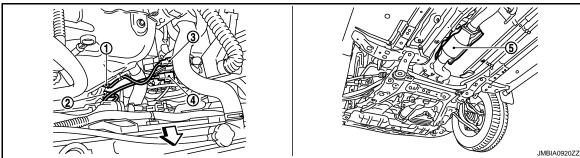
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- 1. Refrigerant pressure sensor
- 2. PCV valve

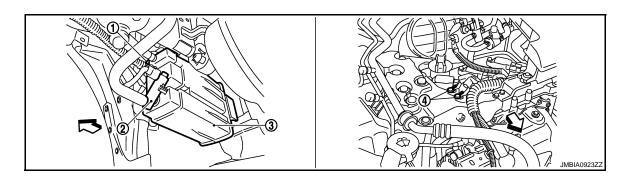




- 1. Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- 3. Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector

5. Three way catalyst (Under floor)

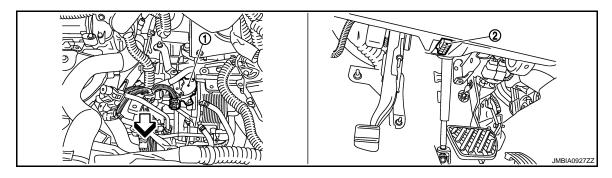


EVAPORATIVE EMISSION SYSTEM

[FOR USA (FEDERAL) AND CANADA]

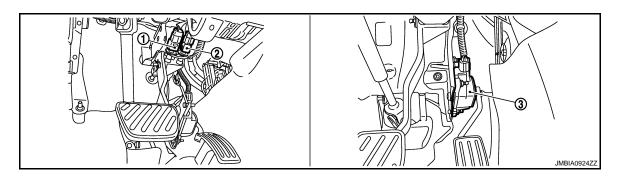
- EVAP control system pressure sen- 2. EVAP canister vent control valve
- 3. EVAP canister

- Body ground

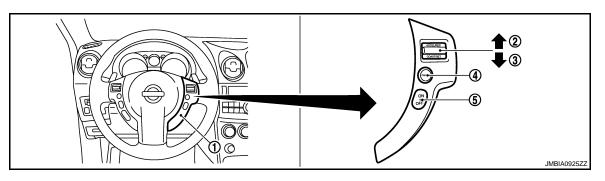


- Park/neutral position (PNP) switch
- 2. Data link connector

Vehicle front



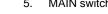
- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor

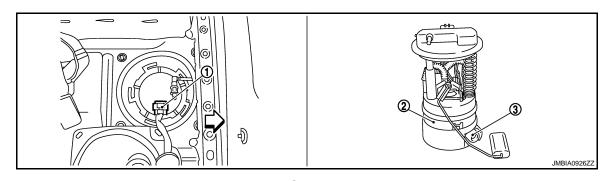


- ASCD steering switch 1.
- CANSEL switch

RESUME/ACCERELATE switch

- SET/COAST switch
- MAIN switch





EC-551 Revision: 2008 January 2008 Rogue

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EVAPORATIVE EMISSION SYSTEM [FOR USA (FEDERAL) AND CANADA]

< FUNCTION DIAGNOSIS >

1. Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

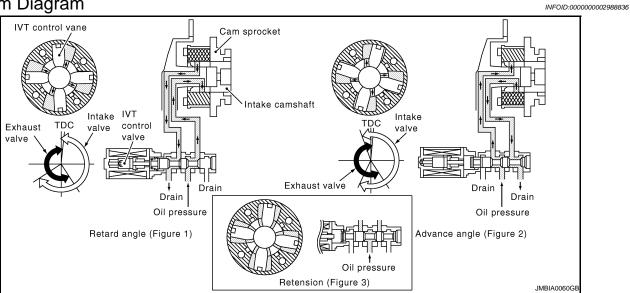
Component Description

INFOID:0000000002988835

Component	Reference
A/F sensor 1	EC-636, "Description"
Accelerator pedal position sensor	EC-817, "Description"
Camshaft position sensor (PHASE)	EC-699, "Description"
Crankshaft position sensor (POS)	EC-695, "Description"
Engine coolant temperature sensor	EC-623, "Description"
EVAP canister purge volume control solenoid valve	EC-719, "Description"
EVAP control system pressure sensor	EC-734, "Description"
Fuel tank temperature sensor	EC-678, "Description"
Mass air flow sensor	EC-608, "Description"
Throttle position sensor	EC-626, "Description"
Vehicle speed sensor	EC-765, "Description"

INTAKE VALVE TIMING CONTROL

System Diagram



System Description

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS)	Engine speed and piston position			
Camshaft position sensor (PHASE)	Engine speed and piston position	Intake valve timing control	Intake valve timing control	
Engine coolant temperature sensor	Engine coolant temperature		solenoid valve	
Combination meter	Vehicle speed*			

^{*:} This signal is sent to the ECM through CAN communication line

SYSTEM DESCRIPTION

This mechanism hydraulically controls cam phases continuously with the fixed operating angle of the intake valve.

The ECM receives signals such as crankshaft position, camshaft position, engine speed, and engine coolant temperature. Then, the ECM sends ON/OFF pulse duty signals to the intake valve timing (IVT) control solenoid valve depending on driving status. This makes it possible to control the shut/open timing of the intake valve to increase engine torque in low/mid speed range and output in high-speed range.

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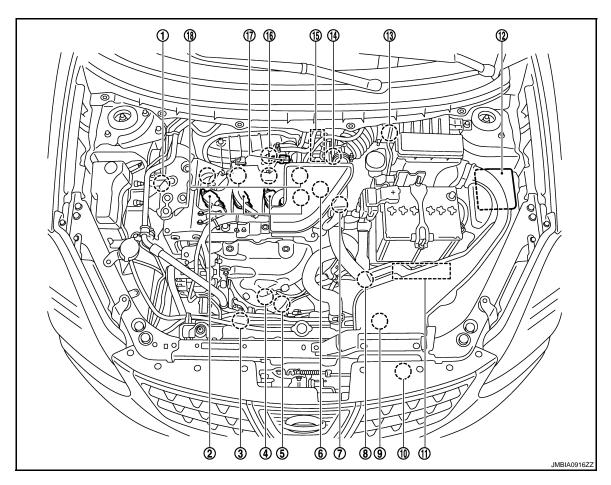
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Component Parts Location

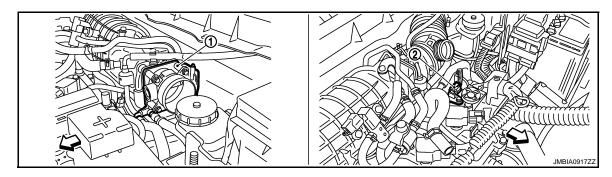
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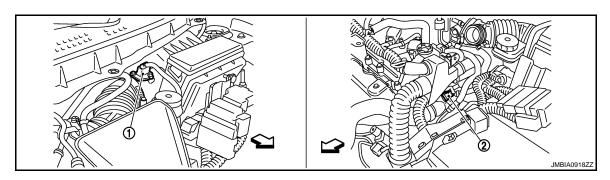
- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS) temperature sensor)
- 16. Knock sensor

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.

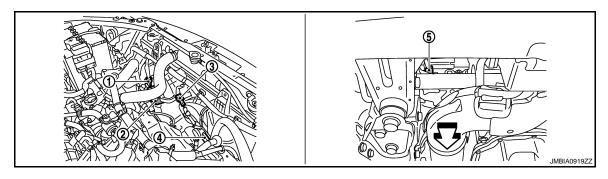
- Cooling fan motor-2 3.
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- 12. IPDM E/R
- 15. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 17. EVAP canister purge volume control 18. Fuel injector solenoid valve



- Electric throttle control actuator
- Camshaft position sensor (PHASE)

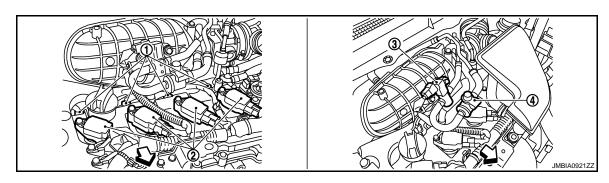


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- √ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- 3. Cooling fan motor-2 harness connector



- Fuel injector
- 4. EVAP service port
- ⟨
 ⇒ Vehicle front

- 2. Ignition coil (with power transistor) and spark plug
- B. EVAP canister purge volume control solenoid valve

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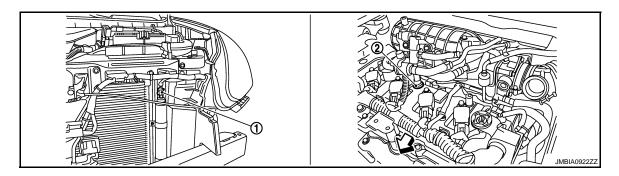
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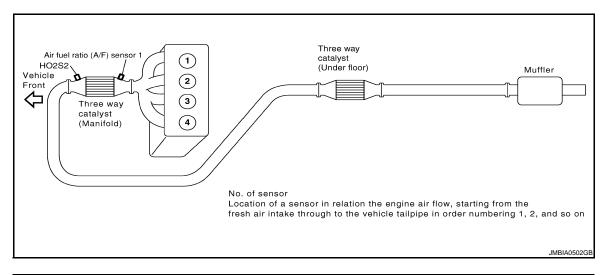
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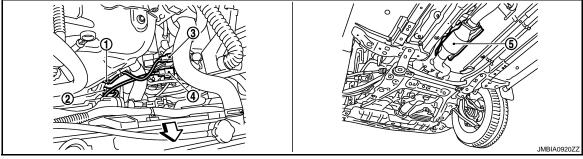
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1. Refrigerant pressure sensor

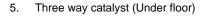
2. PCV valve

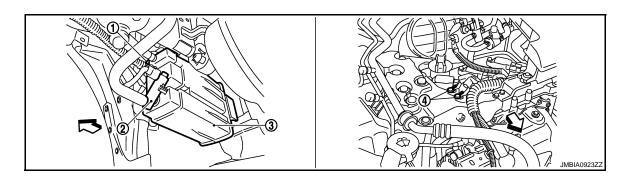




- 1. Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- 3. Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector

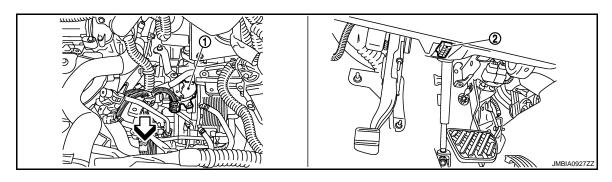




INTAKE VALVE TIMING CONTROL

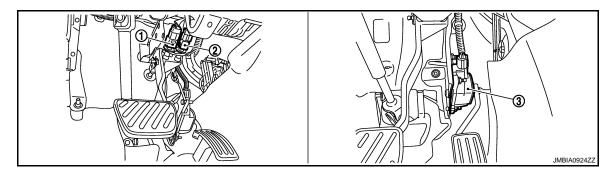
[FOR USA (FEDERAL) AND CANADA]

- . EVAP control system pressure sen- 2. EVAP canister vent control valve 3. EVAP canister
- 4. Body ground

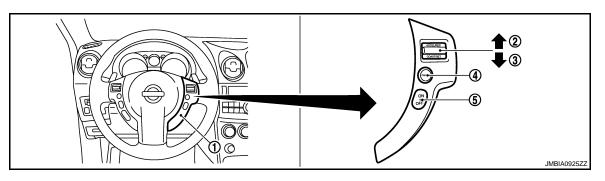


- 1. Park/neutral position (PNP) switch
- 2. Data link connector

⟨□ Vehicle front

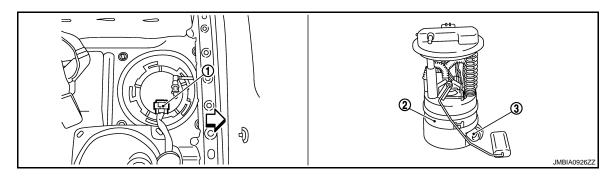


- 1. Stop lamp switch
- 2. ASCD brake switch
- 3. Accelerator pedal position sensor



- ASCD steering switch
 SET/COAST switch
- 2. CANSEL switch
- 5. MAIN switch

3. RESUME/ACCERELATE switch



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INTAKE VALVE TIMING CONTROL

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

1. Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

INFOID:0000000002988839

Component	Reference
Camshaft position sensor (PHASE)	EC-699, "Description"
Crankshaft position sensor (POS)	EC-695, "Description"
Engine coolant temperature sensor	EC-623, "Description"
Intake valve timing control solenoid valve	EC-553, "System Description"
Vehicle speed sensor	EC-765, "Description"

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

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INTRODUCTION

The ECM has an on board diagnostic system, which detects malfunctions related to engine sensors or actuators. The ECM also records various emission-related diagnostic information including:

Emission-related diagnostic information	Diagnostic service		
Diagnostic Trouble Code (DTC)	Service \$03 of SAE J1979		
Freeze Frame data	Service \$02 of SAE J1979		
System Readiness Test (SRT) code	Service \$01 of SAE J1979		
1st Trip Diagnostic Trouble Code (1st Trip DTC)	Service \$07 of SAE J1979		
1st Trip Freeze Frame data			
Test values and Test limits	Service \$06 of SAE J1979		
Calibration ID	Service \$09 of SAE J1979		

The above information can be checked using procedures listed in the table below.

×: Applicable —: Not applicable

	DTC	1st trip DTC	Freeze Frame data	1st trip Freeze Frame data	SRT code	SRT status	Test value
CONSULT-III	×	×	×	×	×	×	_
GST	×	×	×	_	×	×	×
ECM	×	×*	_	_	_	×	_

^{*:} When DTC and 1st trip DTC simultaneously appear on the display, they cannot be clearly distinguished from each other.

The malfunction indicator lamp (MIL) on the instrument panel lights up when the same malfunction is detected in two consecutive trips (Two trip detection logic), or when the ECM enters fail-safe mode. (Refer to EC-890, <a href="Fail Safe".)

TWO TRIP DETECTION LOGIC

When a malfunction is detected for the first time, 1st trip DTC and 1st trip Freeze Frame data are stored in the ECM memory. The MIL will not light up at this stage. <1st trip>

If the same malfunction is detected again during the next drive, the DTC and Freeze Frame data are stored in the ECM memory, and the MIL lights up. The MIL lights up at the same time when the DTC is stored. <2nd trip> The "trip" in the "Two Trip Detection Logic" means a driving mode in which self-diagnosis is performed during vehicle operation. Specific on board diagnostic items will cause the ECM to light up or blink the MIL, and store DTC and Freeze Frame data, even in the 1st trip, as shown below.

x: Applicable —: Not applicable

	MIL			DTC		1st trip DTC		
Items	1st trip		2nd trip		1st trip	2nd trip	4 at tria	On al trin
	Blinking	Lighting up	Blinking	Lighting up	displaying	displaying	1st trip displaying	2nd trip displaying
Misfire (Possible three way catalyst damage) — DTC: P0300 - P0304 is being detected	×	_	_	_	_	_	×	_
Misfire (Possible three way catalyst damage) — DTC: P0300 - P0304 is being detected	_	_	×	_	_	×	_	_
One trip detection diagnoses (Refer to EC-893, "DTC Index".)	_	×	_	_	×	_	_	_
Except above	_	_	_	×	_	×	×	_

DTC AND FREEZE FRAME DATA

DTC and 1st Trip DTC

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

The 1st trip DTC (whose number is the same as the DTC number) is displayed for the latest self-diagnostic result obtained. If the ECM memory was cleared previously, and the 1st trip DTC did not reoccur, the 1st trip DTC will not be displayed.

If a malfunction is detected during the 1st trip, the 1st trip DTC is stored in the ECM memory. The MIL will not light up (two trip detection logic). If the same malfunction is not detected in the 2nd trip (meeting the required driving pattern), the 1st trip DTC is cleared from the ECM memory. If the same malfunction is detected in the 2nd trip, both the 1st trip DTC and DTC are stored in the ECM memory and the MIL lights up. In other words, the DTC is stored in the ECM memory and the MIL lights up when the same malfunction occurs in two consecutive trips. If a 1st trip DTC is stored and a non-diagnostic operation is performed between the 1st and 2nd trips, only the 1st trip DTC will continue to be stored. For malfunctions that blink or light up the MIL during the 1st trip, the DTC and 1st trip DTC are stored in the ECM memory.

Procedures for clearing the DTC and the 1st trip DTC from the ECM memory are described in "How to Erase DTC and 1st Trip DTC".

For malfunctions in which 1st trip DTCs are displayed, refer to <u>EC-893, "DTC Index"</u>. These items are required by legal regulations to continuously monitor the system/component. In addition, the items monitored non-continuously are also displayed on CONSULT-III.

1st trip DTC is specified in Service \$07 of SAE J1979. 1st trip DTC detection occurs without lighting up the MIL and therefore does not warn the driver of a malfunction. However, 1st trip DTC detection will not prevent the vehicle from being tested, for example during Inspection/Maintenance (I/M) tests.

When a 1st trip DTC is detected, check, print out or write down and erase (1st trip) DTC and Freeze Frame data as specified in Work Flow procedure Step 2, refer to <u>EC-492, "Work Flow"</u>. Then perform DTC CONFIRMATION PROCEDURE or Component Function Check to try to duplicate the malfunction. If the malfunction is duplicated, the item requires repair.

Freeze Frame Data and 1st Trip Freeze Frame Data

The ECM records the driving conditions such as fuel system status, calculated load value, engine coolant temperature, short term fuel trim, long term fuel trim, engine speed, vehicle speed, absolute throttle position, base fuel schedule and intake air temperature at the moment a malfunction is detected.

Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data. The data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT-III or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-III screen, not on the GST.

Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. 1st trip freeze frame data is stored in the ECM memory along with the 1st trip DTC. There is no priority for 1st trip freeze frame data and it is updated each time a different 1st trip DTC is detected. However, once freeze frame data (2nd trip detection/MIL on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

Priority	Items			
1	Freeze frame data	Misfire — DTC: P0300 - P0304 Fuel Injection System Function — DTC: P0171, P0172		
2		Except the above items (Includes CVT related items)		
3	1st trip freeze frame data			

For example, the EGR malfunction (Priority: 2) was detected and the freeze frame data was stored in the 2nd trip. After that when the misfire (Priority: 1) is detected in another trip, the freeze frame data will be updated from the EGR malfunction to the misfire. The 1st trip freeze frame data is updated each time a different malfunction is detected. There is no priority for 1st trip freeze frame data. However, once freeze frame data is stored in the ECM memory, 1st trip freeze data is no longer stored (because only one freeze frame data or 1st trip freeze frame data can be stored in the ECM). If freeze frame data is stored in the ECM memory and freeze frame data with the same priority occurs later, the first (original) freeze frame data remains unchanged in the ECM memory.

Both 1st trip freeze frame data and freeze frame data (along with the DTCs) are cleared when the ECM memory is erased. Procedures for clearing the ECM memory are described in "How to Erase DTC and 1st Trip DTC".

How to Read DTC and 1st Trip DTC

(P)With CONSULT-III

With GST

CONSULT-III or GST (Generic Scan Tool) Examples: P0340, P0850, P1148, etc.

These DTCs are prescribed by SAE J2012.

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(CONSULT-III also displays the malfunctioning component or system.)

No Tools

The number of blinks of the MIL in the Diagnostic Test Mode II (Self-Diagnostic Results) indicates the DTC. Example: 0340, 0850, 1148, etc.

These DTCs are controlled by NISSAN.

- 1st trip DTC No. is the same as DTC No.
- Output of a DTC indicates a malfunction. However, GST or the Diagnostic Test Mode II do not indicate whether the malfunction is still occurring or has occurred in the past and has returned to normal. CONSULT-III can identify malfunction status as shown below. Therefore, using CONSULT-III (if available) is recommended.

DTC or 1st trip DTC of a malfunction is displayed in "SELF-DIAGNOSTIC RESULTS" mode of CONSULT-III. Time data indicates how many times the vehicle was driven after the last detection of a DTC.

If the DTC is being detected currently, the time data will be [0].

If a 1st trip DTC is stored in the ECM, the time data will be [1t].

How to Erase DTC and 1st Trip DTC

(P) With CONSULT-III

NOTE:

- If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- If the DTC is not for CVT related items (see <u>EC-893, "DTC Index"</u>), skip step 1.
- 1. Erase DTC in TCM. Refer to TM-41, "Diagnosis Description".
- Select "ENGINE" with CONSULT-III.
- Select "SELF-DIAG RESULTS".
- 4. Touch "ERASE". (DTC in ECM will be erased.)

With GST

NOTE:

- If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- If the DTC is not for CVT related items (see EC-893, "DTC Index"), skip step 1.
- Erase DTC in TCM. Refer to TM-41, "Diagnosis Description".
- Select Service \$04 with GST (Generic Scan Tool).

No Tools

NOTE:

- If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- If the DTC is not for CVT related items (see <u>EC-893, "DTC Index"</u>), skip step 1.
- 1. Erase DTC in TCM. Refer to TM-41, "Diagnosis Description".
- Erase DTC in ECM. Refer to How to Erase Diagnostic Test Mode II (Self-diagnostic Results).
- If the battery is disconnected, the emission-related diagnostic information will be lost within 24
- The following data are cleared when the ECM memory is erased.
- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- Freeze frame data
- 1st trip freeze frame data
- System readiness test (SRT) codes

Actual work procedures are explained using a DTC as an example. Be careful so that not only the DTC, but all of the data listed above, are cleared from the ECM memory during work procedures.

SYSTEM READINESS TEST (SRT) CODE

System Readiness Test (SRT) code is specified in Service \$01 of SAE J1979.

As part of an enhanced emissions test for Inspection & Maintenance (I/M), certain states require the status of SRT be used to indicate whether the ECM has completed self-diagnosis of major emission systems and components. Completion must be verified in order for the emissions inspection to proceed.

If a vehicle is rejected for a State emissions inspection due to one or more SRT items indicating "INCMP", use the information in this Service Manual to set the SRT to "CMPLT".

In most cases the ECM will automatically complete its self-diagnosis cycle during normal usage, and the SRT status will indicate "CMPLT" for each application system. Once set as "CMPLT", the SRT status remains "CMPLT" until the self-diagnosis memory is erased.

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Occasionally, certain portions of the self-diagnostic test may not be completed as a result of the customer's normal driving pattern; the SRT will indicate "INCMP" for these items.

NOTE:

The SRT will also indicate "INCMP" if the self-diagnosis memory is erased for any reason or if the ECM memory power supply is interrupted for several hours.

If, during the state emissions inspection, the SRT indicates "CMPLT" for all test items, the inspector will continue with the emissions test. However, if the SRT indicates "INCMP" for one or more of the SRT items the vehicle is returned to the customer untested.

NOTE:

If MIL is ON during the state emissions inspection, the vehicle is also returned to the customer untested even though the SRT indicates "CMPLT" for all test items. Therefore, it is important to check SRT ("CMPLT") and DTC (No DTCs) before the inspection.

SRT Item

The table below shows required self-diagnostic items to set the SRT to "CMPLT".

SRT item (CONSULT-III indication)	Performance Priority*	Required self-diagnostic items to set the SRT to "CMPLT"	Corresponding DTC No.
CATALYST	2	Three way catalyst function	P0420
EVAP SYSTEM	2	EVAP control system purge flow monitoring	P0441
	1	EVAP control system	P0442
	2	EVAP control system	P0456
HO2S	2	Air fuel ratio (A/F) sensor 1	P0133
		Heated oxygen sensor 2	P0137
		Heated oxygen sensor 2	P0138
		Heated oxygen sensor 2	P0139

^{*:} If completion of several SRTs is required, perform driving patterns (DTC CONFIRMATION PROCEDURE), one by one based on the priority for models with CONSULT-III.

SRT Set Timing

SRT is set as "CMPLT" after self-diagnosis has been performed one or more times. Completion of SRT is done regardless of whether the result is OK or NG. The set timing is different between OK and NG results and is shown in the table below.

Self-diagnosis result			Example					
		Diagnosis	\leftarrow ON \rightarrow		on cycle $OFF \leftarrow ON \rightarrow OF$	FF ← ON →		
All OK	Case 1	P0400	OK (1)	— (1)	OK (2)	— (2)		
		P0402	OK (1)	— (1)	— (1)	OK (2)		
		P1402	OK (1)	OK (2)	— (2)	— (2)		
		SRT of EGR	"CMPLT"	"CMPLT"	"CMPLT"	"CMPLT"		
	Case 2	P0400	OK (1)	— (1)	— (1)	— (1)		
		P0402	— (0)	— (0)	OK (1)	— (1)		
		P1402	OK (1)	OK (2)	— (2)	— (2)		
		SRT of EGR	"INCMP"	"INCMP"	"CMPLT"	"CMPLT"		
NG exists	Case 3	P0400	OK	OK	_	_		
		P0402	_	_	_	_		
		P1402	NG	_	NG	NG (Consecutive NG)		
		(1st trip) DTC	1st trip DTC	_	1st trip DTC	DTC (= MIL ON)		
		SRT of EGR	"INCMP"	"INCMP"	"INCMP"	"CMPLT"		

OK: Self-diagnosis is carried out and the result is OK.

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NG: Self-diagnosis is carried out and the result is NG.

-: Self-diagnosis is not carried out.

When all SRT related self-diagnoses showed OK results in a single cycle (Ignition OFF-ON-OFF), the SRT will indicate "CMPLT". → Case 1 above

When all SRT related self-diagnoses showed OK results through several different cycles, the SRT will indicate "CMPLT" at the time the respective self-diagnoses have at least one OK result. \rightarrow Case 2 above

If one or more SRT related self-diagnoses showed NG results in 2 consecutive cycles, the SRT will also indicate "CMPLT". \rightarrow Case 3 above

The table above shows that the minimum number of cycles for setting SRT as "INCMP" is one (1) for each self-diagnosis (Case 1 & 2) or two (2) for one of self-diagnoses (Case 3). However, in preparation for the state emissions inspection, it is unnecessary for each self-diagnosis to be executed twice (Case 3) for the following reasons:

- The SRT will indicate "CMPLT" at the time the respective self-diagnoses have one (1) OK result.
- The emissions inspection requires "CMPLT" of the SRT only with OK self-diagnosis results.
- When, during SRT driving pattern, 1st trip DTC (NG) is detected prior to "CMPLT" of SRT, the self-diagnosis memory must be erased from ECM after repair.
- If the 1st trip DTC is erased, all the SRT will indicate "INCMP".

NOTE:

SRT can be set as "CMPLT" together with the DTC(s). Therefore, DTC check must always be carried out prior to the state emission inspection even though the SRT indicates "CMPLT".

SRT Service Procedure

If a vehicle has failed the state emissions inspection due to one or more SRT items indicating "INCMP", review the flowchart diagnostic sequence on the next page.

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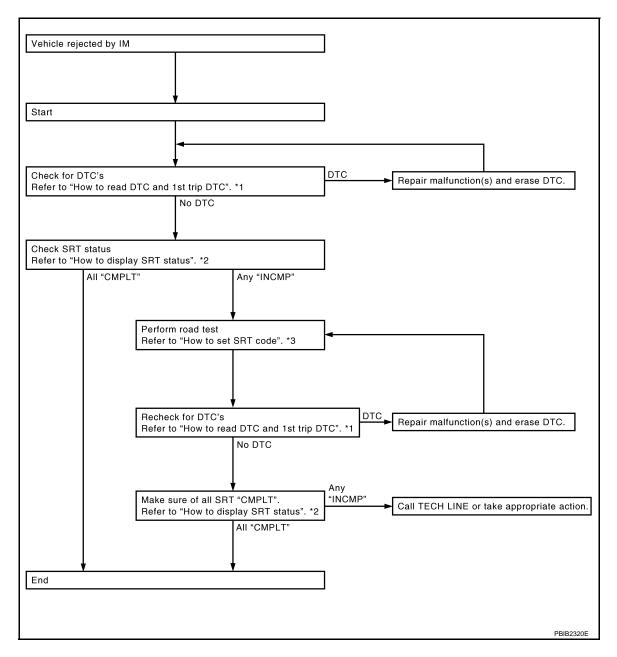
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*1 "How to Read DTC and 1st Trip DTC" *2 "How to Display SRT Status" *3 "How to Set SRT Code"

How to Display SRT Status

(P)WITH CONSULT-III

Selecting "SRT STATUS" in "DTC CONFIRMATION" mode with CONSULT-III.

For items whose SRT codes are set, a "CMPLT" is displayed on the CONSULT-III screen; for items whose SRT codes are not set, "INCMP" is displayed.

NOTE:

Though displayed on the CONSULT-III screen, "HO2S HTR" is not SRT item.

WITH GST

Selecting Service \$01 with GST (Generic Scan Tool)

NO TOOLS

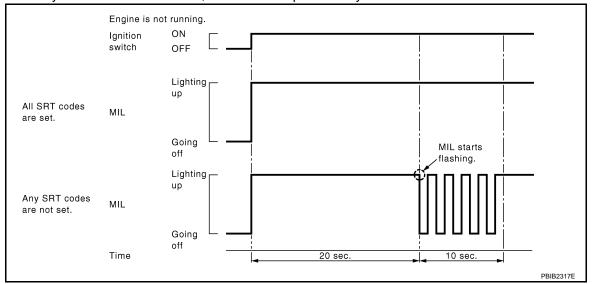
A SRT code itself can not be displayed while only SRT status can be.

- Turn ignition switch ON and wait 20 seconds.
- 2. SRT status is indicated as shown below.
 - When all SRT codes are set, MIL lights up continuously.

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• When any SRT codes are not set, MIL will flash periodically for 10 seconds.



MALFUNCTION INDICATOR LAMP (MIL)

Description

The MIL is located on the instrument panel.

- The MIL will light up when the ignition switch is turned ON without the engine running. This is a bulb check.
 If the MIL does not light up, check MIL circuit. Refer to <u>EC-858</u>. "Component Function Check".
- 2. When the engine is started, the MIL should go off. If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.



On Board Diagnostic System Function

The on board diagnostic system has the following three functions.

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[FOR USA (FEDERAL) AND CANADA]

Diagnostic Test Mode	KEY and ENG. Status	Function	Explanation of Function
Mode I	Ignition switch in ON position Engine stopped	BULB CHECK	This function checks the MIL bulb for damage (blown, open circuit, etc.). If the MIL does not come on, check MIL circuit.
	Engine running	MALFUNCTION WARNING	This is a usual driving condition. When a malfunction is detected twice in two consecutive driving cycles (two trip detection logic), the MIL will light up to inform the driver that a malfunction has been detected. The following malfunctions will light up or blink the MIL in the 1st trip. • Misfire (Possible three way catalyst damage) • One trip detection diagnoses
Mode II	Ignition switch in ON position Engine stopped	SELF-DIAGNOSTIC RESULTS	This function allows DTCs and 1st trip DTCs to be read.

Diagnostic Test Mode I — Bulb Check

In this mode, the MIL on the instrument panel should stay ON. If it remains OFF, check MIL circuit. Refer to <u>EC-858</u>, "Component Function Check".

Diagnostic Test Mode I — Malfunction Warning

MIL	Condition				
ON	When the malfunction is detected.				
OFF	No malfunction.				

This DTC number is clarified in Diagnostic Test Mode II (SELF-DIAGNOSTIC RESULTS)

Diagnostic Test Mode II — Self-diagnostic Results

In this mode, the DTC and 1st trip DTC are indicated by the number of blinks of the MIL as shown below. The DTC and 1st trip DTC are displayed at the same time. If the MIL does not illuminate in diagnostic test mode I (Malfunction warning), all displayed items are 1st trip DTCs. If only one code is displayed when the MIL illuminates in diagnostic test mode II (SELF-DIAGNOSTIC RESULTS), it is a DTC; if two or more codes are displayed, they may be either DTCs or 1st trip DTCs. DTC No. is same as that of 1st trip DTC. These unidentified codes can be identified by using the CONSULT-III or GST. A DTC will be used as an example for how to read a code.

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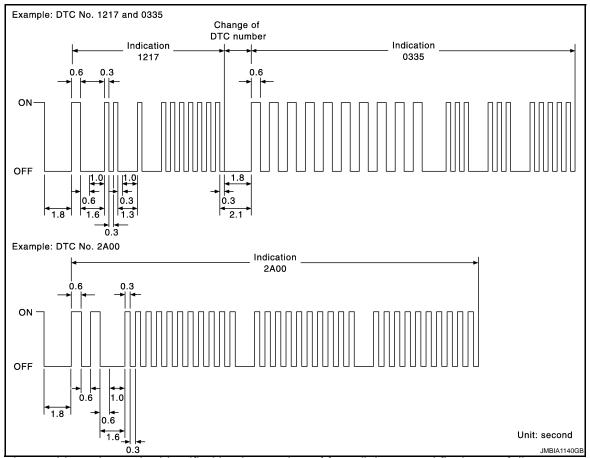
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A particular trouble code can be identified by the number of four-digit numeral flashes as follows.

Number	0	1	2	3	4	5	6	7	8	9	Α	В	С	D	Е	F
Flashes	10	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16

The length of time the 1,000th-digit numeral flashes on and off is 1.2 seconds consisting of an ON (0.6-second) - OFF (0.6-second) cycle.

The 100th-digit numeral and lower digit numerals consist of a 0.3-second ON and 0.3-second OFF cycle.

A change from one digit numeral to another occurs at an interval of 1.0-second OFF. In other words, the later numeral appears on the display 1.3 seconds after the former numeral has disappeared.

A change from one trouble code to another occurs at an interval of 1.8-second OFF.

In this way, all the detected malfunctions are classified by their DTC numbers. The DTC 0000 refers to no malfunction. (See <u>EC-893</u>, "<u>DTC Index"</u>)

How to Switch Diagnostic Test Mode

NOTE:

- It is better to count the time accurately with a clock.
- It is impossible to switch the diagnostic mode when an accelerator pedal position sensor circuit has a malfunction.
- Always ECM returns to Diagnostic Test Mode I after ignition switch is turned OFF.

HOW TO SET DIAGNOSTIC TEST MODE II (SELF-DIAGNOSTIC RESULTS)

- Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 2. Repeat the following procedure quickly five times within 5 seconds.
- Fully depress the accelerator pedal.
- Fully release the accelerator pedal.
- 3. Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 10 seconds until the MIL starts blinking.

NOTE:

Do not release the accelerator pedal for 10 seconds if MIL may start blinking on the halfway of this 10 seconds. This blinking is displaying SRT status and is continued for another 10 seconds.

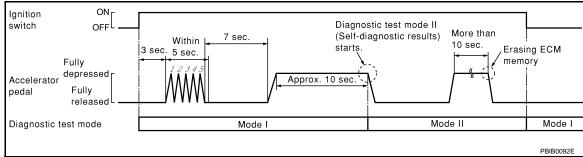
Fully release the accelerator pedal.
 ECM has entered to Diagnostic Test Mode II (Self-diagnostic results).

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NOTE:

Wait until the same DTC (or 1st trip DTC) appears to confirm all DTCs certainly.



HOW TO ERASE DIAGNOSTIC TEST MODE II (SELF-DIAGNOSTIC RESULTS)

- Set ECM in Diagnostic Test Mode II (Self-diagnostic results). Refer to "How to Set Diagnostic Test Mode II (Self-diagnostic Results)".
- Fully depress the accelerator pedal and keep it for more than 10 seconds.The emission-related diagnostic information has been erased from the backup memory in the ECM.
- 3. Fully release the accelerator pedal, and confirm the DTC 0000 is displayed.

How to Erase Diagnostic Test Mode II (Self-diagnostic Results)

The DTC can be erased from the back up memory in the ECM by depressing accelerator pedal. Refer to "How to Erase Diagnostic Test Mode II (Self-diagnostic Results)".

- If the battery is disconnected, the DTC will be lost from the backup memory within 24 hours.
- Be careful not to erase the stored memory before starting trouble diagnoses.

OBD System Operation Chart

Relationship Between MIL, 1st Trip DTC, DTC and Detectable Items

- When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data are stored in the ECM memory.
- When the same malfunction is detected in two consecutive trips, the DTC and the freeze frame data are stored in the ECM memory, and the MIL will come on.
- The MIL will go off after the vehicle is driven 3 times (driving pattern B) with no malfunction. The drive is counted only when the recorded driving pattern is met (as stored in the ECM). If another malfunction occurs while counting, the counter will reset.
- The DTC and the freeze frame data will be stored until the vehicle is driven 40 times (driving pattern A) without the same malfunction recurring (except for Misfire and Fuel Injection System). For Misfire and Fuel Injection System, the DTC and freeze frame data will be stored until the vehicle is driven 80 times (driving pattern C) without the same malfunction recurring. The "TIME" in "SELF-DIAGNOSTIC RESULTS" mode of CONSULT-III will count the number of times the vehicle is driven.
- The 1st trip DTC is not displayed when the self-diagnosis results in OK for the 2nd trip.

Summary Chart

Items	Fuel Injection System	Misfire	Other	
MIL (goes off)	3 (pattern B)	3 (pattern B)	3 (pattern B)	
DTC, Freeze Frame Data (no display)	80 (pattern C)	80 (pattern C)	40 (pattern A)	
1st Trip DTC (clear)	1 (pattern C), *1	1 (pattern C), *1	1 (pattern B)	
1st Trip Freeze Frame Data (clear)	*1, *2	*1, *2	1 (pattern B)	

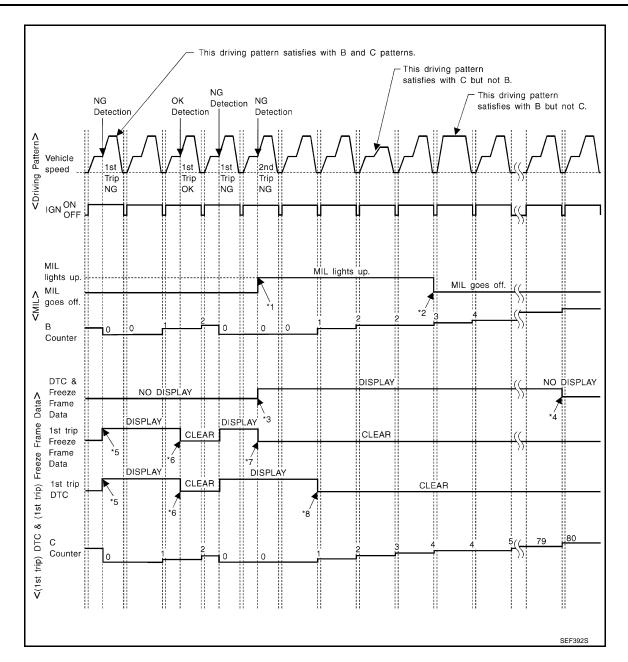
For details about patterns B and C under "Fuel Injection System" and "Misfire", see "EXPLANATION FOR DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM".

For details about patterns A and B under Other, see "EXPLANATION FOR DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM".

Relationship Between MIL, DTC, 1st Trip DTC and Driving Patterns for "Misfire <Exhaust Quality Deterioration>", "Fuel Injection System"

^{*1:} Clear timing is at the moment OK is detected.

^{*2:} Clear timing is when the same malfunction is detected in the 2nd trip.



- *1: When the same malfunction is detected in two consecutive trips, MIL will light up.
- *4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 80 times (pattern C) without the same malfunction. (The DTC and the freeze frame data still remain in ECM.)
- *7: When the same malfunction is detected in the 2nd trip, the 1st trip freeze frame data will be cleared.

- *2: MIL will go off after vehicle is driven 3 times (pattern B) without any malfunctions.
- *5: When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.
- *8: 1st trip DTC will be cleared when vehicle is driven once (pattern C) without the same malfunction after DTC is stored in ECM.
- *3: When the same malfunction is detected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.
- The 1st trip DTC and the 1st trip freeze frame data will be cleared at the moment OK is detected.

Explanation for Driving Patterns for "Misfire < Exhaust Quality Deterioration>", "Fuel Injection System" <Driving Pattern B>

Driving pattern B means the vehicle operation as follows:

All components and systems should be monitored at least once by the OBD system.

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- The B counter will be cleared when the malfunction is detected once regardless of the driving pattern.
- The B counter will be counted up when driving pattern B is satisfied without any malfunction.
- The MIL will go off when the B counter reaches 3. (*2 in "OBD SYSTEM OPERATION CHART")

<Driving Pattern C>

Driving pattern C means the vehicle operation as follows:

The following conditions should be satisfied at the same time:

Engine speed: (Engine speed in the freeze frame data) \pm 375 rpm

Calculated load value: (Calculated load value in the freeze frame data) \times (1±0.1) [%]

Engine coolant temperature (T) condition:

- When the freeze frame data shows lower than 70°C (158°F), T should be lower than 70°C (158°F).
- When the freeze frame data shows higher than or equal to 70°C (158°F), T should be higher than or equal to 70°C (158°F).

Example:

If the stored freeze frame data is as follows:

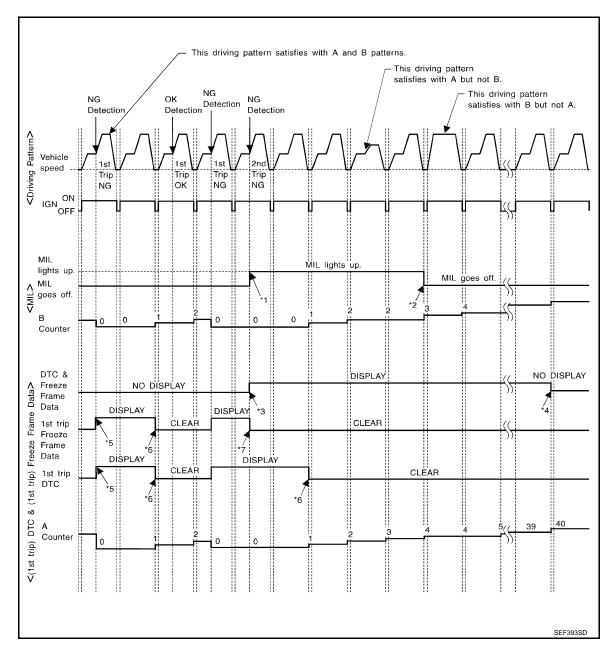
Engine speed: 850 rpm, Calculated load value: 30%, Engine coolant temperature: 80°C (176°F)

To be satisfied with driving pattern C, the vehicle should run under the following conditions:

Engine speed: 475 - 1,225 rpm, Calculated load value: 27 - 33%, Engine coolant temperature: more than 70°C (158°F)

- The C counter will be cleared when the malfunction is detected regardless of vehicle conditions above.
- The C counter will be counted up when vehicle conditions above is satisfied without the same malfunction.
- The DTC will not be displayed after C counter reaches 80.
- The 1st trip DTC will be cleared when C counter is counted once without the same malfunction after DTC is stored in ECM.

Relationship Between MIL, DTC, 1st Trip DTC and Driving Patterns Except For "Misfire <Exhaust Quality Deterioration>", "Fuel Injection System"



- *1: When the same malfunction is detected in two consecutive trips, MIL will light up.
- *4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 40 times (pattern A) without the same malfunction. (The DTC and the freeze frame data still remain in ECM.)
- *7: When the same malfunction is detected in the 2nd trip, the 1st trip freeze frame data will be cleared.

- *2: MIL will go off after vehicle is driven 3 times (pattern B) without any malfunctions.
- *5: When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.
- *3: When the same malfunction is detected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.
- *6: 1st trip DTC will be cleared after vehicle is driven once (pattern B) without the same malfunction.

Explanation for Driving Patterns Except for "Misfire < Exhaust Quality Deterioration>", "Fuel Injection System"

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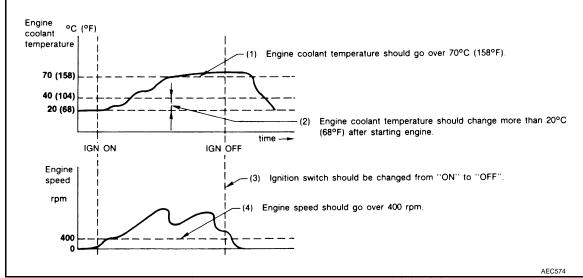
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<Driving Pattern A>



- The A counter will be cleared when the malfunction is detected regardless of (1) (4).
- The A counter will be counted up when (1) (4) are satisfied without the same malfunction.
- The DTC will not be displayed after the A counter reaches 40.

<Driving Pattern B>

Driving pattern B means the vehicle operation as follows:

All components and systems should be monitored at least once by the OBD system.

- The B counter will be cleared when the malfunction is detected once regardless of the driving pattern.
- The B counter will be counted up when driving pattern B is satisfied without any malfunctions.
- The MIL will go off when the B counter reaches 3 (*2 in OBD SYSTEM OPERATION CHART).

CONSULT-III Function

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FUNCTION

Diagnostic test mode	Function
Work Support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on the CONSULT-III unit.
Self Diagnostic Result	Self-diagnostic results such as 1st trip DTC, DTCs and 1st trip freeze frame data or freeze frame data can be read and erased quickly.*
Data Monitor	Input/Output data in the ECM can be read.
Active Test	Diagnostic Test Mode in which CONSULT-III drives some actuators apart from the ECMs and also shifts some parameters in a specified range.
DTC & SRT Confirmation	The status of system monitoring tests and the self-diagnosis status/result can be confirmed.
Function Test	This mode is used to inform customers when their vehicle condition requires periodic maintenance.
ECU Part Number	ECM part number can be read.

^{*:} The following emission-related diagnostic information is cleared when the ECM memory is erased.

- · Diagnostic trouble codes
- · 1st trip diagnostic trouble codes
- Freeze frame data
- 1st trip freeze frame data
- · System readiness test (SRT) codes
- · Test values

ENGINE CONTROL COMPONENT PARTS/CONTROL SYSTEMS APPLICATION

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

			Direct Diagnostic Mode							А
				Self Diagr	nostic Result			DTC & SR mat		_
	Item			DTC*1	FREEZE FRAME DATA*2	Data Monitor	Active Test	SRT STA- TUS	DTC WORK SUP- PORT	EC
		Crankshaft position sensor (POS)		×	×	×				
		Camshaft position sensor (PHASE)		×	×	×				
		Mass air flow sensor		×		×				D
		Engine coolant temperature sensor		×	×	×	×			
		Air fuel ratio (A/F) sensor 1		×		×		×	×	г
		Heated oxygen sensor 2		×		×		×	×	Е
		Vehicle speed sensor		×	×	×				
RTS		Accelerator pedal position sensor		×		×				F
P		Throttle position sensor		×	×	×				
ĒN		Fuel tank temperature sensor		×		×	×			
NOc		EVAP control system pressure sensor		×		×				G
OM	5	Intake air temperature sensor		×	×	×				
C	ENGINE CONTROL COMPONENT PARTS INPUT	Knock sensor		×						-
TRG		Refrigerant pressure sensor				×				
CON		Closed throttle position switch (accelerator pedal position sensor signal)				×				I
Ä		Air conditioner switch				×				
Ë		Park/neutral position (PNP) switch		×		×				
		Stop lamp switch		×		×				J
		Battery voltage				×				
		Load signal				×				k
		Primary speed sensor		×		×				
		Fuel level sensor		×		×				
		ASCD steering switch		×		×				L
		ASCD brake switch		×		×				
		Fuel injector				×	×			N
' 0		Power transistor (Ignition timing)				×	×			
RTS		Throttle control motor relay		×		×				
T PA		Throttle control motor		×						
ONEN		EVAP canister purge volume control solenoid valve		×		×	×		×	
MP	5	Air conditioner relay				×				С
8	ENGINE COTNROL COMPONENT PARTS OUTPUT	Fuel pump relay	×			×	×			
ROL		Cooling fan relay		×		×	×			Б
NLC		Air fuel ratio (A/F) sensor 1 heater		×		×		×* ³		
ECC		Heated oxygen sensor 2 heater		×		×		×* ³		
N D		EVAP canister vent control valve	×	×		×	×			
Ž	Ĭ N	Intake valve timing control solenoid valve		×		×	×			
		Calculated load value			×	×				

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

X: Applicable

- *1: This item includes 1st trip DTCs.
- *2: This mode includes 1st trip freeze frame data or freeze frame data. The items appear on CONSULT-III screen in freeze frame data mode only if a 1st trip DTC or DTC is detected. For details, refer to EC-559, "Diagnosis Description".
- *3: Always "CMPLT" is displayed.

INSPECTION PROCEDURE

Refer to CONSULT-III Operators Manual.

WORK SUPPORT MODE

Work Item

WORK ITEM	CONDITION	USAGE
FUEL PRESSURE RELEASE	FUEL PUMP WILL STOP BY TOUCHING "START" DUR- ING IDLING. CRANK A FEW TIMES AFTER ENGINE STALLS.	When releasing fuel pressure from fuel line
IDLE AIR VOL LEARN	THE IDLE AIR VOLUME THAT KEEPS THE ENGINE WITHIN THE SPECIFIED RANGE IS MEMORIZED IN ECM.	When learning the idle air volume
SELF-LEARNING CONT	THE COEFFICIENT OF SELF-LEARNING CONTROL MIXTURE RATIO RETURNS TO THE ORIGINAL COEF- FICIENT.	When clearing mixture ratio self- learning value
EVAP SYSTEM CLOSE	CLOSE THE EVAP CANISTER VENT CONTROL VALVE IN ORDER TO MAKE EVAP SYSTEM CLOSE UNDER THE FOLLOWING CONDITIONS. IGN SW ON ENGINE NOT RUNNING AMBIENT TEMPERATURE IS ABOVE 0°C (32°F). NO VACUUM AND NO HIGH PRESSURE IN EVAP SYSTEM FUEL TANK TEMP. IS MORE THAN 0°C (32°F). WITHIN 10 MINUTES AFTER STARTING "EVAP SYSTEM CLOSE" WHEN TRYING TO EXECUTE "EVAP SYSTEM CLOSE" UNDER THE CONDITION EXCEPT ABOVE, CONSULT-II WILL DISCONTINUE IT AND DISPLAY APPROPRIATE INSTRUCTION. NOTE: WHEN STARTING ENGINE, CONSULT-III MAY DISPLAY "BATTERY", EVEN IN USING CHARGED BATTERY".	When detecting EVAP vapor leak point of EVAP system
VIN REGISTRATION	IN THIS MODE, VIN IS REGISTERED IN ECM.	When registering VIN in ECM
TARGET IDLE RPM ADJ*	IDLE CONDITION	When setting target idle speed
TARGET IGN TIM ADJ*	IDLE CONDITION	When adjusting target ignition timing

^{*:} This function is not necessary in the usual service procedure.

SELF-DIAGNOSTIC RESULT MODE

Self Diagnostic Item

Regarding items of DTC and 1st trip DTC, refer to EC-893. "DTC Index".)

Freeze Frame Data and 1st Trip Freeze Frame Data

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Freeze frame data item*	Description
DIAG TROUBLE CODE [PXXXX]	The engine control component part/control system has a trouble code, it is displayed as PXXXX. (Refer to EC-893, "DTC Index".)
FUEL SYS-B1	"Fuel injection system status" at the moment a malfunction is detected is displayed. One mode in the following is displayed. Mode2: Open loop due to detected system malfunction Mode3: Open loop due to driving conditions (power enrichment, deceleration enleanment) Mode4: Closed loop - using oxygen sensor(s) as feedback for fuel control Mode5: Open loop - has not yet satisfied condition to go to closed loop
CAL/LD VALUE [%]	The calculated load value at the moment a malfunction is detected is displayed.
COOLANT TEMP [°C] or [°F]	The engine coolant temperature at the moment a malfunction is detected is displayed.
L-FUEL TRM-B1 [%]	 "Long-term fuel trim" at the moment a malfunction is detected is displayed. The long-term fuel trim indicates much more gradual feedback compensation to the base fuel schedule than short-term fuel trim.
S-FUEL TRM-B1 [%]	 "Short-term fuel trim" at the moment a malfunction is detected is displayed. The short-term fuel trim indicates dynamic or instantaneous feedback compensation to the base fuel schedule.
ENGINE SPEED [rpm]	The engine speed at the moment a malfunction is detected is displayed.
VEHICL SPEED [km/h] or [mph]	The vehicle speed at the moment a malfunction is detected is displayed.
ABSOL TH-P/S [%]	The throttle valve opening angle at the moment a malfunction is detected is displayed.
B/FUEL SCHDL [msec]	The base fuel schedule at the moment a malfunction is detected is displayed.
INT/A TEMP SE [°C] or [°F]	The intake air temperature at the moment a malfunction is detected is displayed.
FUEL SYS-B2	
L-FUEL TRM-B2 [%]	
S-FUEL TRM-B2 [%]	Always a certain value is displayed. These items are not efficient for S35 models.
INT MANI PRES [kPa]	
FTFMCH1	

^{*:} The items are the same as those of 1st trip freeze frame data.

DATA MONITOR MODE

Monitored Item

			×: Applicable
Monitored item	Unit	Description	Remarks
ENG SPEED	rpm	Indicates the engine speed computed from the signal of the crankshaft position sensor (POS) and camshaft position sensor (PHASE).	Accuracy becomes poor if engine speed drops below the idle rpm. If the signal is interrupted while the engine is running, an abnormal value may be indicated.
MAS A/F SE-B1	V	The signal voltage of the mass air flow sensor is displayed.	 When the engine is stopped, a certain value is indicated. When engine is running specification range is indicated in "SPEC".
B/FUEL SCHDL	msec	"Base fuel schedule" indicates the fuel injection pulse width programmed into ECM, prior to any learned on board correction.	When engine is running specification range is indicated in "SPEC".

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Monitored item	Unit	Description	Remarks		
A/F ALPHA-B1	%	The mean value of the air-fuel ratio feedback cor- rection factor per cycle is indicated.	 When the engine is stopped, a certain value is indicated. When engine is running specification range is indicated in "SPEC". This data also includes the data for the air-fuel ratio learning control. 		
COOLAN TEMP/S	°C or °F	The engine coolant temperature (determined by the signal voltage of the engine coolant tempera- ture sensor) is displayed.	When the engine coolant temperature sensor is open or short-circuited, ECM enters fail-safe mode. The en- gine coolant temperature determined by the ECM is displayed.		
A/F SEN1 (B1)	V	The A/F signal computed from the input signal of the air fuel ratio (A/F) sensor 1 is displayed.			
HO2S2 (B1)	V	The signal voltage of the heated oxygen sensor 2 is displayed.			
HO2S2 MNTR(B1)	RICH/LEAN	Display of heated oxygen sensor 2 signal: RICH: means the amount of oxygen after three way catalyst is relatively small. LEAN: means the amount of oxygen after three way catalyst is relatively large.	When the engine is stopped, a certain value is indicated.		
VHCL SPEED SE	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from combination meter is dis- played.			
BATTERY VOLT	V	The power supply voltage of ECM is displayed.			
ACCEL SEN 1 ACCEL SEN 2	V	The accelerator pedal position sensor signal voltage is displayed.	ACCEL SEN 2 signal is converted by ECM internally. Thus, it differs from		
			ECM terminal voltage signal.TP SEN 2-B1 signal is converted by		
TP SEN 1-B1 TP SEN 2-B1	V	The throttle position sensor signal voltage is displayed.	ECM internally. Thus, it differs from ECM terminal voltage signal.		
FUEL T/TMP SE	°C or °F	The fuel temperature (determined by the signal voltage of the fuel tank temperature sensor) is displayed.			
INT/A TEMP SE	°C or °F	The intake air temperature (determined by the signal voltage of the intake air temperature sensor) is indicated.			
EVAP SYS PRES	V	The signal voltage of EVAP control system pressure sensor is displayed.			
FUEL LEVEL SE	V	The signal voltage of the fuel level sensor is displayed.			
START SIGNAL	ON/OFF	Indicates start signal status [ON/OFF] computed by the ECM according to the signals of engine speed and battery voltage.	After starting the engine, [OFF] is dis- played regardless of the starter sig- nal.		
CLSD THL POS	ON/OFF	Indicates idle position [ON/OFF] computed by ECM according to the accelerator pedal position sensor signal.			
AIR COND SIG	ON/OFF	Indicates [ON/OFF] condition of the air conditioner switch as determined by the air conditioner signal.			
P/N POSI SW	ON/OFF	Indicates [ON/OFF] condition from the park/neutral position (PNP) switch signal.			
PW/ST SIGNAL	ON/OFF	[ON/OFF] condition of the power steering system (determined by the signal sent from EPS control unit) is indicated.			

ON BOARD DIAGNOSTIC (OBD) SYSTEM

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Monitored item	Unit	Description	Remarks
LOAD SIGNAL	ON/OFF	Indicates [ON/OFF] condition from the electrical load signal. ON: Rear window defogger switch is ON and/or lighting switch is in 2nd position. OFF: Both rear window defogger switch and lighting switch are OFF.	
IGNITION SW	ON/OFF	Indicates [ON/OFF] condition from ignition switch signal.	
HEATER FAN SW	ON/OFF	Indicates [ON/OFF] condition from the heater fan switch signal.	
BRAKE SW	ON/OFF	Indicates [ON/OFF] condition from the stop lamp switch signal.	
INJ PULSE-B1	msec	Indicates the actual fuel injection pulse width compensated by ECM according to the input sig- nals.	When the engine is stopped, a certain computed value is indicated.
IGN TIMING	BTDC	Indicates the ignition timing computed by ECM according to the input signals.	When the engine is stopped, a certain value is indicated.
CAL/LD VALUE	%	"Calculated load value" indicates the value of the current air flow divided by peak air flow.	
MASS AIRFLOW	g⋅m/s	Indicates the mass air flow computed by ECM according to the signal voltage of the mass air flow sensor.	
PURG VOL C/V	%	 Indicates the EVAP canister purge volume control solenoid valve control value computed by the ECM according to the input signals. The opening becomes larger as the value increases. 	
INT/V TIM (B1)	°CA	Indicates [°CA] of intake camshaft advance angle.	
INT/V SOL(B1)	%	 The control value of the intake valve timing control solenoid valve (determined by ECM according to the input signals) is indicated. The advance angle becomes larger as the value increases. 	
AIR COND RLY	ON/OFF	The air conditioner relay control condition (determined by ECM according to the input signals) is indicated.	
FUEL PUMP RLY	ON/OFF	Indicates the fuel pump relay control condition determined by ECM according to the input signals.	
VENT CONT/V	ON/OFF	The control condition of the EVAP canister vent control valve (determined by ECM according to the input signals) is indicated. ON: Closed OFF: Open	
THRTL RELAY	ON/OFF	Indicates the throttle control motor relay control condition determined by the ECM according to the input signals.	
COOLING FAN	HI/LOW/OFF	Indicates the condition of the cooling fan (determined by ECM according to the input signals). HI: High speed operation LOW: Low speed operation OFF: Stop	
HO2S2 HTR (B1)	ON/OFF	Indicates [ON/OFF] condition of heated oxygen sensor 2 heater determined by ECM according to the input signals.	

ON BOARD DIAGNOSTIC (OBD) SYSTEM

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Monitored item	Unit	Description	Remarks
I/P PULLY SPD	rpm	Indicates the engine speed computed from the turbine revolution sensor signal.	
VEHICLE SPEED	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from TCM is displayed.	
IDL A/V LEARN	YET/CMPLT	Display the condition of Idle Air Volume Learning YET: Idle air volume learning has not been performed yet. CMPLT: Idle air volume learning has already been performed successfully.	
TRVL AFTER MIL	km or mile	Distance traveled while MIL is activated.	
A/F S1 HTR(B1)	%	 Air fuel ratio (A/F) sensor 1 heater control value computed by ECM according to the input signals. The current flow to the heater becomes larger as the value increases. 	
AC PRESS SEN	V	The signal voltage from the refrigerant pressure sensor is displayed.	
VHCL SPEED SE	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from combination meter is dis- played.	
SET VHCL SPD	km/h or mph	The preset vehicle speed is displayed.	
MAIN SW	ON/OFF	Indicates [ON/OFF] condition from MAIN switch signal.	
CANCEL SW	ON/OFF	Indicates [ON/OFF] condition from CANCEL switch signal.	
RESUME/ACC SW	ON/OFF	Indicates [ON/OFF] condition from RESUME/AC- CELERATE switch signal.	
SET SW	ON/OFF	Indicates [ON/OFF] condition from SET/COAST switch signal.	
BRAKE SW1	ON/OFF	Indicates [ON/OFF] condition from ASCD brake switch signal.	
BRAKE SW2	ON/OFF	 Indicates [ON/OFF] condition of stop lamp switch signal. 	
VHCL SPD CUT	NON/CUT	Indicates the vehicle cruise condition. NON: Vehicle speed is maintained at the ASCD set speed. CUT: Vehicle speed decreased to excessively low compared with the ASCD set speed, and ASCD operation is cut off.	
LO SPEED CUT	NON/CUT	Indicates the vehicle cruise condition. NON: Vehicle speed is maintained at the ASCD set speed. CUT: Vehicle speed decreased to excessively low, and ASCD operation is cut off.	
AT OD MONITOR	ON/OFF	Indicates [ON/OFF] condition of A/T O/D according to the input signal from the TCM.	
AT OD CANCEL	ON/OFF	Indicates [ON/OFF] condition of A/T O/D cancel request signal.	
CRUISE LAMP	ON/OFF	 Indicates [ON/OFF] condition of CRUISE lamp determined by the ECM according to the input signals. 	

Monitored item	Unit		Description	Remarks
SET LAMP	ON/OFF		F] condition of SET lamp deter- M according to the input signals.	
A/F ADJ-B1	_	Indicates the correction of factor stored in ECM. The factor is calculated from the difference between the target air-fuel ratio stored in ECM and the air-fuel ratio calculated from A/F sensor 1 signal.		
IOTE:				
ny monitored item th	at does not match	the vehicle being dia	ignosed is deleted from the display au	tomatically.
CTIVE TEST N	10DE			
est Item				
TEST ITEM		IDITION	JUDGMENT	CHECK ITEM (REMEDY)
FUEL INJECTION	 Engine: Return to the original trouble condition Change the amount of fuel injection using CONSULT-III. 		If trouble symptom disappears, see CHECK ITEM.	Harness and connectorsFuel injectorAir fuel ratio (A/F) sensor 1
	g c c	NSOLI-III.		
IGNITION TIMING	Engine: Retur trouble condit Timing light: S	n to the original ion Set iition timing using	If trouble symptom disappears, see CHECK ITEM.	Perform Idle Air Volume Learning.

	3		3
COOLING FAN*	Ignition switch: ON Turn the cooling fan "LOW", "HI" and "OFF" using CONSULT-III.	Cooling fan moves and stops.	Harness and connectors IPDM E/R (Cooling fan relay) Cooling fan motor
ENG COOLANT TEMP	Engine: Return to the original trouble condition Change the engine coolant temperature using CONSULT-III.	If trouble symptom disappears, see CHECK ITEM.	Harness and connectors Engine coolant temperature sensor Fuel injector
FUEL PUMP RELAY	Ignition switch: ON (Engine stopped) Turn the fuel pump relay "ON" and "OFF" using CONSULT-III and listen to operating sound.	Fuel pump relay makes the operating sound.	Harness and connectors Fuel pump relay
PURG VOL CONT/V	Engine: After warming up, run engine at 1,500 rpm. Change the EVAP canister purge volume control solenoid valve opening percent using CONSULT-III.	Engine speed changes according to the opening percent.	Harness and connectors Solenoid valve
FUEL/T TEMP SEN	Change the fuel tank temperature	using CONSULT-III.	

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· Harness and connectors

· Harness and connectors

• Intake valve timing control sole-

· Solenoid valve

noid valve

• Ignition switch: ON (Engine

ten to operating sound.Engine: Return to the original

trouble condition

CONSULT-III.

• Turn solenoid valve "ON" and

"OFF" using CONSULT-III and lis-

Change intake valve timing using

stopped)

VENT CONTROL/V

V/T ASSIGN ANGLE

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CHECK ITEM.

sound.

Solenoid valve makes an operating

If trouble symptom disappears, see

^{*:} Leaving cooling fan OFF with CONSULT-III while engine is running may cause the engine to overheat.

ON BOARD DIAGNOSTIC (OBD) SYSTEM

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

DTC & SRT CONFIRMATION MODE

SRT STATUS Mode

For details, refer to EC-559, "Diagnosis Description".

SRT WORK SUPPORT Mode

This mode enables a technician to drive a vehicle to set the SRT while monitoring the SRT status.

DTC WORK SUPPORT Mode

Test mode	Test item	Corresponding DTC No.	Reference page
	EVP SML LEAK P0442/P1442*	P0442	EC-713
	EVF SIVIL LEAR FU442/F1442	P0455	EC-747
EVAPORATIVE SYSTEM	EVP V/S LEAK P0456/P1456*	P0456	EC-753
	PURG VOL CN/V P1444	P0443	EC-719
	PURG FLOW P0441	P0441	EC-708
A/F SEN1	A/F SEN1(B1) P1278/P1279	P0133	EC-646
A/F SENT	A/F SEN1(B1) P1276	P0130	EC-636
	HO2S2(B1) P1146	P0138	EC-657
HO2S2	HO2S2(B1) P1147	P0137	EC-651
	HO2S2(B1) P0139	P0139	EC-664

^{*:} DTC P1442 and P1456 does not apply to S35 models but appears in DTC Work Support Mode screens.

Diagnosis Tool Function

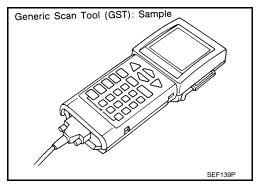
INFOID:0000000002988846

DESCRIPTION

Generic Scan Tool (OBD II scan tool) complying with SAE J1978 has 8 different functions explained below.

ISO 15765-4 is used as the protocol.

The name "GST" or "Generic Scan Tool" is used in this service manual.



FUNCTION

Dia	agnostic Service	Function
Service \$01	READINESS TESTS	This diagnostic service gains access to current emission-related data values, including analog inputs and outputs, digital inputs and outputs, and system status information.
Service \$02	(FREEZE DATA)	This diagnostic service gains access to emission-related data value which were stored by ECM during the freeze frame. For details, refer to EC-559 , "Diagnosis Description".
Service \$03	DTCs	This diagnostic service gains access to emission-related power train trouble codes which were stored by ECM.
Service \$04	CLEAR DIAG INFO	This diagnostic service can clear all emission-related diagnostic information. This includes: • Clear number of diagnostic trouble codes (Service \$01) • Clear diagnostic trouble codes (Service \$03) • Clear trouble code for freeze frame data (Service \$01) • Clear freeze frame data (Service \$02) • Reset status of system monitoring test (Service \$01) • Clear on board monitoring test results (Service \$06 and \$07)
Service \$06	(ON BOARD TESTS)	This diagnostic service accesses the results of on board diagnostic monitoring tests of specific components/systems that are not continuously monitored.

ON BOARD DIAGNOSTIC (OBD) SYSTEM

< FUNCTION DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

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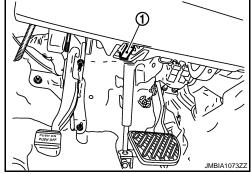
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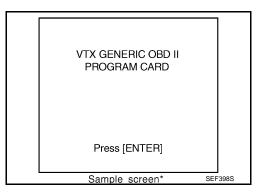
Diagnostic Service		Function
Service \$07	(ON BOARD TESTS)	This diagnostic service enables the off board test drive to obtain test results for emission-related powertrain components/systems that are continuously monitored during normal driving conditions.
Service \$08	_	This diagnostic service can close EVAP system in ignition switch ON position (Engine stopped). When this diagnostic service is performed, EVAP canister vent control valve can be closed. In the following conditions, this diagnostic service cannot function. Low ambient temperature Low battery voltage Engine running Ignition switch OFF Low fuel temperature Too much pressure is applied to EVAP system
Service \$09	(CALIBRATION ID)	This diagnostic service enables the off-board test device to request specific vehicle information such as Vehicle Identification Number (VIN) and Calibration IDs.

INSPECTION PROCEDURE

- 1. Turn ignition switch OFF.
- 2. Connect "GST" to data link connector (1), which is located under LH dash panel.
- 3. Turn ignition switch ON.



- 4. Enter the program according to instruction on the screen or in the operation manual.
 - (*: Regarding GST screens in this section, sample screens are shown.)



5. Perform each diagnostic mode according to each service procedure.

For further information, see the GST Operation Manual of the tool maker.

OBD II FUNCTIONS	
F0: DATA LIST F1: FREEZE DATA F2: DTCS	
F3: SNAPSHOT F4: CLEAR DIAG INFO	
F5: O2 TEST RESULTS F6: READINESS TESTS	
F7: ON BOARD TESTS F8: EXPAND DIAG PROT	
F9: UNIT CONVERSION	
Sample screen*	SEF416S

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

COMPONENT DIAGNOSIS

TROUBLE DIAGNOSIS - SPECIFICATION VALUE

Description INFOID:000000002988847

The specification (SP) value indicates the tolerance of the value that is displayed in "SPEC" of "DATA MONITOR" mode of CONSULT-III during normal operation of the Engine Control System. When the value in "SPEC" of "DATA MONITOR" mode is within the SP value, the Engine Control System is confirmed OK. When the value in "SPEC" of "DATA MONITOR" mode is NOT within the SP value, the Engine Control System may have one or more malfunctions.

The SP value is used to detect malfunctions that may affect the Engine Control System, but will not light the MIL.

The SP value will be displayed for the following three items:

- B/FUEL SCHDL (The fuel injection pulse width programmed into ECM prior to any learned on board correction)
- A/F ALPHA-B1 (The mean value of air-fuel ratio feedback correction factor per cycle)
- MAS A/F SE-B1 (The signal voltage of the mass air flow sensor)

Component Function Check

INFOID:0000000002988848

1.START

Make sure that all of the following conditions are satisfied.

- Vehicle driven distance: More than 5,000 km (3,107 miles)
- Barometric pressure: 98.3 104.3 kPa (1.003 1.064 kg/cm², 14.25 15.12 psi)
- Atmospheric temperature: 20 30°C (68 86°F)
- Engine coolant temperature: 75 95°C (167 203°F)
- Engine speed: Idle
- Transmission: Warmed-up
- After the engine is warmed up to normal operating temperature, drive vehicle until "FLUID TEMP SE" (CVT fluid temperature sensor signal) indicates more than 60°C (140°F).
- Electrical load: Not applied
- Rear window defogger switch, air conditioner switch, lighting switch are OFF. Steering wheel is straight ahead.

>> GO TO 2.

2.PERFORM "SPEC" OF "DATA MONITOR" MODE

(F) With CONSULT-III

NOTE:

Perform "SPEC" in "DATA MONITOR" mode in maximum scale display.

- 1. Perform EC-496, "BASIC INSPECTION: Special Repair Requirement".
- Select "B/FUEL SCHDL", "A/F ALPHA-B1" and "MAS A/F SE-B1" in "SPEC" of "DATA MONITOR" mode with CONSULT-III.
- 3. Make sure that monitor items are within the SP value.

Is the inspection result normal?

YES >> END

NO >> Go to EC-583, "Diagnosis Procedure".

< COMPONENT DIAGNOSIS >

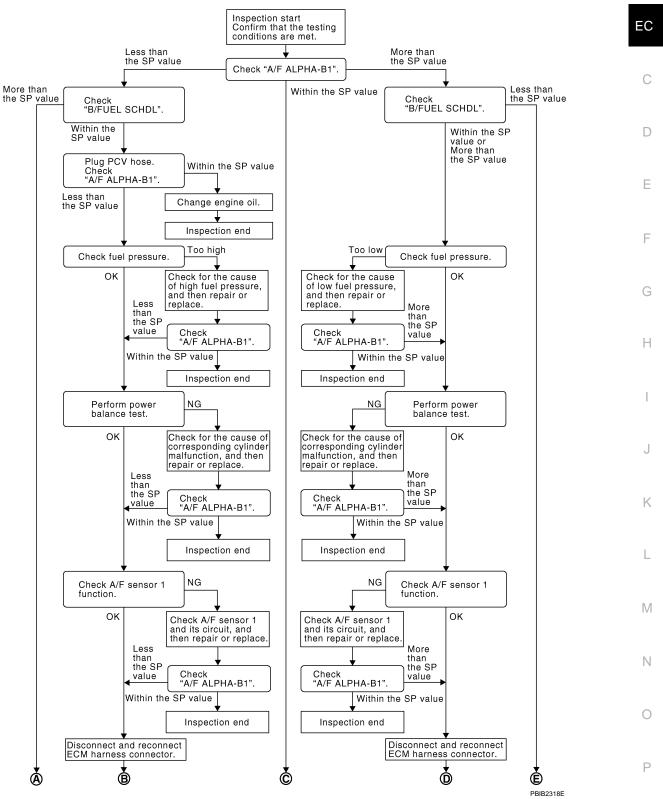
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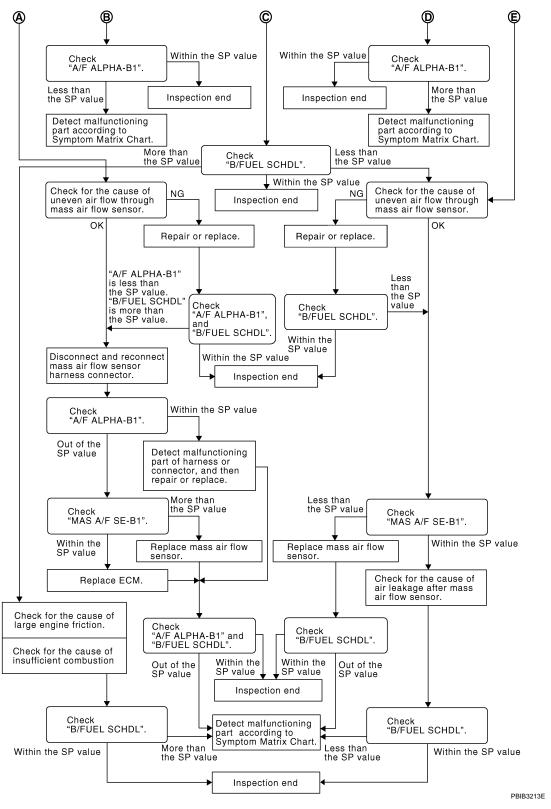
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Diagnosis Procedure

OVERALL SEQUENCE



[FOR USA (FEDERAL) AND CANADA]



DETAILED PROCEDURE

1.CHECK "A/F ALPHA-B1"

(II) With CONSULT-III

- Start engine.
- Confirm that the testing conditions are met. Refer to <u>EC-582, "Component Function Check"</u>.
- 3. Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the each indication is within the SP value.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

NOTE:

Check "A/F ALPHA-B1" for approximately 1 minute because they may fluctuate. It is NG if the indication is out of the SP value even a little.

Is the measurement value within the SP value?

>> GO TO 17. YES

NO-1 >> Less than the SP value: GO TO 2.

NO-2 >> More than the SP value: GO TO 3.

2.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 4.

NO >> More than the SP value: GO TO 19.

3.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 6.

NO-1 >> More than the SP value: GO TO 6.

NO-2 >> Less than the SP value: GO TO 25.

4.CHECK "A/F ALPHA-B1"

- Stop the engine.
- Disconnect PCV hose, and then plug it. 2.
- Start engine. 3.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 5.

NO >> GO TO 6.

5. CHANGE ENGINE OIL

- Stop the engine.
- 2. Change engine oil.

NOTE:

This symptom may occur when a large amount of gasoline is mixed with engine oil because of driving conditions (such as when engine oil temperature does not rise enough since a journey distance is too short during winter). The symptom will not be detected after changing engine oil or changing driving condition.

>> INSPECTION END

$\mathbf{6}.$ CHECK FUEL PRESSURE

Check fuel pressure. (Refer to EC-915, "Inspection".)

Is the inspection result normal?

YES >> GO TO 9.

NO-1 >> Fuel pressure is too high: Replace "fuel filter and fuel pump assembly" and then GO TO 8.

NO-2 >> Fuel pressure is too low: GO TO 7.

.DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging

Is the inspection result normal?

YES >> Replace "fuel filter and fuel pump assembly" and then GO TO 8.

NO >> Repair or replace and then GO TO 8.

 $oldsymbol{8}.$ CHECK "A/F ALPHA-B1"

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> GO TO 9.

9.PERFORM POWER BALANCE TEST

- Perform "POWER BALANCE" in "ACTIVE TEST" mode.
- Make sure that the each cylinder produces a momentary engine speed drop.

Is the inspection result normal?

YES >> GO TO 12.

NO >> GO TO 10.

10. DETECT MALFUNCTIONING PART

Check the following.

- Ignition coil and its circuit (Refer to EC-853, "Component Function Check".)
- Fuel injector and its circuit (Refer to EC-847, "Component Function Check".)
- Intake air leakage
- Low compression pressure (Refer to EM-23, "Inspection".)

Is the inspection result normal?

YES >> Replace fuel injector and then GO TO 11.

NO >> Repair or replace malfunctioning part and then GO TO 11.

11. CHECK "A/F ALPHA-B1"

- Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> GO TO 12.

12.CHECK A/F SENSOR 1 FUNCTION

Perform all DTC CONFIRMATION PROCEDURE related with A/F sensor 1.

- For DTC P0130, refer to <u>EC-636, "DTC Logic"</u>.
 For DTC P0131, refer to <u>EC-640, "DTC Logic"</u>.
- For DTC P0132, refer to <u>EC-643, "DTC Logic"</u>.
- For DTC P0133, refer to EC-646, "DTC Logic".
- For DTC P2A00, refer to <u>EC-831</u>, "DTC Logic".

Is any DTC detected?

YES >> GO TO 15.

>> GO TO 13. NO

13. CHECK A/F SENSOR 1 CIRCUIT

Perform DIAGNOSTIC PROCEDURE according to corresponding DTC.

>> GO TO 14.

14.CHECK "A/F ALPHA-B1"

- 1. Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the each indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

>> GO TO 15. NO

15. DISCONNECT AND RECONNECT ECM HARNESS CONNECTOR

Stop the engine.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

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Disconnect ECM harness connector. Check pin terminal and connector for damage, and then reconnect it. Α >> GO TO 16. 16. CHECK "A/F ALPHA-B1" EC Start engine. Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value. Is the measurement value within the SP value? YES >> INSPECTION END NO >> Detect malfunctioning part according to <a>EC-904, "Symptom Table". D 17 CHECK "B/FUEL SCHDL" Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the Е SP value. Is the measurement value within the SP value? >> INSPECTION END NO-1 >> More than the SP value: GO TO 18. NO-2 >> Less than the SP value: GO TO 25. 18.DETECT MALFUNCTIONING PART Check for the cause of large engine friction. Refer to the following. Engine oil level is too high Engine oil viscosity Н Belt tension of power steering, alternator, A/C compressor, etc. is excessive Noise from engine Noise from transmission, etc. 2. Check for the cause of insufficient combustion. Refer to the following. Valve clearance malfunction Intake valve timing control function malfunction Camshaft sprocket installation malfunction, etc. >> Repair or replace malfunctioning part, and then GO TO 30. 19. CHECK INTAKE SYSTEM K Check for the cause of uneven air flow through mass air flow sensor. Refer to the following. Crushed air ducts Malfunctioning seal of air cleaner element Uneven dirt of air cleaner element Improper specification of intake air system Is the inspection result normal? YES >> GO TO 21. NO >> Repair or replace malfunctioning part, and then GO TO 20. 20.CHECK "A/F ALPHA-B1", AND "B/FUEL SCHDL" N Select "A/F ALPHA-B1" and "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the each indication is within the SP value. Is the measurement value within the SP value?

>> INSPECTION END

NO >> "B/FUEL SCHDL" is more, "A/F ALPHA-B1" is less than the SP value: GO TO 21.

21. DISCONNECT AND RECONNECT MASS AIR FLOW SENSOR HARNESS CONNECTOR

- Stop the engine.
- Disconnect mass air flow sensor harness connector. Check pin terminal and connector for damage and then reconnect it again.

>> GO TO 22.

[FOR USA (FEDERAL) AND CANADA]

< COMPONENT DIAGNOSIS >

22.CHECK "A/F ALPHA-B1"

- 1. Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> Detect malfunctioning part of mass air flow sensor circuit and repair it. Refer to EC-608, "DTC Logic". Then GO TO 29.

NO >> GO TO 23.

23. CHECK "MAS A/F SE-B1"

Select "MAS A/F SE-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 24.

NO >> More than the SP value: Replace mass air flow sensor, and then GO TO 29.

24.REPLACE ECM

Replace ECM.

NOTE:

Use the specified bolts described in parts information certainly when installing the ECM, or violates the Canada law.

Go to EC-499, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> GO TO 29.

25. CHECK INTAKE SYSTEM

Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.

- · Crushed air ducts
- · Malfunctioning seal of air cleaner element
- · Uneven dirt of air cleaner element
- · Improper specification of intake air system

Is the inspection result normal?

YES >> GO TO 27.

NO >> Repair or replace malfunctioning part, and then GO TO 26.

26. CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Less than the SP value: GO TO 27.

27.CHECK "MAS A/F SE-B1"

Select "MAS A/F SE-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 28.

NO >> Less than the SP value: Replace mass air flow sensor, and then GO TO 30.

28. CHECK INTAKE SYSTEM

Check for the cause of air leak after the mass air flow sensor. Refer to the following.

- · Disconnection, looseness, and cracks in air duct
- Looseness of oil filler cap
- Disconnection of oil level gauge
- Open stuck, breakage, hose disconnection, or cracks of PCV valve

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[FOR USA (FEDERAL) AND CANADA]

- Disconnection or cracks of EVAP purge hose, open stuck of EVAP canister purge volume control solenoid valve
- · Malfunctioning seal of rocker cover gasket
- Disconnection, looseness, or cracks of hoses, such as vacuum hose, connecting to intake air system parts
- Malfunctioning seal of intake air system, etc.

>> GO TO 30.

29. CHECK "A/F ALPHA-B1" AND "B/FUEL SCHDL"

Select "A/F ALPHA-B1" and "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Detect malfunctioning part according to EC-904, "Symptom Table".

30. CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and then make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Detect malfunctioning part according to EC-904, "Symptom Table".

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[FOR USA (FEDERAL) AND CANADA]

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000002988850

1.INSPECTION START

Start engine.

Is engine running?

YES >> GO TO 8.

NO >> GO TO 2.

2.CHECK ECM POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch OFF and then ON.
- 2. Check the voltage between ECM harness connector and ground.

EC	ECM		Voltage
Connector Terminal		Ground	
E16	93	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R harness connector E14
- 15A fuse (No. 64)
- · Harness for open or short between ECM and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK GROUND CONNECTION-I

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace ground connection.

${f 5.}$ CHECK ECM GROUND CIRCUIT FOR OPEN AND SHORT-I

- 1. Disconnect ECM harness connectors.
- 2. Check the continuity between ECM harness connector and ground.

ECM		Ground	Continuity
Connector	Terminal	Ground	Continuity
F7	12		
ГΙ	16	- Ground	Existed
	107		
E16	108		
L10	111		
	112		

3. Also check harness for short to power.

Is the inspection result normal?

>> GO TO 6.

YES >> GO TO 7.

NO

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F121, E7
- · Harness for open or short between ECM and ground

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>> Repair open circuit or short to power in harness or connectors.

7. CHECK ECM POWER SUPPLY CIRCUIT-II

- 1. Reconnect ECM harness connectors.
- 2. Turn ignition switch ON.
- 3. Check the voltage between IPDM E/R harness connector and ground.

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IPDN	/I E/R	Ground	Voltage
Connector	Connector Terminal		vollage
E15	47	Ground	Battery voltage

Is the inspection result normal?

YES >> Go to EC-853, "Diagnosis Procedure".

NO >> GO TO 8.

8.CHECK ECM POWER SUPPLY CIRCUIT-III

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Check the voltage between ECM harness connector and ground.

ECM		Ground	Voltage	
Connector	Terminal	Ground	voltage	
E16	105	Ground	After turning ignition switch OFF, battery voltage will exist for a few seconds, then drop approximately 0V.	

Is the inspection result normal?

YES >> GO TO 14.

NO-1 >> Battery voltage does not exist: GO TO 9.

NO-2 >> Battery voltage exists for more than a few seconds: GO TO 11.

9.CHECK ECM POWER SUPPLY CIRCUIT-IV

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Check the voltage between ECM harness connector and ground.

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EC	CM	Ground	Voltage	
Connector	Terminal		voltage	
F7	24	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 11.

10. CHECK ECM POWER SUPPLY CIRCUIT-V

- 1. Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector E15.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E16	105	E15	48	Existed

4. Also check harness for short to ground and short to power.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

11. CHECK ECM POWER SUPPLY CIRCUIT-VI

- Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector E15.
- 3. Check the continuity between ECM harness connector and IPDM E/R harness connector.

ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F7	24	E15	51	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 13.

NO >> GO TO 12.

12. DETECT MALFUNCTIONING PART

Check the following.

- Harness or connectors F121, E7
- Harness for open or short between ECM and IPDM E/R

>> Repair open circuit or short to ground or short power in harness or connectors.

13. CHECK 20A FUSE

- 1. Disconnect 20A fuse (No. 62) from IPDM E/R.
- 2. Check 20A fuse.

Is the inspection result normal?

YES >> GO TO 17.

NO >> Replace 20A fuse.

14. CHECK GROUND CONNECTION-II

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Repair or replace ground connection.

15. CHECK ECM GROUND CIRCUIT FOR OPEN AND SHORT-II

- 1. Disconnect ECM harness connector.
- 2. Check the continuity between ECM harness connector and ground.

ECM		Ground	Continuity
Connector	Connector Terminal		
F7	12		Existed
1 7	16		
	107	Ground	
E16	108		
EIO	111		
	112		

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 17.

[FOR USA (FEDERAL) AND CANADA] < COMPONENT DIAGNOSIS > NO >> GO TO 16.

16. DETECT MALFUNCTIONING PART Α Check the following.

• Harness or connectors F121, E7

· Harness for open or short between ECM and ground

>> Repair open circuit or short to power in harness or connectors.

17. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

>> Repair open circuit or short to power in harness or connectors. NO

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U1000, U1001 CAN COMM CIRCUIT

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

INFOID:0000000002988853

U1000, U1001 CAN COMM CIRCUIT

Description INFOID:000000002988851

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
U1000	CAN communication line	When ECM is not transmitting or receiving CAN communication signal of OBD (emission related diagnosis) for 2 seconds or more.	Harness or connectors (CAN communication line is open or
U1001		When ECM is not transmitting or receiving CAN communication signal other than OBD (emission related diagnosis) for 2 seconds or more.	

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 3 seconds.
- 2. Check DTC.

Is DTC detected?

YES >> EC-594, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

Revision: 2008 January

Go to LAN-14, "Trouble Diagnosis Flow Chart".

EC-594 2008 Rogue

P0011 IVT CONTROL

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P0011 IVT CONTROL

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0011 is displayed with DTC P0075, first perform the trouble diagnosis for EC-776, "DTC Logic".

DTC No.	Trouble diagnosis name	Detecting condition	Possible cause
P0011	Intake valve timing control performance	There is a gap between angle of target and phase-control angle degree.	Crankshaft position sensor (POS) Camshaft position sensor (PHASE) Intake valve control solenoid valve Accumulation of debris to the signal pick-up portion of the camshaft Timing chain installation Foreign matter caught in the oil groove for intake valve timing control

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is between 10V and 16V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE-I

(P)With CONSULT-III

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Maintain the following conditions for at least 6 consecutive seconds. Hold the accelerator pedal as steady as possible.

VHCL SPEED SE	100 - 120 km/h (63 - 75 mph)
ENG SPEED	1,700 - 2,000 rpm
COOLAN TEMP/S	More than 60°C (140°F)
B/FUEL SCHDL	More than 3.5 msec
Shift lever	D position

CAUTION:

Always drive at a safe speed.

- 4. Stop vehicle with engine running and let engine idle for 10 seconds.
- 5. Check 1st trip DTC.

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-596, "Diagnosis Procedure"

NO >> GO TO 3.

3.perform dtc confirmation procedure-ii

(P)With CONSULT-III

Maintain the following conditions for at least 20 consecutive seconds.

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ENG SPEED	1,200 - 3,175 rpm (A constant rotation is maintained.)
COOLAN TEMP/S	More than 70°C (221°F)
Shift lever	1st or 2nd position
Driving location uphill	Driving vehicle uphill (Increased engine load will help maintain the driving conditions required for this test.)

CAUTION:

Always drive at a safe speed.

2. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-596. "Diagnosis Procedure"

NO >> INSPECTION END

Diagnosis Procedure

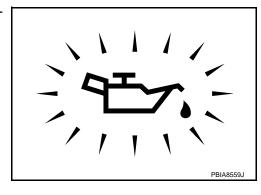
1. CHECK OIL PRESSURE WARNING LAMP

- Start engine.
- 2. Check oil pressure warning lamp and confirm it is not illuminated.

Is oil pressure warning lamp illuminated?

YES >> Go to <u>LU-5</u>, "Inspection".

NO >> GO TO 2.



INFOID:0000000002988855

2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Refer to EC-597. "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace intake valve timing control solenoid valve.

3.CHECK CRANKSHAFT POSITION SENSOR (POS)

Refer to EC-698, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace crankshaft position sensor (POS).

4.CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-701, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace camshaft position sensor (PHASE).

CHECK CAMSHAFT (INTAKE)

Check the following.

P0011 IVT CONTROL

< COMPONENT DIAGNOSIS >

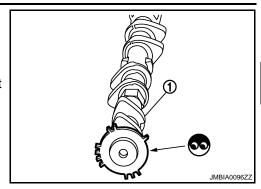
[FOR USA (FEDERAL) AND CANADA]

- Accumulation of debris to the signal plate of camshaft (1) rear end
- · Chipping signal plate of camshaft rear end

Is the inspection result normal?

YES >> GO TO 6.

NO >> Remove debris and clean the signal plate of camshaft rear end or replace camshaft.



6.CHECK TIMING CHAIN INSTALLATION

Check service records for any recent repairs that may cause timing chain misaligned.

Are there any service records that may cause timing chain misaligned?

>> Check timing chain installation. Refer to EM-69, "Removal and Installation".

NO >> GO TO 7.

7.CHECK LUBRICATION CIRCUIT

Refer to EM-52, "Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Clean lubrication line.

8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002988856

1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- Turn ignition switch OFF.
- 2. Disconnect intake valve timing control solenoid valve harness connector.
- Check resistance between intake valve timing control solenoid valve terminals as follows.

Terminals	Resistance
1 and 2	7.0 - 7.5Ω [at 20°C (68°F)]
1 or 2 and ground	${}^{\otimes\Omega}$ (Continuity should not exist)

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace intake valve timing control solenoid valve.

2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

Remove intake valve timing control solenoid valve.

2. Provide 12V DC between intake valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Make sure that the plunger moves as shown in the figure.

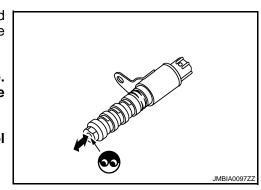
CAUTION:

Do not apply 12V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

Is the inspection result normal?



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EC-597 Revision: 2008 January 2008 Rogue

P0011 IVT CONTROL

[FOR USA (FEDERAL) AND CANADA]

YES >> INSPECTION END

NO >> Replace intake valve timing control solenoid valve.

P0031, P0032 A/F SENSOR 1 HEATER

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P0031, P0032 A/F SENSOR 1 HEATER

Description INFOID:0000000002988857

SYSTEM DESCRIPTION

Sensor	Input Signal to ECM	ECM function	Actuator
Camshaft position sensor (PHASE) Crankshaft position sensor (POS)	Engine speed	Air fuel ratio (A/F) sensor 1	Air fuel ratio (A/F) sensor 1 heater
Mass air flow sensor	Amount of intake air	neater control	neater

The ECM performs ON/OFF duty control of the A/F sensor 1 heater corresponding to the engine operating condition to keep the temperature of A/F sensor 1 element at the specified range.

DTC Logic INFOID:00000000002988858

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0031	Air fuel ratio (A/F) sensor 1 heater control circuit low	The current amperage in the A/F sensor 1 heater circuit is out of the normal range. (An excessively low voltage signal is sent to ECM through the A/F sensor 1 heater.)	Harness or connectors (The A/F sensor 1 heater circuit is open or shorted.) A/F sensor 1 heater	
P0032	Air fuel ratio (A/F) sensor 1 heater control circuit high	The current amperage in the A/F sensor 1 heater circuit is out of the normal range. (An excessively high voltage signal is sent to ECM through the A/F sensor 1 heater.)	Harness or connectors (The A/F sensor 1 heater circuit is shorted.) A/F sensor 1 heater	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than between 11V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for at least 10 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-599, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect air fuel ratio (A/F) sensor 1 harness connector.
- Turn ignition switch ON.

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P0031, P0032 A/F SENSOR 1 HEATER

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[FOR USA (FEDERAL) AND CANADA]

3. Check the voltage between A/F sensor 1 harness connector and ground.

A/F se	A/F sensor 1		Voltage	
Connector Terminal		Ground	voltage	
F27	4	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F123, E6
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

4. CHECK A/F SENSOR 1 HEATER OUTPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sensor 1		E	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F27	3	F7	4	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK A/F SENSOR 1 HEATER

Refer to EC-601, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

$\mathsf{6}.\mathsf{REPLACE}$ AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

7.CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

>> INSPECTION END

P0031, P0032 A/F SENSOR 1 HEATER

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Component Inspection

INFOID:0000000002988860

1.CHECK AIR FUEL RATIO (A/F) SENSOR 1

- Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.
- Check resistance between A/F sensor 1 terminals as follows.

Terminals	Resistance
3 and 4	1.98 - 2.66 Ω [at 25°C (77°F)]
3 and 1, 2	Ω^{∞}
4 and 1, 2	(Continuity should not exist)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Heated Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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[FOR USA (FEDERAL) AND CANADA]

P0037, P0038 HO2S2 HEATER

Description INFOID:000000002988861

SYSTEM DESCRIPTION

Sensor	Input signal to ECM	ECM function	Actuator
Camshaft position sensor (PHASE) Crankshaft position sensor (POS)	Engine speed	Heated oxygen sensor 2	
Engine coolant temperature sensor	Engine coolant temperature	heater control	Heated oxygen sensor 2 heater
Mass air flow sensor	Amount of intake air		

The ECM performs ON/OFF control of the heated oxygen sensor 2 heater corresponding to the engine speed, amount of intake air and engine coolant temperature.

OPERATION

Engine speed rpm	Heated oxygen sensor 2 heater
Above 3,600	OFF
 Below 3,600 rpm after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	ON

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0037	P0037 Heated oxygen sensor 2 heater control circuit low The current amperage in the heated oxygen sensor 2 heater circuit is out of the normal range. (An excessively low voltage signal is sent to ECM through the heated oxygen sensor 2 heater.)		 Harness or connectors (The heated oxygen sensor 2 heater circuit is open or shorted.) Heated oxygen sensor 2 heater
P0038 sensor 2 heater		The current amperage in the heated oxygen sensor 2 heater circuit is out of the normal range. (An excessively high voltage signal is sent to ECM through the heated oxygen sensor 2 heater.)	 Harness or connectors (The heated oxygen sensor 2 heater circuit is shorted.) Heated oxygen sensor 2 heater

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check 1st trip DTC.

Is 1st tip DTC detected?

YES >> Go to EC-603, "Diagnosis Procedure".

NO >> INSPECTION END

P0037, P0038 HO2S2 HEATER

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Diagnosis	Procedure
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CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK HO2S2 POWER SUPPLY CIRCUIT

- Disconnect heated oxygen sensor 2 harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between HO2S2 harness connector and ground.

НО	2S2	Ground	Voltage
Connector Terminal		Oround	voltage
F31	2	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F123, E6
- IPDM E/R connector E14
- 15A fuse (No. 63)
- Harness for open or short between heated oxygen sensor 2 and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

f 4.CHECK HO2S2 OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector. 2.
- Check the continuity between HO2S2 harness connector and ECM harness connector.

НС)2S2	ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
F31	3	F7	13	Existed	

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK HEATED OXYGEN SENSOR 2 HEATER

Refer to EC-604, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 6.

Revision: 2008 January

6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

 Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

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2008 Rogue

P0037, P0038 HO2S2 HEATER

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

• Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

7.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002988864

1. CHECK HEATED OXYGEN SENSOR 2 HEATER

- 1. Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 harness connector.
- 3. Check resistance between HO2S2 terminals as follows.

Terminals	Resistance
2 and 3	3.3 - 4.4 Ω [at 25°C (77°F)]
1 and 2, 3, 4	Ω^{∞}
4 and 1, 2, 3	(Continuity should not exist)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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INFOID:000000000298887

INFOID:0000000002988870

P0075 IVT CONTROL SOLENOID VALVE

Description INFOID:0000000002988869

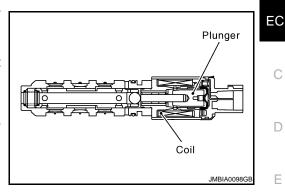
Intake valve timing control solenoid valve is activated by ON/OFF pulse duty (ratio) signals from the ECM.

The intake valve timing control solenoid valve changes the oil amount and direction of flow through intake valve timing control unit or stops oil flow.

The longer pulse width advances valve angle.

The shorter pulse width retards valve angle.

When ON and OFF pulse widths become equal, the solenoid valve stops oil pressure flow to fix the intake valve angle at the control position.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0075	Intake valve timing control solenoid valve circuit	An improper voltage is sent to the ECM through intake valve timing control solenoid valve.	 Harness or connectors (Intake valve timing control solenoid valve circuit is open or shorted.) Intake valve timing control solenoid valve

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 5 seconds.
- Check 1st trip DTC. 2.

Is 1st trip DTC detected?

>> Go to EC-605, "Diagnosis Procedure". YES

NO >> INSPECTION END

Diagnosis Procedure

1.check intake valve timing control solenoid valve power supply circuit

Turn ignition switch OFF.

- 2. Disconnect intake valve timing control solenoid valve harness connector.
- Turn ignition switch ON.
- Check the voltage between intake valve timing control solenoid valve harness connector and ground.

	timing control id valve	Ground	Voltage	
Connector	Terminal			
F45	2	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

P0075 IVT CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

2.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between intake valve timing control solenoid valve and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3.check intake valve timing control solenoid valve output signal circuit for open and short

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between intake valve timing control solenoid valve harness connector and ECM harness connector.

Intake valve timing control solenoid valve		ECM		Continuity
Connector	Terminal	Connector Terminal		
F45	1	F8	78	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

f 4.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Refer to EC-606, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace intake valve timing control solenoid valve.

${f 5.}$ CHECK INTERMITTENT INCIDENT

Refer to GI-41. "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002988872

1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- 1. Turn ignition switch OFF.
- 2. Disconnect intake valve timing control solenoid valve harness connector.
- 3. Check resistance between intake valve timing control solenoid valve terminals as follows.

Terminals	Resistance	
1 and 2	7.0 - 7.5Ω [at 20°C (68°F)]	
1 or 2 and ground	${}^{\infty}\!\Omega$ (Continuity should not exist)	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace intake valve timing control solenoid valve.

2. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

1. Remove intake valve timing control solenoid valve.

P0075 IVT CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

2. Provide 12V DC between intake valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Make sure that the plunger moves as shown in the figure.

CAUTION:

Do not apply 12V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace intake valve timing control solenoid valve.



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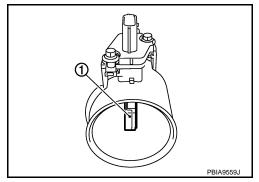
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Description INFOID.000000002988873

The mass air flow sensor (1) is placed in the stream of intake air. It measures the intake flow rate by measuring a part of the entire intake flow. The mass air flow sensor controls the temperature of the hot wire to a certain amount. The heat generated by the hot wire is reduced as the intake air flows around it. The more air, the greater the heat loss.

Therefore, the electric current supplied to hot wire is changed to maintain the temperature of the hot wire as air flow increases. The ECM detects the air flow by means of this current change.



DTC Logic

INFOID:00000000002988874

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
		A)	A high voltage from the sensor is sent to ECM under light load driving condition.	Harness or connectors (The sensor circuit is open or shorted.) Mass air flow sensor EVAP control system pressure sensor
P0101	Mass air flow sensor circuit range/performance	В)	A low voltage from the sensor is sent to ECM under heavy load driving condition.	Harness or connectors (The sensor circuit is open or shorted.) Intake air leaks Mass air flow sensor EVAP control system pressure sensor Intake air temperature sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

If engine will not start or stops soon, wait at least 10 seconds with engine stopped (Ignition switch ON) instead of running engine at idle speed.

>> GO TO 2.

2.perform dtc confirmation procedure for malfunction a

- 1. Start engine and warm it up to normal operating temperature.
- 2. Run engine for at least 10 seconds at idle speed.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-610, "Diagnosis Procedure".

NO-1 >> With CONSULT-III: GO TO 3. NO-2 >> Without CONSULT-III: GO TO 5.

3.CHECK MASS AIR FLOW SENSOR FUNCTION

- 1. Turn ignition switch ON.
- Start engine and warm it up to normal operating temperature.
 If engine cannot be started, go to <u>EC-610</u>, "<u>Diagnosis Procedure</u>".

< COMPONENT DIAGNOSIS >

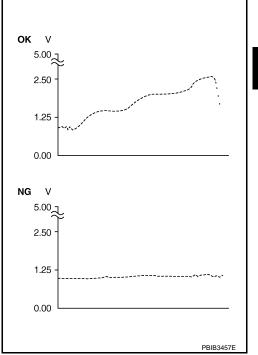
[FOR USA (FEDERAL) AND CANADA]

- 3. Select "DATA MONITOR" mode with CONSULT-III.
- 4. Check the voltage of "MAS A/F SE-B1" with "DATA MONITOR".
- 5. Increases engine speed to about 4,000 rpm.
- Monitor the linear voltage rise in response to engine speed increases.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Go to EC-610, "Diagnosis Procedure".



4. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B

1. Maintain the following conditions for at least 10 consecutive seconds.

ENG SPEED	More than 2,000 rpm
THRTL SEN 1-B1	More than 3V
THRTL SEN 2-B1	More than 3V
Shift lever	Suitable position
Driving location	Driving vehicle uphill (Increased engine load) will help maintain the driving conditions required for this test.

CAUTION:

Always drive vehicle at a safe speed.

2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-610, "Diagnosis Procedure".

NO >> INSPECTION END

${f 5}$ Perform component function check for malfunction ${f B}$

Perform component function check. Refer to EC-609, "Component Function Check".

NOTE:

Use component function check to check the overall function of the mass air flow sensor circuit. During this check, a DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-610, "Diagnosis Procedure".

Component Function Check

1.PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

With GST

- 1. Start engine and warm it up to normal operating temperature.
- Select Service \$01 with GST.

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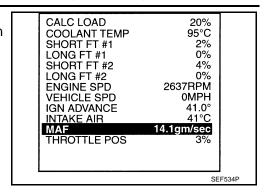
[FOR USA (FEDERAL) AND CANADA]

- 3. Check the mass air flow sensor signal with Service \$01.
- 4. Check for linear mass air flow sensor signal value rise in response to increases to about 4,000 rpm in engine speed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-610, "Diagnosis Procedure".



Diagnosis Procedure

INFOID:0000000002988876

1.INSPECTION START

Confirm the detected malfunction (A or B). Refer to EC-608, "DTC Logic".

Which malfunction is detected?

A >> GO TO 3.

B >> GO TO 2.

2. CHECK INTAKE SYSTEM

Check the following for connection.

- Air duct
- Vacuum hoses
- · Intake air passage between air duct and intake manifold

Is the inspection result normal?

YES >> GO TO 3.

NO >> Reconnect the parts.

3. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace ground connection.

4. CHECK MAF SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect mass air flow (MAF) sensor harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between MAF sensor harness connector and ground.

MAF	sensor	Ground	Voltage	
Connector Terminal		Oround	voltage	
E18	5	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness for open or short between mass air flow sensor and ECM
- Harness for open or short between mass air flow sensor and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK MAF SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch OFF.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- Disconnect ECM harness connector.
- Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		
E18	4	F7	56	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 7.

7.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- Harness for open or short between mass air flow sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

8.CHECK MAF SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E18	3	F8	58	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 9.

9. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- Harness for open or short between mass air flow sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

10.CHECK INTAKE AIR TEMPERATURE SENSOR

Refer to EC-622, "Component Inspection".

Is the inspection result normal?

>> GO TO 11. YES

NO >> Replace mass air flow sensor (with intake air temperature sensor).

11. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-736, "Component Inspection".

Is the inspection result normal?

YES

>> Replace EVAP control system pressure sensor. NO

12. CHECK MASS AIR FLOW SENSOR

Refer to EC-612, "Component Inspection".

Is the inspection result normal?

>> GO TO 13. YES

NO >> Replace mass air flow sensor.

13. CHECK INTERMITTENT INCIDENT

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Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002988877

1.CHECK MASS AIR FLOW SENSOR-I

(I) With CONSULT-III

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT-III and select "DATA MONITOR" mode.
- Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
MAS A/F SE-B1	Ignition switch ON (Engine stopped.)	Approx. 0.4V
	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Without CONSULT-III

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- Start engine and warm it up to normal operating temperature.
- Check the voltage between ECM harness connector terminals under the following conditions.

ECM				
Connector	+	_	Condition	Voltage
Connector	Terminal	Terminal		
58 F8 (MAF sensor signal)	,	Ignition switch ON (Engine stopped.)	Approx. 0.4V	
		Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V	
		2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V	
		Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*	

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

2.CHECK FOR THE CAUSE OF UNEVEN AIR FLOW THROUGH MASS AIR FLOW SENSOR

- Turn ignition switch OFF.
- Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.
- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system parts

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.CHECK MASS AIR FLOW SENSOR-II

With CONSULT-III

- Repair or replace malfunctioning part.
- Start engine and warm it up to normal operating temperature.

P0101 MAF SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

3. Connect CONSULT-III and select "DATA MONITOR" mode.

4. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
MAS A/F SE-BI	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

- Repair or replace malfunctioning part.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Check the voltage between ECM harness connector terminals under the following conditions.

ECM				
Connector	+	l	Condition	Voltage
Terminal	Terminal	Terminal		
F8	58 56 (MAF sensor signal) gound)		Ignition switch ON (Engine stopped.)	Approx. 0.4V
		56	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
		2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V	
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4.CHECK MASS AIR FLOW SENSOR-III

(I) With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT-III and select "DATA MONITOR" mode.
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
WAS AVE SE-BI	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Without CONSULT-III

- Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- Check the voltage between ECM harness connector terminals under the following conditions.

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[FOR USA (FEDERAL) AND CANADA]

ECM				
Connector -	+	_	Condition	Voltage
	Terminal	Terminal		
			Ignition switch ON (Engine stopped.)	Approx. 0.4V
	58	56	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
F8	(MAF sensor signal)	2,000 ipin (Engine is waithed up to normal operating temper	1.4 - 1.8V	
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

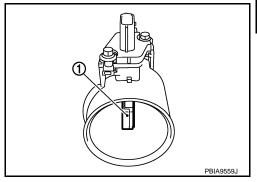
YES >> INSPECTION END

NO >> Clean or replace mass air flow sensor.

Description

The mass air flow sensor (1) is placed in the stream of intake air. It measures the intake flow rate by measuring a part of the entire intake flow. The mass air flow sensor controls the temperature of the hot wire to a certain amount. The heat generated by the hot wire is reduced as the intake air flows around it. The more air, the greater the heat loss.

Therefore, the electric current supplied to hot wire is changed to maintain the temperature of the hot wire as air flow increases. The ECM detects the air flow by means of this current change.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0102	Mass air flow sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.) Intake air leaks Mass air flow sensor
P0103	Mass air flow sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.) Mass air flow sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

Which DTC is detected?

P0102 >> GO TO 2.

P0103 >> GO TO 3.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0102

- 1. Start engine and wait at least 5 seconds.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-616, "Diagnosis Procedure".

NO >> INSPECTION END

3.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0103-I

- 1. Turn ignition switch ON and wait at least 5 seconds.
- Check DTC.

Is DTC detected?

YES >> Go to EC-616, "Diagnosis Procedure".

NO >> GO TO 4.

f 4.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0103-II

- 1. Start engine and wait at least 5 seconds.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-616, "Diagnosis Procedure".

NO >> INSPECTION END

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Diagnosis Procedure

INFOID:0000000002988880

1. INSPECTION START

Confirm the detected DTC.

Which DTC is detected?

P0102 >> GO TO 2.

P0103 >> GO TO 3.

2. CHECK INTAKE SYSTEM

Check the following for connection.

- Air duct
- Vacuum hoses
- Intake air passage between air duct to intake manifold

Is the inspection result normal?

YES >> GO TO 3.

NO >> Reconnect the parts.

3.check ground connection

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace ground connection.

4. CHECK MAF SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect mass air flow (MAF) sensor harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between MAF sensor harness connector and ground.

MAF	sensor	Ground	Voltage	
Connector	Terminal	Oround		
E18	5	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

DETECT MALFUNCTIONING PART

Check the following.

- Harness for open or short between mass air flow sensor and ECM
- Harness for open or short between mass air flow sensor and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK MAF SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF	sensor	E	Continuity	
Connector	Terminal	Connector Terminal		Continuity
E18	4	F8	56	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

NO >> GO TO 7.

7.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6. F123
- Harness for open or short between mass air flow sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

8.CHECK MAF SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF	sensor	E	Continuity	
Connector	Terminal	Connector Terminal		Continuity
E18	3	F8	58	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 9.

9. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6. F123
- Harness for open or short between mass air flow sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

10. CHECK MASS AIR FLOW SENSOR

Refer to EC-617, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace mass air flow sensor.

11. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK MASS AIR FLOW SENSOR-I

(P)With CONSULT-III

- Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- Connect CONSULT-III and select "DATA MONITOR" mode.
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
MAS AVF SE-BT	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Without CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the voltage between ECM harness connector terminals under the following conditions.

ECM				
Connector	+	_	Condition	Voltage
	Terminal	Terminal		
		2,000 ipin (Engine is waimed up to normal operating temper	Ignition switch ON (Engine stopped.)	Approx. 0.4V
	58		0.8 - 1.2V	
F8	(MAF sensor signal)		1.4 - 1.8V	
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 2.

2.CHECK FOR THE CAUSE OF UNEVEN AIR FLOW THROUGH MASS AIR FLOW SENSOR

- 1. Turn ignition switch OFF.
- Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.
- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system parts

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.CHECK MASS AIR FLOW SENSOR-II

(P)With CONSULT-III

- 1. Repair or replace malfunctioning part.
- Start engine and warm it up to normal operating temperature.
- 3. Connect CONSULT-III and select "DATA MONITOR" mode.
- 4. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
INIAS AVE SE-BT	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Without CONSULT-III

- Repair or replace malfunctioning part.
- 2. Start engine and warm it up to normal operating temperature.
- Check the voltage between ECM harness connector terminals under the following conditions.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

ECM				
Connector	+	_	Condition	Voltage
	Terminal	Terminal		
F8			Ignition switch ON (Engine stopped.)	Approx. 0.4V
	58	58 56 Idle (Engine is w	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
	signal) gound) ature.)	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V	
				Idle to about 4,000 rpm

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4.CHECK MASS AIR FLOW SENSOR-III

(P)With CONSULT-III

- Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- Connect CONSULT-III and select "DATA MONITOR" mode.
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
WAS AN SE-BI	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
•	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Without CONSULT-III

- Turn ignition switch OFF.
- Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- Check the voltage between ECM harness connector terminals under the following conditions.

	ECM			
Connector + -		_	Condition	Voltage
Connector	Terminal	Terminal		
			Ignition switch ON (Engine stopped.)	Approx. 0.4V
	58	56	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
F8 (MAF sensor signal)		(Sensor gound)	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Clean or replace mass air flow sensor.

EC-619 Revision: 2008 January 2008 Rogue

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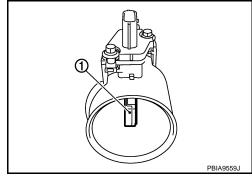
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P0112, P0113 IAT SENSOR

Description INFOID:0000000002988882

The intake air temperature sensor is built-into mass air flow sensor (1). The sensor detects intake air temperature and transmits a signal to the ECM.

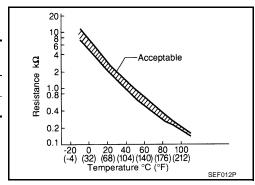
The temperature sensing unit uses a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.



<Reference data>

Intake air temperature °C (°F)	Voltage* V	Resistance kΩ
25 (77)	3.3	1.800 - 2.200
80 (176)	1.2	0.283 - 0.359

^{*:} These data are reference values and are measured between ECM terminals 50 (Intake air temperature sensor) and 58 (Sensor ground).



DTC Logic

INFOID:0000000002988883

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0112	Intake air temperature sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0113	Intake air temperature sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	Intake air temperature sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 5 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-620, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID-00000000002988884

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

P0112, P0113 IAT SENSOR

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YES >> G	O TO 2.				
		ace ground co			_
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			rith intake air te	emperature sensor) harness connector.	
	on switch Of		ir flow sensor l	narness connector and ground.	
. Oneok trie	voltage bett	veen mass a	ii iiow serisor i	iamess connector and ground.	
MAF s	ensor			_	
Connector	Terminal	Ground	Voltage		
E18	2	Ground	Approx. 5V	_	
the inspecti	on result nor	mal?		_	
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VO >> G	O TO 3.				
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heck the follo					
Harness cor	nectors E6,				
Harness for	open or shor	t between ma	ass air flow se	nsor and ECM	
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Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0112, P0113 IAT SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Component Inspection

INFOID:0000000002988885

1.CHECK INTAKE AIR TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector.
- 3. Check resistance between mass air flow sensor terminals as follows.

Terminals	Condition	Resistance $k\Omega$	
1 and 2	Intake air temperature °C (°F)	25 (77)	1.800 - 2.200

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mass air flow sensor (with intake air temperature sensor).

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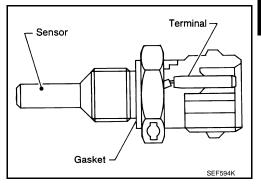
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P0117, P0118 ECT SENSOR

Description

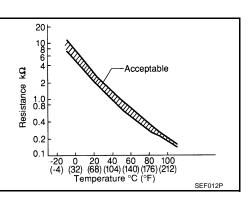
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



<Reference data>

Engine coolant temperature °C (°F)	Voltage* V	Resistance kΩ
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.37 - 2.63
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260

^{*:} These data are reference values and are measured between ECM terminals 46 (Engine coolant temperature sensor) and 52 (Sensor ground).



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble Diagnosis Name	DTC Detecting Condition	Possible Cause
P0117	Engine coolant temperature sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0118	Engine coolant temperature sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

EC-623

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-623, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

1. Turn ignition switch OFF.

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P0117, P0118 ECT SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK ECT SENSOR POWER SUPPLY CIRCUIT

- Disconnect engine coolant temperature (ECT) sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between ECT sensor harness connector and ground.

ECT s	sensor	Ground	Voltage
Connector	Terminal	Oround	voltage
F80	1	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3.check ect sensor ground circuit for open and short

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between ECT sensor harness connector and ECM harness connector.

ECT	sensor	E	CM	Continuity
Connector	Terminal	Connector Terminal		Continuity
F80	2	F8	52	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-624, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace engine coolant temperature sensor.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002988889

1. CHECK ENGINE COOLANT TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect engine coolant temperature sensor harness connector.
- Remove engine coolant temperature sensor.

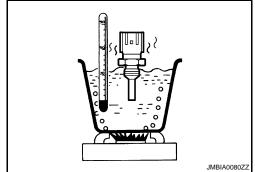
P0117, P0118 ECT SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

4. Check resistance between engine coolant temperature sensor terminals by heating with hot water as shown in the figure.

Terminals	Condition			Resistance	
			20 (68)	2.37 - 2.63	kΩ
1 and 2	Temperature	°C (°F)	50 (122)	0.68 - 1.00	kΩ
			90 (194)	0.236 - 0.260	kΩ



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor.

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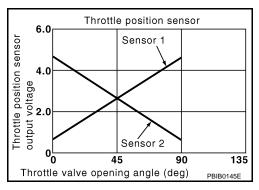
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P0122, P0123 TP SENSOR

Description

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0122 or P0123 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-776, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0122	Throttle position sensor 2 circuit low input	An excessively low voltage from the TP sensor 2 is sent to ECM.	Harness or connectors (TP sensor 2 circuit is open or shorted.)
P0123	Throttle position sensor 2 circuit high input	An excessively high voltage from the TP sensor 2 is sent to ECM.	Electric throttle control actuator (TP sensor 2)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-626, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002988892

INFOID:0000000002988891

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY CIRCUIT

- Disconnect electric throttle control actuator harness connector.
- Turn ignition switch ON.

P0122, P0123 TP SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

3. Check the voltage between electric throttle control actuator harness connector and ground.

Electric throttle control actuator		Ground	Voltage
Connector	Terminal	Giodila	voltage
F29	1	Ground	Approx. 5V

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Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

 $\overline{3}$.check throttle position sensor 2 ground circuit for open and short

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle	control actuator	ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F29	4	F8	36	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4.CHECK THROTTLE POSITION SENSOR 2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle	control actuator	ECM Connector Terminal		Continuity
Connector	Terminal			Continuity
F29	3	F8	38	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK THROTTLE POSITION SENSOR

Refer to EC-628, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- Go to <u>EC-628</u>, "Special Repair Requirement".

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0122, P0123 TP SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Component Inspection

INFOID:0000000002988893

1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set shift lever to D position.
- 6. Check the voltage between ECM harness connector terminals.

	ECM						
+ -		Condition		Voltage			
Connector	Terminal	Connector	Terminal				
	37		Fully released	More than 0.36V			
F8	(TP sensor 1 signal)	F8	36 (Sensor ground)	Accelerator pedal	Fully depressed	Less than 4.75V	
10	38	10		'	Fully released	Less than 4.75V	
	(TP sensor 2 signal)				Fully depressed	More than 0.36V	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.replace electric throttle control actuator

- Replace electric throttle control actuator.
- 2. Go to EC-628, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002988894

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2. PERFORM IDLE AIR VOLUME LEARNING

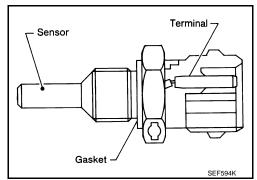
Refer to EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

P0125 ECT SENSOR

Description INFOID:0000000002988895

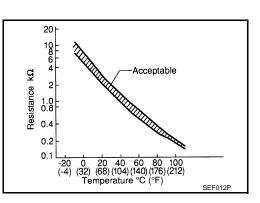
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



<Reference data>

Engine coolant temperature °C (°F)	Voltage* V	Resistance kΩ
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.37 - 2.63
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260

^{*:} These data are reference values and are measured between ECM terminals 46 (Engine coolant temperature sensor) and 52 (Sensor ground).



DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0125 is displayed with P0117 or P0118, first perform the trouble diagnosis for DTC P0117 or P0118. Refer to EC-623, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0125	Insufficient engine coolant temperature for closed loop fuel control	 Voltage sent to ECM from the sensor is not practical, even when some time has passed after starting the engine. Engine coolant temperature is insufficient for closed loop fuel control. 	Harness or connectors (High resistance in the circuit) Engine coolant temperature sensor Thermostat

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.CHECK ENGINE COOLANT TEMPERATURE SENSOR FUNCTION

(P)With CONSULT-III

- Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-III.
- Check that "COOLAN TEMP/S" is above 10°C (50°F).

With GST

Follow the procedure "With CONSULT-III" above.

Is it above 10°C (50°F)?

EC-629 Revision: 2008 January 2008 Rogue

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P0125 ECT SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

YES >> INSPECTION END

NO >> GO TO 3.

3. PERFORM DTC CONFIRMATION PROCEDURE

(P) With CONSULT-III

- 1. Start engine and run it for 65 minutes at idle speed.
- Check 1st tip DTC.

If "COOLAN TEMP/S" increases to more than 10°C (50°F) within 65 minutes, stop engine because the test result will be OK.

CAUTION:

Be careful not to overheat engine.

With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> EC-630, "Diagnosis Procedure"

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002988897

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-630, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace engine coolant temperature sensor.

3. CHECK THERMOSTAT OPERATION

When the engine is cold [lower than 70°C (158°F)] condition, grasp lower radiator hose and confirm the engine coolant does not flow.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace thermostat. Refer to CO-25, "Removal and Installation".

4. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002988898

1. CHECK ENGINE COOLANT TEMPERATURE SENSOR

- Turn ignition switch OFF.
- Disconnect engine coolant temperature sensor harness connector.
- Remove engine coolant temperature sensor.

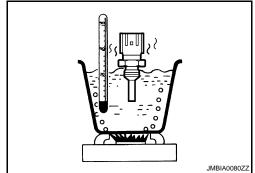
P0125 ECT SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

4. Check resistance between engine coolant temperature sensor terminals by heating with hot water as shown in the figure.

Terminals	Condition			Resistance	
		20 (68)	2.37 - 2.63	kΩ	
1 and 2	Temperature	°C (°F)	50 (122)	0.68 - 1.00	kΩ
			90 (194)	0.236 - 0.260	kΩ



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor.

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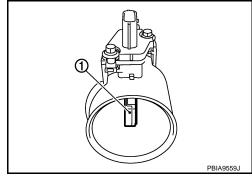
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P0127 IAT SENSOR

Description

The intake air temperature sensor is built-into mass air flow sensor (1). The sensor detects intake air temperature and transmits a signal to the ECM.

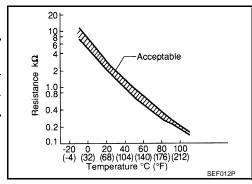
The temperature sensing unit uses a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.



<Reference data>

Intake air temperature °C (°F)	Voltage* V	Resistance kΩ
25 (77)	3.3	1.800 - 2.200
80 (176)	1.2	0.283 - 0.359

^{*:} These data are reference values and are measured between ECM terminals 50 (Intake air temperature sensor) and 58 (Sensor ground).



INFOID:0000000002988900

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0127	Intake air temperature too high	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signal from engine coolant temperature sensor.	Harness or connectors (The sensor circuit is open or shorted) Intake air temperature sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

This test may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Wait until engine coolant temperature is less than 90°C (194°F)
- Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-III.
- Check the engine coolant temperature.
- If the engine coolant temperature is not less than 90°C (194°F), turn ignition switch OFF and cool down engine.

NOTE:

Perform the following steps before engine coolant temperature is above 90°C (194°F).

P0127 IAT SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

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< COMPONENT DIAGNOSIS >	[FOR USA (FEDERAL) AND CANADA]
 Start engine. Hold vehicle speed at more than 70 km/h (43 MPH) CAUTION: 	for 100 consecutive seconds.
Always drive vehicle at a safe speed. 4. Check 1st trip DTC. With GST Follow the procedure "With CONSULT-III" above.	EC
Is 1st trip DTC detected? YES >> Go to EC-633, "Diagnosis Procedure". NO >> INSPECTION END	C
Diagnosis Procedure	INFOID:0000000002988901
1. CHECK GROUND CONNECTION	
1. Turn ignition switch OFF.	E
 Check ground connection E21. Refer to Ground Ins Is the inspection result normal? YES >> GO TO 2. NO >> Repair or replace ground connection. 	pection in GI-44, "Circuit Inspection".
2.CHECK INTAKE AIR TEMPERATURE SENSOR	
Refer to EC-633. "Component Inspection". Is the inspection result normal? YES >> GO TO 3. NO >> Replace mass air flow sensor (with intake a 3.CHECK INTERMITTENT INCIDENT	ir temperature sensor).
Refer to GI-41, "Intermittent Incident".	
>> INSPECTION END Component Inspection	J INFOID:0000000002988902
1. CHECK INTAKE AIR TEMPERATURE SENSOR	K
 Turn ignition switch OFF. Disconnect mass air flow sensor harness connector Check resistance between mass air flow sensor terr 	
Terminals Condition Resistar	
1 and 2 Intake air temperature °C (°F) 25 (77) 1.800 -	2.200 M
Is the inspection result normal? YES >> INSPECTION END NO >> Replace mass air flow sensor (with intake a	ir temperature sensor).
	0

Revision: 2008 January EC-633 2008 Rogue

INFOID:0000000002988904

P0128 THERMOSTAT FUNCTION

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0128 is displayed with DTC PP0300, P0301, P0302, P0303 or P0304, first perform the trouble diagnosis for DTC P0300, P0301, P0302, P0303, P0304. Refer to <u>EC-687</u>, "DTC Logic".

Engine coolant temperature has not risen enough to open the thermostat even though the engine has run long enough.

This is due to a leak in the seal or the thermostat stuck open.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0128	Thermostat function	The engine coolant temperature does not reach to specified temperature even though the engine has run long enough.	ThermostatLeakage from sealing portion of thermostatEngine coolant temperature sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

- For best results, perform at ambient temperature of -10°C (14°F) or higher.
- For best results, perform at engine coolant temperature of -10°C (14°F) to 52°C (160°F).
- Before performing the following procedure, do not fill with the fuel.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Turn A/C switch OFF.
- Turn blower fan switch OFF.
- 3. Turn ignition switch ON.
- 4. Select "COOLAN TEMP/S" in "DATA MONITOR" mode with CONSULT-III.
- 5. Check the indication of "COOLAN TEMP/S"
 - If it is below 52°C (126°F), go to following step.
 - If it is above 52°C (126°F), cool down the engine to less than 52°C (126°F). Then go to next steps.
- 6. Start engine and let it idle for at least 30 minutes.

If "COOLAN TEMP/S" increases to more than 71°C (160°F) within 30 minutes, turn ignition switch OFF because the test result will be OK.

7. Check 1st trip DTC.

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-634, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-635, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace engine coolant temperature sensor.

2.CHECK THERMOSTAT

Refer to CO-25, "Removal and Installation".

P0128 THERMOSTAT FUNCTION

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace thermostat.

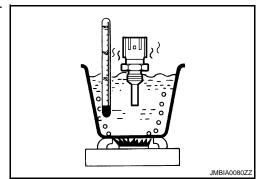
Component Inspection

INFOID:0000000002988905

1.CHECK ENGINE COOLANT TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect engine coolant temperature sensor harness connector.
- 3. Remove engine coolant temperature sensor.
- 4. Check resistance between engine coolant temperature sensor terminals by heating with hot water as shown in the figure.

Terminals	Condition			Resistance	
	Temperature °C (°F)	20 (68)	2.37 - 2.63	kΩ	
1 and 2		Temperature °C (°F)	50 (122)	0.68 - 1.00	kΩ
		90 (194)	0.236 - 0.260	kΩ	



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor.

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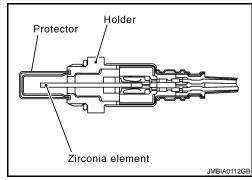
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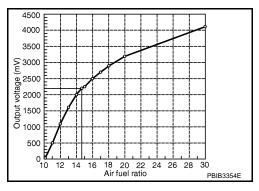
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800°C (1,472°F).





DTC Logic

DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal fluctuates according to fuel feedback control.

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible Cause
P0130	P0130 Air fuel ratio (A/F) sensor 1	A)	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly in the range other than approx. 2.2V.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.)
circuit	Circuit	B)	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 2.2V.	A/F sensor 1

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

- 1. Start engine and warm it up to normal operating temperature.
- Let it idle for 2 minutes.
- 3. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-638, "Diagnosis Procedure".

NO-1 >> With CONSULT-III: GO TO 3.

NO-2 >> Without CONSULT-III: GO TO 7.

[FOR USA (FEDERAL) AND CANADA]

< COMPONENT DIAGNOSIS > 3.CHECK AIR FUEL RATIO (A/F) SENSOR 1 FUNCTION Α Select "A/F SEN1 (B1)" in "DATA MONITOR" mode with CONSULT-III. Check "A/F SEN1 (B1)" indication. Does the indication fluctuates around 2.2 V? EC YES >> GO TO 4. NO >> Go to EC-638, "Diagnosis Procedure". f 4 .PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-I Select "A/F SEN1 (B1) P1276" of "A/F SEN1" in "DTC WORK SUPPORT" mode with CONSULT-III. Touch "START". 2. When the following conditions are met, "TESTING" will be displayed on the CONSULT-III screen. D **ENG SPEED** 1,750 - 2,600 rpm Е VHCL SPEED SE More than 64 km/h (40 mph) B/FUEL SCHDL 1.0 - 8.0 msec Shift lever D position If "TESTING" is not displayed after 20 seconds, retry from step 2. **CAUTION:** Always drive vehicle at a safe speed. Is "TESTING" displayed on CONSULT-III screen? YES >> GO TO 5. NO >> Check A/F sensor 1 function again. GO TO 3. Н ${f 5}$ PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-II Release accelerator pedal fully. NOTE: Never apply brake during releasing the accelerator pedal. Which does "TESTING" change to? COMPLETED>>GO TO 6. OUT OF CONDITION>>Retry DTC CONFIRMATION PROCEDURE. GO TO 4. $oldsymbol{\circ}$ PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-III Touch "SELF-DIAG RESULT" Which is displayed on CONSULT-III screen? OK >> INSPECTION END >> Go to EC-638, "Diagnosis Procedure". NG 7 .PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B Perform Component Function Check, Refer to EC-637, "Component Function Check". Use component function check to check the overall function of the A/F sensor 1 circuit. During this check, a 1st trip DTC might not be confirmed. Ν Is the inspection result normal? YES >> INSPECTION END NO >> Go to EC-638, "Diagnosis Procedure". Component Function Check INFOID:0000000002988908 P 1. PERFORM COMPONENT FUNCTION CHECK

With GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Drive the vehicle at a speed of 80 km/h (50 MPH) for a few minutes in the suitable gear position.
- Set D position, then release the accelerator pedal fully until the vehicle speed decreases to 50 km/h (31 MPH).

CAUTION:

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Always drive vehicle at a safe speed.

NOTÉ:

Never apply brake during releasing the accelerator pedal.

- 4. Repeat steps 2 to 3 for five times.
- 5. Stop the vehicle and turn ignition switch OFF.
- 6. Wait at least 10 seconds and restart engine.
- 7. Repeat steps 2 to 3 for five times.
- 8. Stop the vehicle and connect GST to the vehicle.
- 9. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-638, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002988909

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect A/F sensor 1 harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between A/F sensor 1 harness connector and ground.

A/F sei	nsor 1	Ground	Voltage	
Connector	Connector Terminal		vollage	
F27	4	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- · Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

4. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sei	nsor 1	EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F27	1	F8	45	Existed
ΓΖΙ	2	ГО	49	EXISTECT

4. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

A/F ser	nsor 1	EC	M	0	On additional to		
Connector	Terminal	Connector	Terminal	Ground	Continuity		
F27	1	F8	45	Ground	Not existed		
F21	2	Fö	49	Ground	NOT existed		
Also che	ck harnes	s for short to	power.	1			
	tion result						
ES >>	GO TO 5.						
			•	und or sh	ort to power in har	ness or connectors.	
.CHECK I	NTERMITT	TENT INCIDI	ENT				
erform GI-4	11, "Interm	ittent Inciden	<u>t"</u> .				
the inspec	tion result	normal?					
	GO TO 6.						
	Repair or r	•					
.REPLACI	E AIR FUE	L RATIO (A/	F) SENSO	R 1			
eplace air f	uel ratio (A	\/F) sensor 1				_	
AUTION:	ny A/E 001	noor which	haa haan	drannad	from a baight of	more than 0.5 m (10.7 in) onto a	
		is a concret				more than 0.5 m (19.7 in) onto a	
Before in	stalling n	ew A/F sen	sor, clea	n exhaus	t system thread	s using Oxygen Sensor Thread	
			ool (J-43	897-18 o	r J-43897-12)] an	nd approved anti-seize lubricant	
(commerc	ial service	e tool).					
	INSPECTION	ON END					
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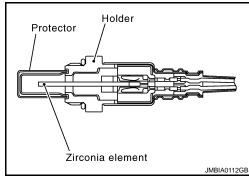
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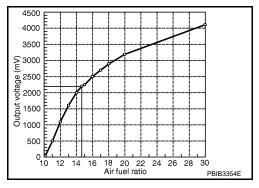
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800°C (1,472°F).





DTC Logic

DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal is not inordinately low.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P0131	Air fuel ratio (A/F) sensor 1 circuit low voltage	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 0V.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.) A/F sensor 1

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V at idle.

>> GO TO 2.

2.CHECK A/F SENSOR FUNCTION

(P)With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "A/F SEN1 (B1)" indication.

With GST

Follow the procedure "With CONSULT-III" above.

Is the indication constantly approx. 0V?

YES >> Go to EC-641, "Diagnosis Procedure".

DO131 A/E SENSOD 1

			PUI.	DI AVF SENSOR I	
< COMPO	NENT DIA	GNOSI	S >	[FOR USA (FEDERAL) AND CANADA]	
NO >>	GO TO 3) <u>.</u>			
3.PERFO	RM DTC C	CONFIRM	MATION PROCE	EDURE	Α
2. Drive a CAUTI Always	nition swit and accele ON: s drive ve	ch OFF, rate vehiche at a	cle to more thar a safe speed.	seconds and then restart engine. 1 40 km/h (25 MPH) within 20 seconds after restarting engine. 1 t 20 consecutive seconds.	EC
ENG SPEE)	1	,000 - 3,200 rpm		
VHCL SPEE	D SE	N	lore than 40 km/h (2	25 mph)	D
B/FUEL SCH	HDL	1	.5 - 9.0 msec		
Shift lever		S	uitable position		Е
• If this 1. 4. Check With GS Follow the Is 1st trip D YES >> NO >>	the access procedu 1st trip DTT procedure TC detects Go to ECT INSPECT	re is not C. "With Coed? -641, "Di ΠΟΝ EN	t completed wind by the completed wind by the completed wind by the complete with th		F G
Diagnosi 1.CHECK			ECTION	INFOID:0000000002988912	
	•	nnection		Ground Inspection in GI-44, "Circuit Inspection".	J
NO >>	-	replace	ground connect (A/F) SENSOR	tion. 1 POWER SUPPLY CIRCUIT	K
2. Turn ig	nition swit	ch ON.	narness connec en A/F sensor 1	tor. harness connector and ground.	L
A /F					M
A/F se		Ground	Voltage		
Connector F27	Terminal 4	Ground	Battery voltage	•	N
					. 4

A/F sensor 1			Ground	Voltage	
	Connector	Connector Terminal		voltage	
	F27	4	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

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${f 4.}$ CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F ser	nsor 1	EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F27	1	F8	45	Existed
1 21	2	10	49	LAISIEU

4. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F sensor 1		ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Giodila	Continuity
F27	1	F8	45	Ground	Not existed
1 21	2	1-0	49	Giodila	NOT EXISTED

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace.

O. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

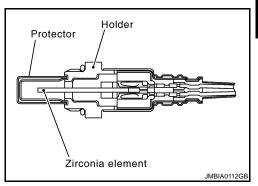
Description INFOID:0000000002988913

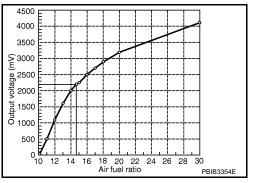
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800°C (1,472°F).





DTC Logic INFOID:0000000002988914

DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal is not inordinately high.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P0132	Air fuel ratio (A/F) sensor 1 circuit high voltage	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 5V.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.) A/F sensor 1

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V at idle.

>> GO TO 2.

2.CHECK A/F SENSOR FUNCTION

(P)With CONSULT-III

- Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" in "DATA MONITOR" mode with CONSULT-III.
- Check "A/F SEN1 (B1)" indication.

Follow the procedure "With CONSULT-III" above.

Is the indication constantly approx. 5 V?

>> Go to EC-644, "Diagnosis Procedure".

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< COMPONENT DIAGNOSIS >

NO >> GO TO 3.

3.PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Turn ignition switch OFF, wait at least 10 seconds and then restart engine.
- 2. Drive and accelerate vehicle to more than 40 km/h (25 MPH) within 20 seconds after restarting engine. **CAUTION**:

Always drive vehicle at a safe speed.

3. Maintain the following conditions for about 20 consecutive seconds.

ENG SPEED	1,000 - 3,200 rpm
VHCL SPEED SE	More than 40 km/h (25 mph)
B/FUEL SCHDL	1.5 - 9.0 msec
Shift lever	Suitable position

NOTE:

- Keep the accelerator pedal as steady as possible during the cruising.
- If this procedure is not completed within 1 minute after restarting engine at step 1, return to step
- 4. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC is detected?

YES >> Go to EC-644, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002988915

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect A/F sensor 1 harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between A/F sensor 1 harness connector and ground.

A/F sei	nsor 1	Ground	Voltage	
Connector	Connector Terminal		voltage	
F27	4	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

4.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sei	nsor 1	ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
F27	1	F8	45	Existed	
1 21	2	10	49	LXISIEU	

4. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F ser	nsor 1	ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Ground	Continuity
F27	1	F8	45	Ground	Not existed
	2		49		

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace.

O.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

EC-645

>> INSPECTION END

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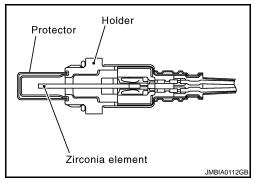
Description INFOID:000000002988916

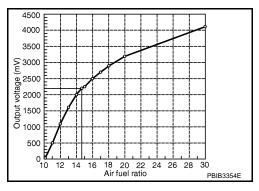
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800°C (1,472°F).





DTC Logic

DTC DETECTION LOGIC

To judge the malfunction of A/F sensor 1, this diagnosis measures response time of the A/F signal computed by ECM from the A/F sensor 1 signal. The time is compensated by engine operating (speed and load), fuel feedback control constant, and the A/F sensor 1 temperature index. Judgment is based on whether the compensated time (the A/F signal cycling time index) is inordinately long or not.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P0133	Air fuel ratio (A/F) sensor 1 circuit slow response	The response of the A/F signal computed by ECM from A/F sensor 1 signal takes more than the specified time.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.) A/F sensor 1 A/F sensor 1 A/F sensor 1 heater Fuel pressure Fuel injector Intake air leaks Exhaust gas leaks PCV Mass air flow sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

Do vou have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 5.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

COMM CITETY DIVIDION	
2.PERFORM DTC CONFIRMATION PROCEDURE-I	
With CONSULT-III	
Start engine and warm it up to normal operating temperature.	
2. Turn ignition switch OFF and wait at least 10 seconds.	E
3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1minute under no load.4. Let engine idle for 1 minute.	
5. Select "A/F SEN1(B1) P1278/P1279" of "A/F SEN1" in "DTC WORK SUPPORT" mode with CONSULT-III.	
6. Touch "START".	
Is "COMPLETED" displayed on COUSULT-III?	
YES >> GO TO 3	
NO >> GO TO 4.	
3.PERFORM DTC CONFIRMATION PROCEDURE-II	
Touch "SELF-DIAG RESULT".	
Which is displayed on CONSULT-III?	
OK >> INSPECTION END	
NG >> Go to EC-648, "Diagnosis Procedure".	
4.PERFORM DTC CONFIRMATION PROCEDURE	
1. After perform the following procedure, "TESTING" will be displayed on the CONSULT-III screen.	
- Increase the engine speed up to 4,000 to 5,000 rpm and keep it for 10 seconds.	
 Fully release accelerator pedal and then let engine idle for about 10 seconds. If "TESTING" is not displayed after 10 seconds, refer to EC-582, "Component Function Check". 	
2. Wait for about 20 seconds at idle at under the condition that "TESTING" is displayed on the CONSULT-III	
screen.	
3. Make sure that "TESTING" changes to "COMPLETED".	
If "TESTING" changed to "OUT OF CONDITION", refer to EC-582 , "Component Function Check". 4. Touch "SELF-DIAG RESULT".	
Which is displayed on CONSULT-III?	
OK >> INSPECTION END	
NG >> Go to EC-648, "Diagnosis Procedure".	
5. CHECK AIR-FUEL RATIO SELF-LEARNING VALUE	
⊚With GST	
1. Start engine and warm it up to normal operating temperature.	
2. Select Service \$01 with GST.	
3. Calculate the total value of "Short term fuel trim" and "Long term fuel trim" indications.	
Is the total percentage within ±15%?	
YES >> GO TO 7.	
NO >> GO TO 6.	
6.DETECT MALFUNCTIONING PART	
Check the following.	
Intake air leaks Tuh quat mea leaks	
Exhaust gas leaksIncorrect fuel pressure	
Lack of fuel	
• Fuel injector	
Incorrect PCV hose connection	
PCV valve Managir flow concern	
Mass air flow sensor	
>> Papair or raplace malfunctioning part	
>> Repair or replace malfunctioning part.	

1. Turn ignition switch OFF and wait at least 10 seconds.
2. Start engine and keep the engine speed between 3.500

7. PERFORM DTC CONFIRMATION PROCEDURE

2. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- 3. Let engine idle for 1 minute.
- Increase the engine speed up to 4,000 to 5,000 rpm and keep it for 10 seconds.
- 5. Fully release accelerator pedal and then let engine idle for about 1 minute.
- Check 1st trip DTC detected?.

Is 1st trip DTC detected?

YES >> Go to EC-648, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002988918

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

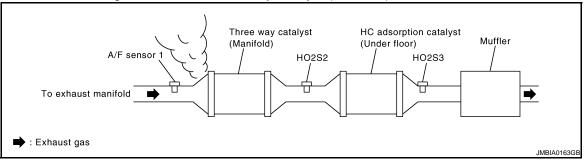
2. RETIGHTEN A/F SENSOR 1

Loosen and retighten the A/F sensor 1. Refer to EM-32, "Removal and Installation".

>> GO TO 3.

3. CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- Listen for an exhaust gas leak before three way catalyst (manifold).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 4.

4. CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 5.

${f 5.}$ CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to <u>EC-503</u>, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- 2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 or P172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171 or P0172. Refer to <u>EC-670, "DTC Logic"</u> or <u>EC-674, "DTC Logic"</u>.

NO >> GO TO 6.

6.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

Disconnect A/F sensor 1 harness connector.

P0133 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

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2. Turn ignition switch ON.

3. Check the voltage between A/F sensor 1 harness connector and ground.

A/F ser	nsor 1	Ground	Voltage	
Connector Terminal		Glound	voltage	
F27	4	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

7.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

8.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sensor 1		EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F27	1	F8	45	Existed
1 21	2	10	49	LXISIGU

4. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F sensor 1		ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Glodila	Continuity
F27	F27		45	Ground	Not existed
F27	2	F8	49	Giodila	Not existed

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9.CHECK AIR FUEL RATIO (A/F) SENSOR 1 HEATER

Refer to EC-601, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 13.

10. CHECK MASS AIR FLOW SENSOR

Check mass air flow sensor.

Refer to EC-612, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace mass air flow sensor.

11. CHECK PCV VALVE

P0133 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Refer to EC-864, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace PCV valve.

12. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or replace.

13.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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P0137 H02S2

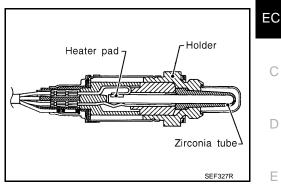
Description INFOID:0000000002988919

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas on each bank.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

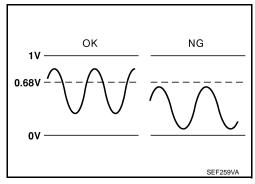
Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



DTC Logic INFOID:0000000002988920

DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the maximum voltage of the sensor is sufficiently high during the various driving condition such as fuelcut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0137	Heated oxygen sensor 2 circuit low voltage	The maximum voltage from the sensor is not reached to the specified voltage.	Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector Intake air leaks

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 5.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30 °C (32 to 86 °F).

>> GO TO 3.

3. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

P0137 H02S2

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).

If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches to 70°C (158°F).

- 7. Open engine hood.
- 8. Select "HO2S2 (B1) P1147" of "HO2S2" in "DTC WORK SUPPORT" mode with CONSULT-III.
- 9. Start engine and following the instruction of CONSULT-III.

NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

10. Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III screen?

OK >> INSPECTION END

NG >> Go to EC-653, "Diagnosis Procedure".

CAN NOT BE DIAGNOSED>>GO TO 4.

f 4.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

- 1. Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- 2. Perform DTC CONFIRMATION PROCEDURE again.

>> GO TO 3.

5. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-652, "Component Function Check".

NOTE:

Use component function check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-653, "Diagnosis Procedure".

Component Function Check

INFOID:0000000002988921

1.PERFORM COMPONENT FUNCTION CHECK-I

⋈Without CONSULT-III

- Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector terminals under the following condition.

	ECM		ECM	Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	vollage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connectors under the following condition.

[FOR USA (FEDERAL) AND CANADA]

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voltage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

3. PERFORM COMPONENT FUNCTION CHECK-III

Check the voltage between ECM harness connector and ground under the following condition.

	ECM		ECM	Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

>> Go to EC-653, "Diagnosis Procedure". NO

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

>> GO TO 2. YES

NO >> Repair or replace ground connection.

2.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to EC-503, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- 2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171. Refer to EC-670, "DTC Logic".

NO >> GO TO 3.

3.CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect heated oxygen sensor 2 harness connector.
- 3. Disconnect ECM harness connector.
- Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2S2		EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F31	1	F8	35	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

f 4 .CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between HO2S2 harness connector and ECM harness connector.

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EC-653 Revision: 2008 January 2008 Rogue

HO2S2		EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F31	4	F8	33	Existed

2. Check the continuity between HO2S2 harness connector or ECM harness connector and ground.

HO2S2		ECM		Ground	Continuity
Connector	Terminal	Connector Terminal		Oround	Continuity
F31	4	F8	33	Ground	Not existed

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK HEATED OXYGEN SENSOR 2

Refer to EC-654, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 6.

6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002988923

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

2.CHECK HEATED OXYGEN SENSOR 2

(P)With CONSULT-III

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)" as the monitor item with CONSULT-III.

P0137 HO2S2

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

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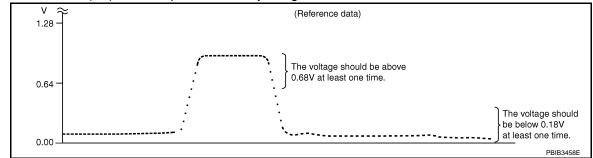
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7. Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S2 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S2 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3. CHECK HEATED OXYGEN SENSOR 2-1

Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground under the following condition.

	ECM			
Connector	+	-	Condition	Voltage
Connector	Terminal	Terminal		
F8	33 (HO2S2 signal)	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground under the following condition.

	ECM			
Connector	+	-	Condition	Voltage
Connector	Terminal	Terminal		
F8	33 (HO2S2 signal)	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground under the following condition.

[FOR USA (FEDERAL) AND CANADA]

	ECM				
Connector	+	_	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

6. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

P0138 H02S2

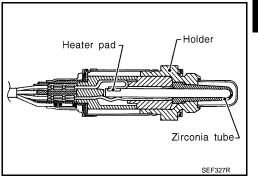
Description INFOID:0000000002988924

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas on each bank.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



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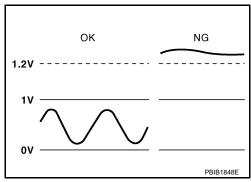
DTC Logic

DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time.

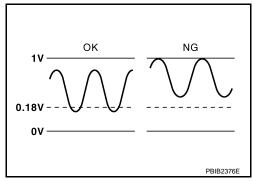
MALFUNCTION A

To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the voltage is unusually high during the various driving condition such as fuel-cut.



MALFUNCTION B

To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the minimum voltage of sensor is sufficiently low during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
		A)	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2
P0138	Heated oxygen sensor 2 circuit high voltage	В)	The minimum voltage from the sensor is not reached to the specified voltage.	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

- Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to <u>EC-659</u>. "<u>Diagnosis Procedure</u>". NO-1 >> With CONSULT-III: GO TO 3.

NO-2 >> Without CONSULT-III: GO TO 5.

3.perform dtc confirmation procedure for malfunction b

NOTE:

For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30 °C (32 to 86 °F).

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).

If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches to 70°C (158°F).

- 7. Open engine hood.
- Select "HO2S2 (B1) P1146" of "HO2S2" in "DTC WORK SUPPORT" mode with CONSULT-III.
- Start engine and following the instruction of CONSULT-III.

NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

10. Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III

OK >> INSPECTION END

NG >> Go to EC-659, "Diagnosis Procedure".

CAN NOT BE DIAGNOSED>>GO TO 4.

f 4 .PERFORM DTC CONFIRMATION PROCEDURE FOR MALUNCTION B AGAIN

- Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- Perform DTC CONFIRMATION PROCEDURE again.

>> GO TO 3.

${f 5}$ PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

Perform component function check. Refer to EC-659, "Diagnosis Procedure".

NOTE:

Use component function check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-659. "Diagnosis Procedure".

Component Function Check

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1.PERFORM COMPONENT FUNCTION CHECK-I

Start engine and warm it up to the normal operating temperature.

P0138 HO2S2

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector terminals under the following condition.

ECM		ECM		Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connectors under the following condition.

ECM		ECM		Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

3. PERFORM COMPONENT FUNCTION CHECK-III

Check the voltage between ECM harness connector and ground under the following condition.

ECM ECM		Condition	Voltage			
Connector	Terminal	Connector	Terminal	Condition	vollage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-659, "Diagnosis Procedure".

Diagnosis Procedure

1.INSPECTION START

Confirm the detected malfunction (A or B). Refer to EC-657, "DTC Logic".

Which malfunction is detected?

A >> GO TO 2.

B >> GO TO 9.

2. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace ground connection.

3.CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

Disconnect heated oxygen sensor 2 harness connector.

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- 2. Disconnect ECM harness connector.
- 3. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	.S2	EC	Continuity	
Connector	Connector Terminal		Connector Terminal	
F31	1	F8	35	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2S2		EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F31	4	F8	33	Existed

2. Check the continuity between HO2S2 harness connector or ECM harness connector and ground.

HO2S2		EC	M	Ground	Continuity	
Connector	Terminal	Connector	Terminal	Ground	Continuity	
F31	4	F8	33	Ground	Not existed	

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK HO2S2 CONNECTOR FOR WATER

Check connectors for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace harness or connectors.

6.CHECK HEATED OXYGEN SENSOR 2

Refer to EC-662. "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 7.

7.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

8. CHECK INTERMITTENT INCIDENT

< COMPONENT DIAGNOSIS >

Refer to GI-44, "Circuit Inspection".

>> INSPECTION END

9. CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace ground connection.

10.clear the mixture ratio self-learning value

Clear the mixture ratio self-learning value. Refer to EC-503, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".

2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0172 detected? Is it difficult to start engine?

>> Perform trouble diagnosis for DTC P0172. Refer to EC-674, "DTC Logic".

NO >> GO TO 11.

11. CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

Turn ignition switch OFF.

- Disconnect heated oxygen sensor 2 harness connector.
- 3. Disconnect ECM harness connector.
- Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	S2	EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F31	1	F8	35	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

12. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2S2		EC	Continuity	
Connector	Connector Terminal		Connector Terminal	
F31	4	F8	33	Existed

Check the continuity between HO2S2 harness connector or ECM harness connector and ground.

HO2	.S2	EC	M	Ground	Continuity	
Connector	Terminal	Connector	Terminal	Ground	Continuity	
F31	4	F8	33	Ground	Not existed	

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

13. CHECK HEATED OXYGEN SENSOR 2

Refer to EC-662, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.

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[FOR USA (FEDERAL) AND CANADA]

NO >> GO TO 14.

14. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.

>> INSPECTION END

15. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002988928

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

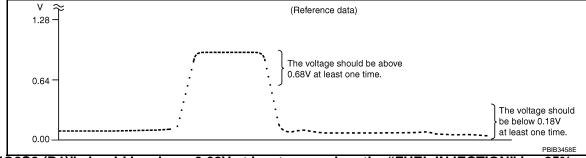
YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK HEATED OXYGEN SENSOR 2

(P)With CONSULT-III

- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)" as the monitor item with CONSULT-III.
- Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S2 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S2 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3.CHECK HEATED OXYGEN SENSOR 2-I

Without CONSULT-III

- Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground under the following condition.

[FOR USA (FEDERAL) AND CANADA]

	ECM				
Connector	+	_	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground under the following condition.

	ECM				
Connector	+	_	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground under the following condition.

	ECM				
Connector	+	_	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

 Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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P0139 HO2S2

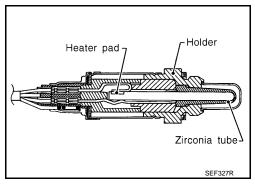
Description INFOID.000000002988929

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas on each bank.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

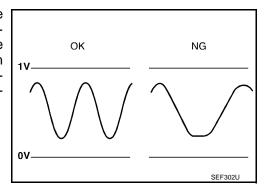
Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



DTC Logic

DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (mamifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the switching response of the sensor's voltage is faster than specified during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0139	Heated oxygen sensor 2 circuit slow response	It takes more time for the sensor to respond be- tween rich and lean than the specified time.	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector Intake air leaks

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 5.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 3.

3. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.

P0139 HO2S2

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

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- 3. Start engine and warm it up to the normal operating temperature.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Open engine hood.
- Select "HO2S2 (B1) P0139" of "HO2S2" in "DTC WORK SUPPORT" mode with CONSULT-III.
- 8. Start engine and following the instruction of CONSULT-III.

NOTE

It will take at most 10 minutes until "COMPLETED" is displayed.

9. Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III?

OK >> INSPECTION END

NG >> GO TO 4.

CAN NOT BE DIAGNOSED>>GO TO 4.

4. PERFORM THE RESULT OF DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- Perform DTC CONFIRMATION PROCEDURE again.

>> GO TO 3.

5. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-665, "Component Function Check".

NOTE:

Use Component Function Check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-666, "Diagnosis Procedure".

Component Function Check

1.PERFORM COMPONENT FUNCTION CHECK-I

Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector terminals under the following condition.

ECM		ECM		Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	A change of voltage should be more than 0.30V for 1 second during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connectors under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voltage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	A change of voltage should be more than 0.30V for 1 second during this procedure.	

< COMPONENT DIAGNOSIS >

Is the inspection result normal?

YES >> INSPECTION END NO >> GO TO 3.

3.perform component function check-iii

Check the voltage between ECM harness connector and ground under the following condition.

ECM		ECM		Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	A change of voltage should be more than 0.30V for 1 second during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-666, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000002988932

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to <u>EC-503, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement"</u>.
- 2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 or P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171 or P0172. Refer to <u>EC-670, "DTC Logic"</u> or <u>EC-674, "DTC Logic"</u>.

NO >> GO TO 3.

3.CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 harness connector.
- Disconnect ECM harness connector.
- 4. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	S2	EC	Continuity	
Connector	Connector Terminal		Terminal	Continuity
F31	1	F8	35	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

f 4.CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	.S2	EC	Continuity	
Connector	Connector Terminal		Connector Terminal	
F31	4	F8	33	Existed

P0139 HO2S2

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Check the continuity between HO2S2 harness connector or ECM harness connector and ground.

HO2	.S2	EC	М	Ground	Continuity	
Connector	Terminal	Connector	Terminal	Giodila	Continuity	
F31	4	F8	33	Ground	Not existed	

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5}.$ CHECK HEATED OXYGEN SENSOR 2

Refer to EC-667, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 6.

6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK HEATED OXYGEN SENSOR 2

(II) With CONSULT-III

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)" as the monitor item with CONSULT-III.

EC-667 Revision: 2008 January 2008 Rogue

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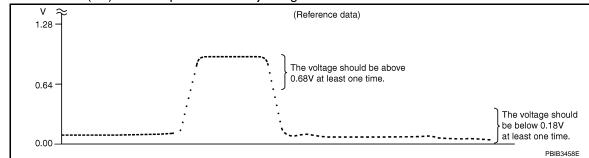
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Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S2 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S2 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3.CHECK HEATED OXYGEN SENSOR 2-I

⋈Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground under the following condition.

ECM					
Connector	+	_	Condition	Voltage	
Connector	Terminal				
F8	33 (HO2S2 signal)	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4.CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground under the following condition.

ECM					
Connector	+	-	Condition	Voltage	
Connector	Terminal	Terminal	1		
F8	33 (HO2S2 signal)	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground under the following condition.

P0139 HO2S2

[FOR USA (FEDERAL) AND CANADA]

ECM				
Connector	+	_	Condition	Voltage
Connector	Terminal	Terminal		
F8	33 (HO2S2 signal)	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

6. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P0171 FUEL INJECTION SYSTEM FUNCTION

DTC Logic

DTC DETECTION LOGIC

With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the A/F sensors 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios.

In case the amount of the compensation value is extremely large (The actual mixture ratio is too lean.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input signal to ECM	ECM function	Actuator
A/F sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)	Fuel injection control	Fuel injector

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0171	Fuel injection system too lean	 Fuel injection system does not operate properly. The amount of mixture ratio compensation is too large. (The mixture ratio is too lean.) 	 Intake air leaks A/F sensor 1 Fuel injector Exhaust gas leaks Incorrect fuel pressure Lack of fuel Mass air flow sensor Incorrect PCV hose connection

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE-I

- 1. Clear the mixture ratio self-learning value. Refer to EC-503, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- 2. Start engine.

Is it difficult to start engine?

YES >> GO TO 3.

NO >> GO TO 4.

3. RESTART ENGINE

If it is difficult to start engine, the fuel injection system has a malfunction, too.

Crank engine while depressing accelerator pedal.

Does engine start?

YES >> Go to EC-671, "Diagnosis Procedure".

NO >> Check exhaust and intake air leak visually.

4. PERFORM DTC CONFIRMATION PROCEDURE-II

- 1. Start engine and let it idle for at least 10 minutes.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-671, "Diagnosis Procedure".

NO >> GO TO 5.

5. PERFORM DTC CONFIRMATION PROCEDURE-III

1. Turn ignition switch OFF and wait at least 10 seconds.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for 10 minutes. Refer to the table below.

Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

Engine speed in the freeze frame data \pm 400 rpm		
Vehicle speed in the freeze frame data \pm 10 km/h (6 MPH)		
Engine coalent temperature (T) condition	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).	
Engine coolant temperature (T) condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).	

3. Check 1st trip DTC.

Is 1st trip DTC detected?

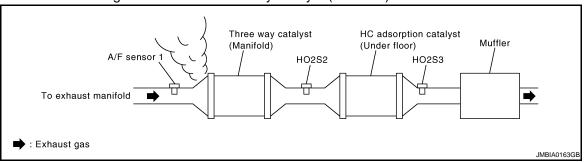
>> Go to EC-671, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1.CHECK EXHAUST GAS LEAK

- Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before three way catalyst (manifold).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 2.

2.CHECK FOR INTAKE AIR LEAK

- Listen for an intake air leak after the mass air flow sensor.
- 2. Check PCV hose connection.

Intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 3.

3.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect corresponding A/F sensor 1 harness connector.
- Disconnect ECM harness connector. 3.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F s	ensor 1	I	ECM	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F27	1	F8	45	Existed
F21	2	10	49	LXISIEU

5. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

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A/F s	ensor 1	ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Giodila	Continuity
F27	1	F8	45	Ground	Not existed
1 21	2	10	49	Giodila	Not existed

Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK FUEL PRESSURE

- 1. Release fuel pressure to zero. Refer to <a>EC-915, "Inspection".
- 2. Install fuel pressure gauge kit [SST (J-44321)] and check fuel pressure. Refer to EC-915, "Inspection".

At idling: Approximately 350 kPa (3.57 kg/cm², 51 psi)

Is the inspection result normal?

YES >> GO TO 6. NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging.

Is the inspection result normal?

YES >> Replace "fuel filter and fuel pump assembly".

NO >> Repair or replace

6. CHECK MASS AIR FLOW SENSOR

(P)With CONSULT-III

1. Install all removed parts.

2. Check "MASS AIR FLOW" in "DATA MONITOR" mode with CONSULT-III.

1.0 - 4.0 g·m/sec: at idling 4.0 - 10.0 g·m/sec: at 2,500 rpm

With GST

1. Install all removed parts.

2. Check mass air flow sensor signal in Service \$01 with GST.

1.0 - 4.0 g·m/sec: at idling 4.0 - 10.0 g·m/sec: at 2,500 rpm

Is the measurement value within the specification?

YES >> GO TO 7.

NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or grounds. Refer to <u>EC-608</u>, "<u>DTC Logic</u>".

.CHECK FUNCTION OF FUEL INJECTOR

(P)With CONSULT-III

- Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- 3. Make sure that each circuit produces a momentary engine speed drop.

⊗Without CONSULT-III

1. Let engine idle.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Listen to each fuel injector operating sound.

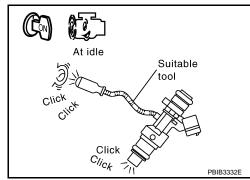
Clicking noise should be heard.

Is the inspection result normal?

YES >> GO TO 8.

NO

>> Perform trouble diagnosis for FUEL INJECTOR, refer to EC-847, "Component Function Check".



8. CHECK FUEL INJECTOR

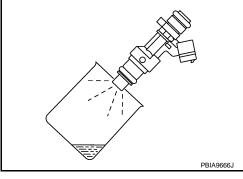
- Turn ignition switch OFF.
- Confirm that the engine is cooled down and there are no fire hazards near the vehicle. 2.
- 3. Disconnect all fuel injector harness connectors.
- 4. Remove fuel tube assembly. Refer to EM-42, "Removal and Installation". Keep fuel hose and all fuel injectors connected to fuel tube.
- 5. Disconnect all ignition coil harness connectors.
- 6. Prepare pans or saucers under each fuel injector.
- 7. Crank engine for about 3 seconds.

Fuel should be sprayed evenly for each fuel injector.

Is the inspection result normal?

>> GO TO 9. YES

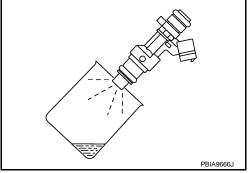
NO >> Replace fuel injectors from which fuel does not spray out. Always replace O-ring with new ones.



9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END



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[FOR USA (FEDERAL) AND CANADA]

P0172 FUEL INJECTION SYSTEM FUNCTION

DTC Logic

DTC DETECTION LOGIC

With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the A/F sensors 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios.

In case the amount of the compensation value is extremely large (The actual mixture ratio is too rich.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input signal to ECM	ECM function	Actuator
A/F sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)	Fuel injection control	Fuel injector

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0172	Fuel injection system too rich	 Fuel injection system does not operate properly. The amount of mixture ratio compensation is too large. (The mixture ratio is too rich.) 	 A/F sensor 1 Fuel injector Exhaust gas leaks Incorrect fuel pressure Mass air flow sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE-I

- Clear the mixture ratio self-learning value. Refer to <u>EC-503</u>, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- 2. Start engine.

Is it difficult to start engine?

YES >> GO TO 3.

NO >> GO TO 4.

3. RESTART ENGINE

If it is difficult to start engine, the fuel injection system has a malfunction, too.

Crank engine while depressing accelerator pedal.

Does engine start?

YES >> Go to EC-675, "Diagnosis Procedure".

NO >> Remove spark plugs and check for fouling, etc.

4.PERFORM DTC CONFIRMATION PROCEDURE-II

Start engine and let it idle for at least 10 minutes.

Is 1st trip DTC detected?

YES >> Go to EC-675, "Diagnosis Procedure".

NO >> GO TO 5.

5. PERFORM DTC CONFIRMATION PROCEDURE-III

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for 10 minutes. Refer to the table below.

Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

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[FOR USA (FEDERAL) AND CANADA]

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Engine speed in the freeze frame data ± 400 rpm	
Vehicle speed in the freeze frame data \pm 10 km/h (6 MPH)	
Engine coolant temperature (T) condition	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).
Engine coolant temperature (T) condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).

3. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-675, "Diagnosis Procedure".

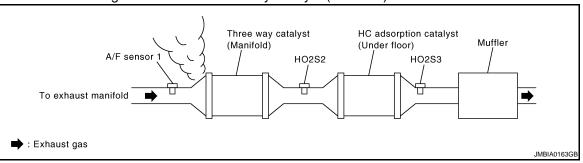
NO >> INSPECTION END

Diagnosis Procedure

1. CHECK EXHAUST GAS LEAK

Start engine and run it at idle.

2. Listen for an exhaust gas leak before three way catalyst (manifold).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 2.

2.CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 3.

3.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect corresponding A/F sensor 1 harness connector.
- Disconnect ECM harness connector.
- 4. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sensor 1		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F27	1	F8	45	Existed
1 21	2	1.0	49	LAISIEU

5. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F s	ensor 1	ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Ground	Continuity
F27	1	F8	45	Ground	Not existed
121	2	10	49	Giodila	NOI EXISTED

6. Also check harness for short to power.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK FUEL PRESSURE

- Release fuel pressure to zero. Refer to <u>EC-915</u>, "Inspection".
- 2. Install fuel pressure gauge kit [SST (J-44321)] and check fuel pressure. Refer to EC-915, "Inspection".

At idling: Approximately 350 kPa (3.57 kg/cm², 51 psi)

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging.

Is the inspection result normal?

YES >> Replace "fuel filter and fuel pump assembly".

NO >> Repair or replace

6.CHECK MASS AIR FLOW SENSOR

(R) With CONSULT-III

- Install all removed parts.
- 2. Check "MASS AIR FLOW" in "DATA MONITOR" mode with CONSULT-III.

1.0 - 4.0 g·m/sec: at idling 4.0 - 10.0 g·m/sec: at 2,500 rpm

With GST

- 1. Install all removed parts.
- 2. Check mass air flow sensor signal in "Service \$01" with GST.

1.0 - 4.0 g·m/sec: at idling 4.0 - 10.0 g·m/sec: at 2,500 rpm

Is the measurement value within the specification?

YES >> GO TO 7.

NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or grounds. Refer to <u>EC-608</u>, "<u>DTC Logic</u>".

7. CHECK FUNCTION OF FUEL INJECTOR

(P)With CONSULT-III

- 1. Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- 3. Make sure that each circuit produces a momentary engine speed drop.

⊗Without CONSULT-III

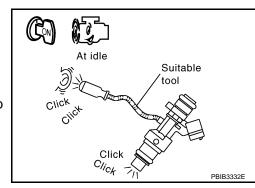
- 1. Let engine idle.
- 2. Listen to each fuel injector operating sound.

Clicking noise should be heard.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Perform trouble diagnosis for FUEL INJECTOR, refer to EC-847, "Component Function Check".



< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

8. CHECK FUEL INJECTOR

 Remove fuel injector assembly. Refer to <u>EM-42, "Removal and Installation"</u>. Keep fuel hose and all fuel injectors connected to fuel tube.

- 2. Confirm that the engine is cooled down and there are no fire hazards near the vehicle.
- 3. Disconnect all fuel injector harness connectors.
- 4. Disconnect all ignition coil harness connectors.
- 5. Prepare pans or saucers under each fuel injectors.
- Crank engine for about 3 seconds.
 Make sure fuel does not drip from fuel injector.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace the fuel injectors from which fuel is dripping. Always replace O-ring with new one.

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

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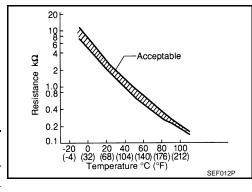
P0181 FTT SENSOR

Description INFOID:000000002988954

The fuel tank temperature sensor is used to detect the fuel temperature inside the fuel tank. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the fuel temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.

<Reference data>

Fluid temperature °C (°F)	Voltage* V	Resistance kΩ
20 (68)	3.5	2.3 - 2.7
50 (122)	2.2	0.79 - 0.90



^{*:} These data are reference values and are measured between ECM terminals 95 (Fuel tank temperature sensor) and 104 (Sensor ground).

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0181	Fuel tank temperature sensor circuit range/per-formance	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signals from engine coolant temperature sensor and intake air temperature sensor.	Harness or connectors (The sensor circuit is open or shorted) Fuel tank temperature sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure-i

- 1. Turn ignition switch and wait at least 10 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-679, "Diagnosis Procedure".

NO >> GO TO 3.

3.CHECK ENGINE COOLANT TEMPERATURE

(P)With CONSULT-III

- 1. Select "COOLAN TEMP/S" in "DATA MONITOR" mode with CONSULT-III.
- Check "COOLAN TEMP/S" value.

With GST

Follow the procedure "With CONSULT-III" above.

"COOLAN TEMP/S" less than 60°C (140°F)?

YES >> INSPECTION END

NO >> GO TO 4.

4. PERFORM DTC CONFIRMATION PROCEDURE-II

(P)With CONSULT-III

1. Cool engine down until "COOLAN TEMP/S" is less than 60°C (140°F).

P0181 FTT SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

2.	Wait at	least 10	seconds
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3. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-679, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

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1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44. "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK FUEL TANK TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between "fuel level sensor unit and fuel pump" harness connector and ground.

Fuel level sensor u	nit and fuel pump	Ground	Voltage
Connector Terminal		Ground	voltage
B40	2	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M11, B1
- Harness connectors M77, E105
- Harness for open or short between ECM and "fuel level sensor unit and fuel pump"

>> Repair open circuit or short to ground or short to power in harness or connector.

4. CHECK FUEL TANK TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Check the continuity between "fuel level sensor unit and fuel pump" harness connector and ECM harness connector.

Fuel level sensor u	nit and fuel pump	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	Continuity
B40	1	E16	104	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6. NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1, M11
- Harness connectors M77, E105

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P0181 FTT SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- Harness for open or short between "fuel level sensor unit and fuel pump" and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connector.

6. CHECK FUEL TANK TEMPERATURE SENSOR

Refer to EC-680, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace "fuel level sensor unit and fuel pump".

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002988957

1. CHECK FUEL TANK TEMPERATURE SENSOR

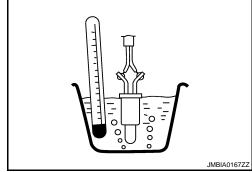
- 1. Turn ignition switch OFF.
- 2. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 3. Remove fuel level sensor unit.
- 4. Check resistance between "fuel level sensor unit and fuel pump" terminals by heating with hot water as shown in the figure.

Terminals	Condition			Resistan	се
1 and 2	Temperature °C (°F)		20 (68)	2.3 - 2.7	kΩ
i aliu z			50 (122)	0.79 - 0.90	kΩ

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace "fuel level sensor unit and fuel pump".



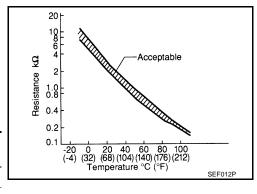
P0182, P0183 FTT SENSOR

Description INFOID:0000000002988958

The fuel tank temperature sensor is used to detect the fuel temperature inside the fuel tank. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the fuel temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.

<Reference data>

Fluid temperature °C (°F)	Voltage* V	Resistance kΩ
20 (68)	3.5	2.3 - 2.7
50 (122)	2.2	0.79 - 0.90



^{*:} These data are reference values and are measured between ECM terminals 95 (Fuel tank temperature sensor) and 104 (Sensor ground).

DTC Logic INFOID:0000000002988959

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0182	Fuel tank temperature sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0183	Fuel tank temperature sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	Fuel tank temperature sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure

- Turn ignition switch ON and wait at least 5 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-681, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1.CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK FUEL TANK TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- 2. Disconnect "fuel level sensor unit and fuel pump" harness connector.

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INFOID:0000000002988960

- Turn ignition switch OFF.
- Turn ignition switch ON.

P0182, P0183 FTT SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

4. Check the voltage between "fuel level sensor unit and fuel pump" harness connector and ground.

Fuel level sensor u	nit and fuel pump	Ground	Voltage
Connector	Connector Terminal		voitage
B40	2	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M11, B1
- Harness connectors M77, E105
- Harness for open or short between ECM and "fuel level sensor unit and fuel pump"

>> Repair open circuit or short to ground or short to power in harness or connector.

4.CHECK FUEL TANK TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Check the continuity between "fuel level sensor unit and fuel pump" harness connector and ECM harness connector.

Fuel level sensor u	nit and fuel pump	E	CM	Continuity
Connector	Terminal	Connector	Terminal	Continuity
B40	1	E16	104	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6. NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1, M11
- Harness connectors M77, E105
- Harness for open or short between "fuel level sensor unit and fuel pump" and ECM

>> Repair open circuit or short to ground or short to power in harness or connector.

6. CHECK FUEL TANK TEMPERATURE SENSOR

Refer to EC-682, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace "fuel level sensor unit and fuel pump".

.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002988961

1. CHECK FUEL TANK TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 3. Remove fuel level sensor unit.

P0182, P0183 FTT SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

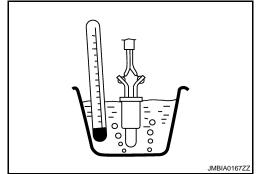
4. Check resistance between "fuel level sensor unit and fuel pump" terminals by heating with hot water as shown in the figure.

Terminals	Condition		Resistan	се		
1 and 2	Tomporaturo	nd 2 Temperature °C (°F)	°C (°E)	20 (68)	2.3 - 2.7	kΩ
i and z	ind 2 Temperature		50 (122)	0.79 - 0.90	kΩ	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace "fuel level sensor unit and fuel pump".



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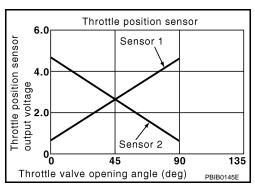
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P0222, P0223 TP SENSOR

Description

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0222	Throttle position sensor 1 circuit low input	An excessively low voltage from the TP sensor 1 is sent to ECM.	Harness or connectors (TP sensor 1 circuit is open or shorted.)
P0223	Throttle position sensor 1 circuit high input	An excessively high voltage from the TP sensor 1 is sent to ECM.	Electric throttle control actuator (TP sensor 1)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-684, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002988964

INFOID:0000000002988963

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK THROTTLE POSITION SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Disconnect electric throttle control actuator harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between electric throttle control actuator harness connector and ground.

P0222, P0223 TP SENSOR

[FOR USA (FEDERAL) AND CANADA]

< COMPONENT DIAGNOSIS >

>> INSPECTION END

Electric throttle c	entral actuator					А
Connector	Terminal	Ground	Voltage			
F29	1	Ground	Approx. 5V			
Is the inspection			прргох. о ч			EC
	O TO 3.	Har:			•	
		rcuit or sh	ort to ground	or short to	power in harness or connectors.	С
3.CHECK TH	ROTTLE PO	SITION S	SENSOR 1 GI	ROUND CI	RCUIT FOR OPEN AND SHORT	
1. Turn ignition	on switch OF	F.				
	t ECM harne					D
3. Check the nector.	continuity be	etween el	ectric throttle	control act	uator harness connector and ECM harness con-	
riccioi.						Е
Electric throttle c	ontrol actuator		ECM			
Connector	Terminal	Connect	or Terminal	Continuity		
F29	4	F8	36	Existed		F
4. Also check	k harness for	short to	ground and sh	ort to pow	er.	
Is the inspection	n result norr	nal?	•	·		G
	O TO 4.					
4			_		power in harness or connectors.	
4.CHECK TH	ROTTLE PO	SITION S	SENSOR 1 IN	PUT SIGN	AL CIRCUIT FOR OPEN AND SHORT	Н
1. Check the	continuity be	etween el	ectric throttle	control ac	uator harness connector and ECM harness con-	
nector.						
			FOM			-
Electric throttle c			ECM	Continuity		
Connector	Terminal	Connecto		Frietzal		J
F29	2	F8	37	Existed		
			ground and sh	ort to pow	₽ Г .	K
Is the inspection YES >> GO	on result flori D TO 5.	<u>IIai?</u>				r
		rcuit or sh	ort to ground	or short to	power in harness or connectors.	
5.CHECK TH			_			
Refer to EC-68	86 "Compon	ent Insne	ction"			
Is the inspection	•	•				В.
•	O TO 7.	III.				N
	O TO 6.					
6.REPLACE	ELECTRIC T	HROTTL	E CONTROL	ACTUATO	R	N
	lectric throttle					
			<u>Requirement"</u> .			
						С
>> INSPECTION END						
7. CHECK INTERMITTENT INCIDENT						
Refer to GI-41,	"Intermitten	t Incident				
			=			

P0222, P0223 TP SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Component Inspection

INFOID:0000000002988965

1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set shift lever to D position.
- 6. Check the voltage between ECM harness connector terminals.

ECM						
+		_		Condition		Voltage
Connector	Terminal	Connector	Terminal	1		
	37 (TP sensor 1 signal)		36 (Sensor ground)		Fully released	More than 0.36V
F8		F8		Accelerator pedal	Fully depressed	Less than 4.75V
10	38	го			Fully released	Less than 4.75V
	(TP sensor 2 signal)				Fully depressed	More than 0.36V

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.replace electric throttle control actuator

- Replace electric throttle control actuator.
- 2. Go to EC-686, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002988966

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P0300, P0301, P0302, P0303, P0304 MISFIRE

DTC Logic INFOID:0000000002988967

DTC DETECTION LOGIC

When a misfire occurs, engine speed will fluctuate. If the engine speed fluctuates enough to cause the crankshaft position (CKP) sensor (POS) signal to vary, ECM can determine that a misfire is occurring.

Sensor	Input signal to ECM	ECM function
Crankshaft position sensor (POS)	Engine speed	On board diagnosis of misfire

The misfire detection logic consists of the following two conditions.

1. One Trip Detection Logic (Three Way Catalyst Damage)

On the 1st trip that a misfire condition occurs that can damage the three way catalyst (TWC) due to overheating, the MIL will blink.

When a misfire condition occurs, the ECM monitors the CKP sensor signal every 200 engine revolutions for a change.

When the misfire condition decreases to a level that will not damage the TWC, the MIL will turn off. If another misfire condition occurs that can damage the TWC on a second trip, the MIL will blink. When the misfire condition decreases to a level that will not damage the TWC, the MIL will remain on. If another misfire condition occurs that can damage the TWC, the MIL will begin to blink again.

Two Trip Detection Logic (Exhaust quality deterioration)

For misfire conditions that will not damage the TWC (but will affect vehicle emissions), the MIL will only light when the misfire is detected on a second trip. During this condition, the ECM monitors the CKP sensor signal every 1,000 engine revolutions.

A misfire malfunction can be detected on any one cylinder or on multiple cylinders.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0300	Multiple cylinder misfire detected	Multiple cylinder misfire.	Improper spark plug
P0301	No.1 cylinder misfire detected	No. 1 cylinder misfires.	Insufficient compression Incorrect fuel pressure
P0302	No. 2 cylinder misfire detected	No. 2 cylinder misfires.	The fuel injector circuit is open or shorted
P0303	No. 3 cylinder misfire detected	No. 3 cylinder misfires.	Fuel injector Intake air leak
P0304	No. 4 cylinder misfire detected	No. 4 cylinder misfires.	The ignition signal circuit is open or shorted Lack of fuel Signal plate A/F sensor 1 Incorrect PCV hose connection

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE-I

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Restart engine and let it idle for about 15 minutes.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-688, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform dtc confirmation procedure-ii $\,$

Turn ignition switch OFF and wait at least 10 seconds.

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[FOR USA (FEDERAL) AND CANADA]

2. Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for a certain time. Refer to the table below.

Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws when driving.

Engine speed	Engine speed in the freeze frame data $\pm400~\text{rpm}$	
Vehicle speed	Vehicle speed in the freeze frame data \pm 10 km/h (6 MPH)	
Engine coolant temperature (T)	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).	
condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).	

The time to driving varies according to the engine speed in the freeze frame data.

Engine speed	Time
Around 1,000 rpm	Approximately 10 minutes
Around 2,000 rpm	Approximately 5 minutes
More than 3,000 rpm	Approximately 3.5 minutes

3. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-688, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002988968

1. CHECK FOR INTAKE AIR LEAK AND PCV HOSE

- 1. Start engine and run it at idle speed.
- Listen for the sound of the intake air leak.
- Check PCV hose connection.

Is intake air leak detected?

YES >> Discover air leak location and repair.

NO >> GO TO 2.

2. CHECK FOR EXHAUST SYSTEM CLOGGING

Stop engine and visually check exhaust tube, three way catalyst and muffler for dents.

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 3.

YES-2 >> Without CONSULT-III: GO TO 4.

NO >> Repair or replace malfunctioning part.

3.PERFORM POWER BALANCE TEST

(I) With CONSULT-III

- Start engine.
- 2. Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- 3. Make sure that each circuit produces a momentary engine speed drop.

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 4.

4. CHECK FUNCTION OF FUEL INJECTOR

1. Start engine and let engine idle.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

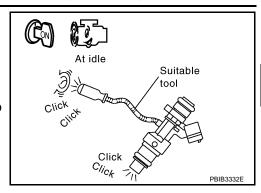
Listen to each fuel injector operating sound.

Clicking noise should be heard.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Perform trouble diagnosis for FUEL INJECTOR, refer to EC-848. "Component Inspection".



${f 5.}$ CHECK FUNCTION OF IGNITION COIL-I

CAUTION:

Do the following procedure in the place where ventilation is good without the combustible.

- Turn ignition switch OFF.
- Remove fuel pump fuse in IPDM E/R to release fuel pressure.

NOTE:

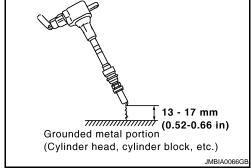
Do not use CONSULT-III to release fuel pressure, or fuel pressure applies again during the following procedure.

- Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.
- 6. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 7. Remove ignition coil and spark plug of the cylinder to be checked.
- 8. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 9. Connect spark plug and harness connector to ignition coil.
- 10. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 -0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- 11. Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal por-

Spark should be generated.

CAUTION:

 Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.



 It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken. NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

Is the inspection result normal?

YES >> GO TO 9. NO >> GO TO 6.

6. CHECK FUNCTION OF IGNITION COIL-II

- Turn ignition switch OFF.
- Disconnect spark plug and connect a known-good spark plug.
- Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

Is the inspection result normal?

YES >> GO TO 7.

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NO >> Check ignition coil, power transistor and their circuits. Refer to EC-853, "Component Function Check".

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< COMPONENT DIAGNOSIS >

7.CHECK SPARK PLUG

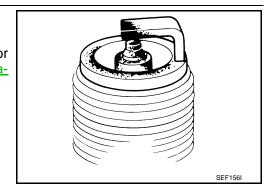
Check the initial spark plug for fouling, etc.

Is the inspection result normal?

YES >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-18, "Removal and Installa-

tion".

NO >> Repair or clean spark plug. Then GO TO 8.



8. CHECK FUNCTION OF IGNITION COIL-III

- 1. Reconnect the initial spark plugs.
- Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

Spark should be generated.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-18, "Removal and Installation".

9. CHECK COMPRESSION PRESSURE

Check compression pressure. Refer to EM-23, "Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Check pistons, piston rings, valves, valve seats and cylinder head gaskets.

10. CHECK FUEL PRESSURE

- 1. Install all removed parts.
- Release fuel pressure to zero. Refer to <u>EC-915, "Inspection"</u>.
- 3. Install fuel pressure gauge kit [SST (J-44321)] and check fuel pressure. Refer to EC-915. "Inspection".

At idling: Approximately 350 kPa (3.57 kg/cm², 51 psi)

Is the inspection result normal?

YES >> GO TO 12.

NO >> GO TO 11.

11. DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging.

Is the inspection result normal?

YES >> Replace "fuel filter and fuel pump assembly".

NO >> Repair or replace.

12. CHECK IGNITION TIMING

Check the following items. Refer to EC-496, "BASIC INSPECTION: Special Repair Requirement".

Items	Specifications
Target idle speed	700 ± 50 rpm (in P or N position)
Ignition timing	15 ± 5°BTDC (in P or N position)

Is the inspection result normal?

YES >> GO TO 13.

NO >> Follow the EC-496, "BASIC INSPECTION: Special Repair Requirement".

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

13. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect corresponding A/F sensor 1 harness connector.
- Disconnect ECM harness connector.
- 4. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F s	ensor 1	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F27	1	F8	45	Existed
1 21	2	1.0	49	LAISIEU

Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F sensor 1		ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Ground	Continuity
F27	1	F8	45	Ground	Not existed
121	2	10	49	Giouna	INOL EXISTED

Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 14.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

14. CHECK A/F SENSOR 1 HEATER

Refer to EC-601, "Component Inspection".

Is the inspection result normal?

YFS >> GO TO 15.

NO >> Replace A/F sensor 1.

15. CHECK MASS AIR FLOW SENSOR

(P)With CONSULT-III

Check "MASS AIR FLOW" in "DATA MONITOR" mode with CONSULT-III.

1.0 - 4.0 g·m/sec : at idling 4.0 - 10.0 g·m/sec : at 2,500 rpm

Check mass air flow sensor signal in Service \$01 with GST.

1.0 - 4.0 g·m/sec : at idling 4.0 - 10.0 g·m/sec : at 2,500 rpm

Is the measurement value within the specification?

YES >> GO TO 16.

>> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or NO ground. Refer to EC-608, "DTC Logic".

16. CHECK SYMPTOM TABLE

Check items on the rough idle symptom in EC-904, "Symptom Table".

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or replace.

$17.\mathtt{erase}$ the 1ST TRIP DTC

Some tests may cause a 1st trip DTC to be set.

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Erase the 1st trip DTC from the ECM memory after performing the tests. Refer to EC-559. "Diagnosis Description".

>> GO TO 18.

18. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

[FOR USA (FEDERAL) AND CANADA]

P0327, P0328 KS

Description INFOID:0000000002988969

The knock sensor is attached to the cylinder block. It senses engine knocking using a piezoelectric element. A knocking vibration from the cylinder block is sensed as vibrational pressure. This pressure is converted into a voltage signal and sent to the ECM.

INFOID:0000000002988970

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detected condition	Possible cause
P0327	Knock sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0328	Knock sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and run it for at least 5 seconds at idle speed.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-693, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK KNOCK SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Disconnect knock sensor harness connector and disconnect ECM harness connector.
- Check the continuity between knock sensor harness connector and ECM harness connector.

Knock sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F16	2	F8	67	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

EC-693 Revision: 2008 January 2008 Rogue

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

${f 3.}$ CHECK KNOCK SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between knock sensor harness connector and ECM harness connector.

Knock	sensor	Е	Continuity	
Connector	Terminal	Connector Terminal		Continuity
F16	1	F8	61	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK KNOCK SENSOR

Refer to EC-694, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace knock sensor.

CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002988972

1. CHECK KNOCK SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect knock sensor harness connector.
- 3. Check resistance between knock sensor terminals as follows.

NOTE:

It is necessary to use an ohmmeter which can measure more than 10 M Ω .

Terminals	Resistance
1 and 2	Approx. 532 - 588 kΩ [at 20°C (68°F)]

CAUTION:

Do not use any knock sensors that have been dropped or physically damaged. Use only new ones.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace knock sensor.

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P0335 CKP SENSOR (POS)

Description INFOID:000000002988973

The crankshaft position sensor (POS) is located on the oil pan facing the gear teeth (cogs) of the signal plate. It detects the fluctuation of the engine revolution.

The sensor consists of a permanent magnet and Hall IC.

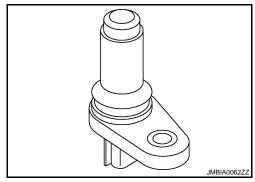
When the engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

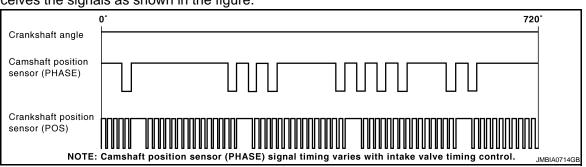
The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor changes.

The ECM receives the voltage signal and detects the fluctuation of the engine revolution.

ECM receives the signals as shown in the figure.





DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0335	Crankshaft position sensor (POS) circuit	 The crankshaft position sensor (POS) signal is not detected by the ECM during the first few seconds of engine cranking. The proper pulse signal from the crankshaft position sensor (POS) is not sent to ECM while the engine is running. The crankshaft position sensor (POS) signal is not in the normal pattern during engine running. 	Harness or connectors [Crankshaft position sensor (POS) circuit is open or shorted.] (Refrigerant pressure sensor circuit is shorted.) (Accelerator pedal position sensor circuit is shorted.) (EVAP control system pressure sensor circuit is shorted.) Crankshaft position sensor (POS) Refrigerant pressure sensor Accelerator pedal position sensor EVAP control system pressure sensor Signal plate

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V with ignition switch ON.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

P0335 CKP SENSOR (POS)

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- Start engine and let it idle for at least 5 seconds.
 If engine does not start, crank engine for at least 2 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-696, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002988975

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK CRANKSHAFT POSITION (CKP) SENSOR (POS) POWER SUPPLY CIRCUIT-I

- 1. Disconnect crankshaft position (CKP) sensor (POS) harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between CKP sensor (POS) harness connector and ground.

CKP sen	sor (POS)	Ground	Voltage	
Connector Terminal		Glodila	vollage	
F20	1	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 3.

3.check crankshaft position (ckp) sensor (pos) power supply circuit-ii

- 1. Turn ignition switch ON.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

CKP sen	CKP sensor (POS)		ECM	
Connector	Terminal	Connector Terminal		Continuity
F20	1	F8	76	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit.

4. CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor		
Connector	Terminal	Name	Connector	Terminal
F8	72	Refrigerant pressure sensor	E49	3
го	76	CKP sensor (POS)	F20	1
E16 87		APP sensor	E110	5
E16	91	EVAP control system pressure sensor	B47	3

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair short to ground or short to power in harness or connectors.

P0335 CKP SENSOR (POS)

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

5. CHECK COMPONENTS

Check the following.

- Refrigerant pressure sensor (Refer to <u>EC-865</u>, "<u>Diagnosis Procedure</u>".)
- EVAP control system pressure sensor (Refer to <u>EC-736, "Component Inspection"</u>.)

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace malfunctioning components.

6. CHECK APP SENSOR

Refer to EC-830, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 12. NO >> GO TO 7.

7. REPLACE ACCELERATOR PEDAL ASSEMBLY

- Replace accelerator pedal assembly. Refer to <u>ACC-3, "Removal and Installation"</u>.
- Go to <u>EC-830</u>, "Special Repair Requirement".

>> INSPECTION END

8.check ckp sensor (pos) ground circuit for open and short

- 1. Turn ignition switch OFF.
- 2. Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

CKP sensor (POS)		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F20	2	F8	60	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9.CHECK CKP SENSOR (POS) INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Disconnect ECM harness connector.
- Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

CKP sensor (POS)		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F20	3	F8	65	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

10. CHECK CRANKSHAFT POSITION SENSOR (POS)

Refer to EC-698, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace crankshaft position sensor (POS).

11.CHECK GEAR TOOTH

Visually check for chipping signal plate gear tooth.

Is the inspection result normal?

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P0335 CKP SENSOR (POS)

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YES >> GO TO 12.

NO >> Replace the signal plate.

12. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002988976

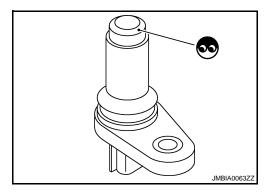
1. CHECK CRANKSHAFT POSITION SENSOR (POS)-I

- 1. Turn ignition switch OFF.
- 2. Loosen the fixing bolt of the sensor.
- 3. Disconnect crankshaft position sensor (POS) harness connector.
- 4. Remove the sensor.
- 5. Visually check the sensor for chipping.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace crankshaft position sensor (POS).



2.CHECK CRANKSHAFT POSITION SENSOR (POS)-II

Check resistance between crankshaft position sensor (POS) terminals as follows.

Terminals (Polarity)	Resistance Ω [at 25°C (77°F)]
1 (+) - 2 (-)	
1 (+) - 3 (-)	Except 0 or ∞
2 (+) - 3 (-)	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace crankshaft position sensor (POS).

Description INFOID:0000000002988977

The camshaft position sensor (PHASE) senses the retraction of camshaft (INT) to identify a particular cylinder. The camshaft position sensor (PHASE) senses the piston position.

When the crankshaft position sensor (POS) system becomes inoperative, the camshaft position sensor (PHASE) provides various controls of engine parts instead, utilizing timing of cylinder identification signals.

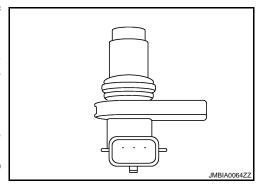
The sensor consists of a permanent magnet and Hall IC.

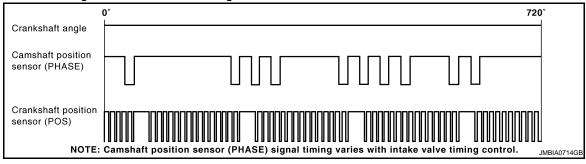
When engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor changes.

ECM receives the signals as shown in the figure.





DTC Logic INFOID:0000000002988978

DTC DETECTION LOGIC

NOTE:

If DTC P0340 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-776. "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0340	Camshaft position sensor (PHASE) circuit	 The cylinder No. signal is not sent to ECM for the first few seconds during engine cranking. The cylinder No. signal is not sent to ECM during engine running. The cylinder No. signal is not in the normal pattern during engine running. 	Harness or connectors (The sensor circuit is open or shorted) Camshaft position sensor (PHASE) Camshaft (INT) Starter motor (Refer to STR-5, "System Diagram".) Starting system circuit (Refer to STR-5, "System Diagram".) Dead (Weak) battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V with ignition switch ON.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE-I

Start engine and let it idle for at least 5 seconds.

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[FOR USA (FEDERAL) AND CANADA]

If engine does not start, crank engine for at least 2 seconds.

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-700, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform dtc confirmation procedure-i

- Maintaining engine speed at more than 800 rpm for at least 5 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-700, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002988979

1. CHECK STARTING SYSTEM

Turn ignition switch to START position.

Does the engine turn over? Does the starter motor operate?

YES >> GO TO 2.

NO >> Check starting system.

2.CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace ground connection.

3.check camshaft position (cmp) sensor (phase) power supply circuit

- Disconnect camshaft position (CMP) sensor (PHASE) harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between CMP sensor (PHASE) harness connector and ground.

CMP senso	r (PHASE)	Ground	Voltage
Connector Terminal		Giodila	voltage
F26	1	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4.CHECK CMP SENSOR (PHASE) GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

CMP sensor (PHASE)		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F26	2	F8	64	Existed

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK CMP SENSOR (PHASE) INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect ECM harness connector.
- Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

[FOR USA (FEDERAL) AND CANADA]

< COMPONENT DIAGNOSIS >

CMP sensor (PHASE)		EC	Continuity	
Connector	Terminal	Connector Terminal		Continuity
F268	3	F13	69	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-701, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace camshaft position sensor (PHASE).

7.CHECK CAMSHAFT (INT)

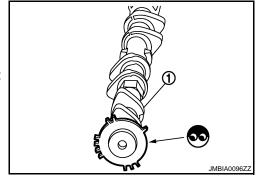
Check the following.

- Accumulation of debris to the signal plate of camshaft (1) rear end
- Chipping signal plate of camshaft rear end

Is the inspection result normal?

YES >> GO TO 8.

NO >> Remove debris and clean the signal plate of camshaft rear end or replace camshaft.



8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

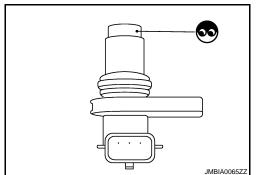
1. CHECK CAMSHAFT POSITION SENSOR (PHASE)-I

- Turn ignition switch OFF.
- 2. Loosen the fixing bolt of the sensor.
- 3. Disconnect camshaft position sensor (PHASE) harness connector.
- 4. Remove the sensor.
- 5. Visually check the sensor for chipping.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace camshaft position sensor (PHASE).



2. CHECK CAMSHAFT POSITION SENSOR (PHASE)-II

Check resistance camshaft position sensor (PHASE) terminals as follows.

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[FOR USA (FEDERAL) AND CANADA]

Terminals (Polarity)	Resistance
1 (+) - 2 (-)	
1 (+) - 3 (-)	Except 0 or ∞ Ω [at 25°C (77°F)]
2 (+) - 3 (-)	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace camshaft position sensor (PHASE).

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

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P0420 THREE WAY CATALYST FUNCTION

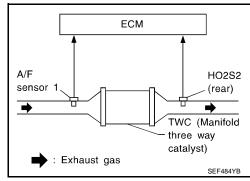
DTC Logic INFOID:0000000002988981

DTC DETECTION LOGIC

The ECM monitors the switching frequency ratio of air fuel ratio (A/F) sensor 1 and heated oxygen sensor 2.

A three way catalyst (manifold) with high oxygen storage capacity will indicate a low switching frequency of heated oxygen sensor 2. As oxygen storage capacity decreases, the heated oxygen sensor 2 switching frequency will increase.

When the frequency ratio of A/F sensor 1 and heated oxygen sensor 2 approaches a specified limit value, the three way catalyst (manifold) malfunction is diagnosed.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0420	Catalyst system efficiency below threshold	 Three way catalyst (manifold) does not operate properly. Three way catalyst (manifold) does not have enough oxygen storage capacity. 	 Three way catalyst (manifold) Exhaust tube Intake air leaks Fuel injector Fuel injector leaks Spark plug Improper ignition timing

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Do not hold engine speed for more than the specified minutes below.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

(P)With CONSULT-III

- Start engine and warm it up to the normal operating temperature.
- 2. Repeat the following procedure 3 times.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

Keep the vehicle speed as steady as possible during the cruising.

Stop vehicle with engine running.

Never turn ignition switch OFF.

- Select "DTC & SRT CONFIRMATION" then "SRT WORK SUPPORT" mode with CONSULT-III.
- 4. Drive vehicle at a speed of 80 km/h (50 MPH) or more until "INCMP" of "CATALYST" changes to "CMPLT"
 - Keep the vehicle speed as steady as possible during the cruising.
 - It will take at most 3 minutes until "INCMP" of "CATALYST" changes to "CMPLT".
- 5. Check 1 st trip DTC.

With GST

- Start engine and warm it up to the normal operating temperature.
- Repeat the following procedure 3 times.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

NOTE:

Keep the vehicle speed as steady as possible during the cruising.

Stop vehicle with engine running.

NOTE:

Never turn ignition switch OFF.

3. Check 1 st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-704, "Diagnosis Procedure".

NO >> INSPECTION END

Component Function Check

INFOID:0000000002988982

1. PERFORM COMPONENT FUNCTION CHECK

Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Open engine hood.
- 6. Check the voltage between ECM harness connector terminals under the following condition.

E	СМ	E	СМ	Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Keeping engine speed at 2,500 rpm constant under no load	The voltage fluctuation cycle takes more than 5 seconds. 1 cycle: $0.6 - 1.0 \rightarrow 0 - 0.3 \rightarrow 0.6 - 1.0$

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-704, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000002988983

1. CHECK EXHAUST SYSTEM

Visually check exhaust tubes and muffler for dent.

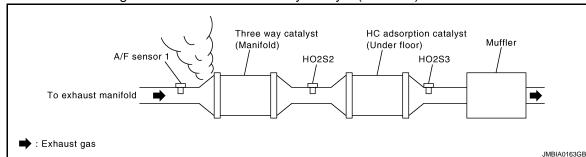
Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace.

2. CHECK EXHAUST GAS LEAK

- Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before the three way catalyst (manifold).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 3.

3. CHECK INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Is intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 4.

4. CHECK IGNITION TIMING

Check the following items. Refer to EC-496, "BASIC INSPECTION: Special Repair Requirement".

Items	Specifications
Target idle speed	700 ± 50 rpm (in P or N position)
Ignition timing	15 ± 5° BTDC (in P or N position)

Is the inspection result normal?

YES >> GO TO 5.

NO >> Follow the EC-496, "BASIC INSPECTION: Special Repair Requirement".

5.CHECK FUEL INJECTOR

1. Stop engine and then turn ignition switch ON.

2. Check the voltage between ECM harness connector and ground.

ECM		Ground	Voltage
Connector	Terminal	Oround	voltage
	29		
F7	30	Ground	Battery voltage
Γ/	31	Giouna	Battery voltage
	32		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Perform <u>EC-847</u>, "<u>Diagnosis Procedure</u>".

6.CHECK FUNCTION OF IGNITION COIL-I

CAUTION:

Do the following procedure in the place where ventilation is good without the combustible.

- 1. Turn ignition switch OFF.
- Remove fuel pump fuse in IPDM E/R to release fuel pressure.

NOTE:

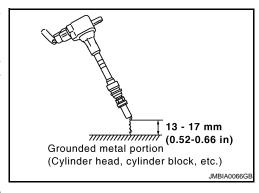
Do not use CONSULT-III to release fuel pressure, or fuel pressure applies again during the following procedure.

- Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- Turn ignition switch OFF.
- 6. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 7. Remove ignition coil and spark plug of the cylinder to be checked.
- 8. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 9. Connect spark plug and harness connector to ignition coil.
- 10. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- 11. Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

CAUTION:

 Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.



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• It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken. NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 7.

7.CHECK FUNCTION OF IGNITION COIL-II

- 1. Turn ignition switch OFF.
- 2. Disconnect spark plug and connect a known-good spark plug.
- 3. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Check ignition coil, power transistor and their circuits. Refer to EC-853, "Diagnosis Procedure".

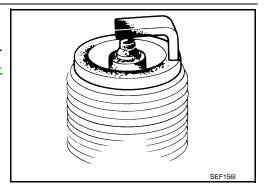
8. CHECK SPARK PLUG

Check the initial spark plug for fouling, etc.

Is the inspection result normal?

YES >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-18, "Removal and Installation"

NO >> Repair or clean spark plug. Then GO TO 9.



9. CHECK FUNCTION OF IGNITION COIL-III

- 1. Reconnect the initial spark plugs.
- 2. Crank engine for about three seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

Spark should be generated.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-18, "Removal and Installation".

10. CHECK FUEL INJECTOR

- 1. Turn ignition switch OFF.
- Remove fuel injector assembly.

Refer to EM-42, "Removal and Installation".

Keep fuel hose and all fuel injectors connected to fuel tube.

- 3. Disconnect all ignition coil harness connectors.
- 4. Reconnect all fuel injector harness connectors disconnected.
- Turn ignition switch ON.

Does fuel drip from fuel injector?

YES >> GO TO 11.

NO >> Replace the fuel injector(s) from which fuel is dripping.

11. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident"

Is the trouble fixed?

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[FOR USA (FEDERAL) AND CANADA]

YES >> INSPECTION END

NO >> Replace three way catalyst assembly.

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DTC Logic

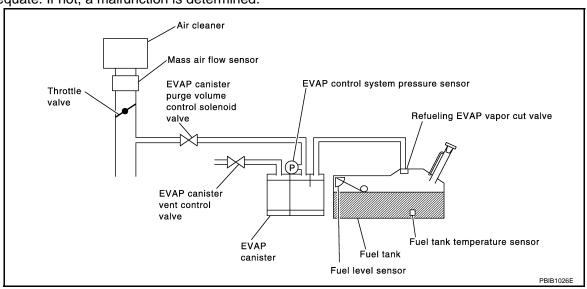
DTC DETECTION LOGIC

NOTE:

If DTC P0441 is displayed with other DTC such as P2122, P2123, P2127, P2128 or P2138, first perform trouble diagnosis for other DTC.

In this evaporative emission (EVAP) control system, purge flow occurs during non-closed throttle conditions. Purge volume is related to air intake volume. Under normal purge conditions (non-closed throttle), the EVAP canister purge volume control solenoid valve is open to admit purge flow. Purge flow exposes the EVAP control system pressure sensor to intake manifold vacuum.

Under normal conditions (non-closed throttle), sensor output voltage indicates if pressure drop and purge flow are adequate. If not, a malfunction is determined.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0441	EVAP control system incorrect purge flow	EVAP control system does not operate properly, EVAP control system has a leak between intake manifold and EVAP control system pressure sensor.	EVAP canister purge volume control solenoid valve stuck closed EVAP control system pressure sensor and the circuit Loose, disconnected or improper connection of rubber tube Blocked rubber tube Cracked EVAP canister EVAP canister purge volume control solenoid valve circuit Accelerator pedal position sensor Blocked purge port EVAP canister vent control valve

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 6.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Alway	s perform	test at a	temperature	of 5°C	(41°F) or more
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>> GO TO 3.

3.PERFORM DTC CONFIRMATION PROCEDURE-I

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(II) With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and let it idle for at least 70 seconds.
- Select "PURG FLOW P0441" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CON-SULT-III.
- 5. Touch "START".

Is COMPLETED displayed on CONSULT-III screen?

YES >> GO TO 5.

NO >> GO TO 4.

4. PERFORM DTC CONFIRMATION PROCEDURE-II

When the following conditions are met, "TESTING" will be displayed on the CONSULT-III screen. Maintain the conditions continuously until "TESTING" changes to "COMPLETED". (It will take at least 35 seconds.)

Selector lever	Suitable position
VHCL SPEED SE	32 - 120 km/h (20 - 75 mph)
ENG SPEED	500 - 3,800 rpm
B/FUEL SCHDL	1.0 - 10.0 msec
COOLAN TEMP/S	More than 0°C (32°F)

CAUTION:

Always drive vehicle at a safe speed.

If "TESTING" is not changed for a long time, retry from step 2.

Is "COMPLETED" displayed on CONSULT-III screen?

YES >> GO TO 5.

NO >> Perform DTC CONFIRMATION PROCEDURE again. GO TO 3.

5. PERFORM DTC CONFIRMATION PROCEDURE-III

Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III screen?

OK >> INSPECTION END

NG >> Go to EC-710, "Diagnosis Procedure".

6. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-709, "Component Function Check".

NOTE:

Use Component Function Check to check the overall monitoring function of the EVAP control system purge flow monitoring. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-710, "Diagnosis Procedure".

Component Function Check

INFOID:00000000002988985

1. PERFORM COMPONENT FUNCTION CHECK

Without CONSULT-III

- 1. Lift up drive wheels.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF, wait at least 10 seconds.
- 4. Start engine and wait at least 70 seconds.
- 5. Set voltmeter probes to ECM harness connector terminals.

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INFOID:0000000002988986

ECM		ECM	
Connector	Terminal	Connector	Terminal
E16	86 (EVAP control system pressure sensor signal)	E16	96 (Sensor ground)

- 6. Check EVAP control system pressure sensor value at idle speed and note it.
- 7. Establish and maintain the following conditions for at least 1 minute.

Air conditioner switch	ON
Headlamp switch	ON
Rear window defogger switch	ON
Engine speed	Approx. 3,000 rpm
Shift lever	Any position other than P, N or R

Verify that EVAP control system pressure sensor value stays 0.1V less than the value at idle speed (measured at step 6) for at least 1 second.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-710, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK EVAP CANISTER

- 1. Turn ignition switch OFF.
- 2. Check EVAP canister for cracks.

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 2.

YES-2 >> Without CONSULT-III: GO TO 3.

NO >> Replace EVAP canister.

2. CHECK PURGE FLOW

(P)With CONSULT-III

- Disconnect vacuum hose connected to EVAP canister purge volume control solenoid valve at EVAP service port and install vacuum gauge. For the location of EVAP service port, refer to EC-545, "System Diagram".
- 2. Start engine and let it idle.
- 3. Select "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III.
- 4. Rev engine up to 2,000 rpm.
- Touch "Qd" and "Qu" on CONSULT-III screen to adjust "PURG VOL CONT/V" opening and check vacuum existence.

PURG VOL CONT/V	Vacuum
100%	Existed
0%	Not existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 4.

3.CHECK PURGE FLOW

⋈ Without CONSULT-III

- Start engine and warm it up to normal operating temperature.
- Stop engine.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- Disconnect vacuum hose connected to EVAP canister purge volume control solenoid valve at EVAP service port and install vacuum gauge. For the location of EVAP service port, refer to EC-545, "System Diagram".
- Start engine and let it idle.

Do not depress accelerator pedal even slightly.

5. Check vacuum gauge indication before 60 seconds passed after starting engine.

Vacuum should not exist.

6. Revving engine up to 2,000rpm after 100 seconds passed after starting engine.

Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 4.

4. CHECK EVAP PURGE LINE

- 1. Turn ignition switch OFF.
- 2. Check EVAP purge line for improper connection or disconnection. Refer to <u>EC-545</u>, "System Diagram".

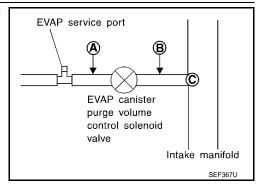
Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair EVAP purge line.

CHECK EVAP PURGE HOSE AND PURGE PORT

- Disconnect purge hoses connected to EVAP service port A and EVAP canister purge volume control solenoid valve B.
- Blow air into each hose and EVAP purge port C.



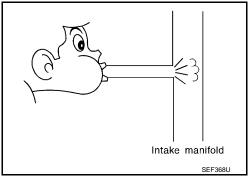
Check that air flows freely.

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 6.

YES-2 >> Without CONSULT-III: GO TO 7.

NO >> Repair or clean hoses and/or purge port.



6. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

With CONSULT-III

- Start engine.
- Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III. Check that engine speed varies according to the valve opening.

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 7.

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[FOR USA (FEDERAL) AND CANADA]

7.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-722, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace EVAP canister purge volume control solenoid valve.

8.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- 1. Disconnect EVAP control system pressure sensor harness connector.
- Check connectors for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace EVAP control system pressure sensor.

9.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR FUNCTION

Refer to EC-737, "DTC Logic" for DTC P0452, EC-742, "DTC Logic" for DTC P0453.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace EVAP control system pressure sensor.

10.CHECK RUBBER TUBE FOR CLOGGING

- 1. Disconnect rubber tube connected to EVAP canister vent control valve.
- 2. Check the rubber tube for clogging.

Is the inspection result normal?

YES >> GO TO 11.

NO >> Clean the rubber tube using an air blower.

11. CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-728, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 12.

NO >> Replace EVAP canister vent control valve.

12. CHECK EVAP PURGE LINE

Inspect EVAP purge line (pipe and rubber tube). Check for evidence of leaks.

Refer to EC-916, "Inspection".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace it.

13. CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 14.

14. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

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P0442 EVAP CONTROL SYSTEM

DTC Logic

DTC DETECTION LOGIC

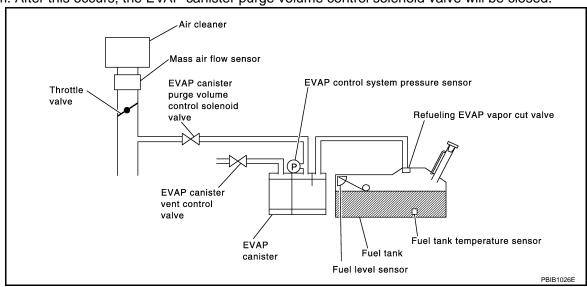
NOTE:

If DTC P0442 is displayed with DTC P0456, first perform the trouble diagnosis for DTC P0456. Refer to <u>EC-753</u>, "DTC Logic".

This diagnosis detects leaks in the EVAP purge line using engine intake manifold vacuum.

If pressure does not increase, the ECM will check for leaks in the line between the fuel tank and EVAP canister purge volume control solenoid valve, under the following "Vacuum test" conditions.

The EVAP canister vent control valve is closed to shut the EVAP purge line off. The EVAP canister purge volume control solenoid valve will then be opened to depressurize the EVAP purge line using intake manifold vacuum. After this occurs, the EVAP canister purge volume control solenoid valve will be closed.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0442	EVAP control system small leak detected (negative pressure)	EVAP control system has a leak, EVAP control system does not operate properly.	 Incorrect fuel tank vacuum relief valve Incorrect fuel filler cap used Fuel filler cap remains open or fails to close. Foreign matter caught in fuel filler cap. Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve. Foreign matter caught in EVAP canister vent control valve. EVAP canister or fuel tank leaks EVAP purge line (pipe and rubber tube) leaks EVAP purge line rubber tube bent Loose or disconnected rubber tube EVAP canister vent control valve and the circuit EVAP canister purge volume control solenoid valve and the circuit Fuel tank temperature sensor O-ring of EVAP canister vent control valve is missing or damaged EVAP canister is saturated with water EVAP control system pressure sensor Fuel level sensor and the circuit Refueling EVAP vapor cut valve ORVR system leaks

CAUTION

- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.
- If the fuel filler cap is not tightened properly, the MIL may come on.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

· Use only a genuine NISSAN rubber tube as a replacement.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

- Perform "DTC WORK SUPPORT" when the fuel level is between 1/4 and 3/4 full, and vehicle is placed on flat level surface.
- Always perform test at a temperature of 0 to 30°C (32 to 86°F).

NOTE:

Make sure that EVAP hoses are connected to EVAP canister purge volume control solenoid valve properly.

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

2. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 4. Make sure that the following conditions are met.

COOLAN TEMP/S: 0 - 70°C (32 - 158°F) INT/A TEMP SE: 0 - 30°C (32 - 86°F)

5. Select "EVAP SML LEAK P0442/P1442" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-III.

Follow the instruction displayed.

NOTE:

If the engine speed cannot be maintained within the range displayed on the CONSULT-III screen, go to EC-496, "BASIC INSPECTION: Special Repair Requirement".

Which is displayed on CONSULT-III screen?

OK >> INSPECTION END

NG >> Go to EC-714, "Diagnosis Procedure".

3.perform component function check

With GST

NOTE:

Be sure to read the explanation of DRIVING PATTERN in <u>EC-896</u>, "How to <u>Set SRT Code"</u> before driving vehicle.

- Start engine.
- 2. Drive vehicle according to DRIVING PATTERN.
- 3. Stop vehicle.
- 4. Turn ignition switch OFF, wait at least 10 seconds and then turn ON.
- 5. Select Service \$07 with GST.

Is 1st trip DTC displayed?

YES-1 >> P0441: Go to <u>EC-710. "Diagnosis Procedure"</u>. YES-2 >> P0442: Go to <u>EC-714. "Diagnosis Procedure"</u>. NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002988988

1. CHECK FUEL FILLER CAP DESIGN

1. Turn ignition switch OFF.

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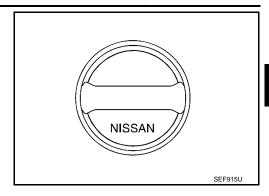
[FOR USA (FEDERAL) AND CANADA]

2. Check for genuine NISSAN fuel filler cap design.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace with genuine NISSAN fuel filler cap.



2. CHECK FUEL FILLER CAP INSTALLATION

Check that the cap is tightened properly by rotating the cap clockwise.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Open fuel filler cap, then clean cap and fuel filler neck threads using air blower. Then retighten until ratcheting sound is heard.

3. CHECK FUEL FILLER CAP FUNCTION

Check for air releasing sound while opening the fuel filler cap.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4. CHECK FUEL TANK VACUUM RELIEF VALVE

Refer to EC-718, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace fuel filler cap with a genuine one.

5.CHECK FOR EVAP LEAK

Refer to EC-916, "Inspection".

Is there any leak in EVAP line?

YES >> Repair or replace.

NO >> GO TO 6.

6. CHECK EVAP CANISTER VENT CONTROL VALVE

Check the following.

• EVAP canister vent control valve is installed properly.

Refer to EC-918, "Exploded View".

EVAP canister vent control valve.

Refer to EC-728, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace EVAP canister vent control valve and O-ring.

.CHECK IF EVAP CANISTER SATURATED WITH WATER

 Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

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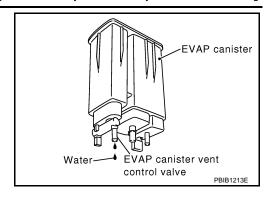
Does water drain from the EVAP canister?

Does water drain from the EVAP canister?

YES >> GO TO 8.

NO-1 >> With CONSULT-III: GO TO 10.

NO-2 >> Without CONSULT-III: GO TO 11.



8. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 10.

YES-2 >> Without CONSULT-III: GO TO 11.

NO >> GO TO 9.

9. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection

>> Repair hose or replace EVAP canister.

10.check evap canister purge volume control solenoid valve operation

(P)With CONSULT-III

- 1. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 2. Start engine.
- 3. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode.
- 4. Touch "Qu" on CONSULT-III screen to increase "PURG VOL CONT/V" opening to 100%.
- 5. Check vacuum hose for vacuum.

Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 13.

NO >> GO TO 12.

11. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

⋈Without CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- Stop engine.
- 3. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 4. Start engine and let it idle for at least 80 seconds.
- 5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 13.

NO >> GO TO 12.

12. CHECK VACUUM HOSE

Check vacuum hoses for clogging or disconnection. Refer to <u>EC-545</u>, "System Diagram". Is the inspection result normal?

YES >> GO TO 13. NO >> Repair or reconnect the hose.	
3.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE	
refer to EC-722, "Component Inspection".	
s the inspection result normal?	
YES >> GO TO 14.	
NO >> Replace EVAP canister purge volume control solenoid valve.	
4.CHECK FUEL TANK TEMPERATURE SENSOR	
Refer to EC-680, "Component Inspection".	
s the inspection result normal? YES >> GO TO 15.	
NO >> Replace fuel level sensor unit.	
5. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR	
tefer to EC-734, "DTC Logic".	
s the inspection result normal?	
YES >> GO TO 16.	
NO >> Replace EVAP control system pressure sensor.	
6.CHECK EVAP PURGE LINE	
check EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks or improper tefer to EC-545, "System Diagram".	connection.
s the inspection result normal?	
YES >> GO TO 17.	
NO >> Repair or reconnect the hose.	
7.CLEAN EVAP PURGE LINE	
clean EVAP purge line (pipe and rubber tube) using air blower.	
>> GO TO 18.	
8.CHECK EVAP/ORVR LINE	
Check EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, looseness and ection. For location, refer to EC-859 , "Description".	d improper con-
s the inspection result normal?	
YES >> GO TO 19.	
NO >> Repair or replace hoses and tubes.	
9. CHECK RECIRCULATION LINE	
check recirculation line between filler neck tube and fuel tank for clogging, kink, cracks,	looseness and
nproper connection. s the inspection result normal?	
YES >> GO TO 20.	
NO >> Repair or replace hose, tube or filler neck tube.	
20. CHECK REFUELING EVAP VAPOR CUT VALVE	
refer to EC-862, "Component Inspection".	
s the inspection result normal?	
YES >> GO TO 21.	
NO >> Replace refueling EVAP vapor cut valve with fuel tank.	
21.CHECK FUEL LEVEL SENSOR	
Refer to FL-10, "2WD: Inspection" (2WD), FL-14, "AWD: Inspection" (AWD).	

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YES >> GO TO 22.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

NO >> Replace fuel level sensor unit.

22. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

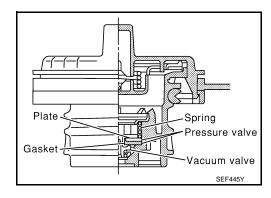
>> INSPECTION END

Component Inspection

INFOID:0000000002988989

1. CHECK FUEL FILLER CAP

- 1. Turn ignition switch OFF.
- 2. Remove fuel filler cap.
- 3. Wipe clean valve housing.



- 4. Install fuel filler cap adapter (commercial service tool) to fuel filler cap.
- 5. Check valve opening pressure and vacuum.

Pressure: 15.3 - 20.0 kPa (0.156 - 0.204 kg/cm², 2.22 -

2.90 psi)

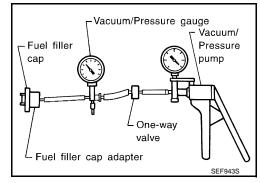
Vacuum: -6.0 to -3.3 kPa (-0.061 to -0.034 kg/cm²,

-0.87 to -0.48 psi)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.



2. REPLACE FUEL FILLER CAP

Replace fuel filler cap.

CAUTION:

Use only a genuine fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.

>> INSPECTION END

P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

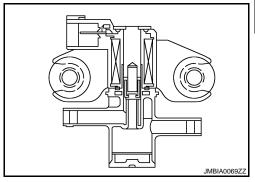
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[FOR USA (FEDERAL) AND CANADA]

P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Description INFOID:0000000002988990

The EVAP canister purge volume control solenoid valve uses a ON/ OFF duty to control the flow rate of fuel vapor from the EVAP canister. The EVAP canister purge volume control solenoid valve is moved by ON/OFF pulses from the ECM. The longer the ON pulse, the greater the amount of fuel vapor that will flow through the valve.



DTC Logic INFOID:0000000002988991

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0443	EVAP canister purge volume control solenoid valve	The canister purge flow is detected during the specified driving conditions, even when EVAP canister purge volume control solenoid valve is completely closed.	 EVAP control system pressure sensor EVAP canister purge volume control solenoid valve (The valve is stuck open.) EVAP canister vent control valve EVAP canister Hoses (Hoses are connected incorrectly or clogged.) 	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Always perform test at a temperature of 5°C (41°F) or more.

Do you have CONSULT-III

YES >> GO TO 2.

NO >> GO TO 3.

2.PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Select "PURG VOL CN/V P1444" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-III.
- Touch "START".
- Start engine and let it idle until "TESTING" on CONSULT-III changes to "COMPLETED". (It will take approximately 10 seconds.)

If "TESTING" is not displayed after 5 minutes, retry from step 2.

Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III?

OK >> INSPECTION END

NG >> Go to EC-720, "Diagnosis Procedure".

3.PERFORM DTC CONFIRMATION PROCEDURE

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P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

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[FOR USA (FEDERAL) AND CANADA]

With GST

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and let it idle for at least 20 seconds.
- 4. Check 1st trip DTC.

Is 1st trip DTC displayed?

YES >> Go to EC-720, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002988992

1.check evap canister purge volume control solenoid valve power supply circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect EVAP canister purge volume control solenoid valve harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between EVAP canister purge volume control solenoid valve harness connector and ground.

EVAP canister purge volume control solenoid valve		Ground	Voltage	
Connector	Terminal			
F32	1	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

2.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between EVAP canister purge volume control solenoid valve and IPDM E/R
- Harness for open or short between EVAP canister purge volume control solenoid valve and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between EVAP canister purge volume control solenoid valve harness connector and ECM harness connector.

EVAP canister purge volume control solenoid valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F32	2	F7	25	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

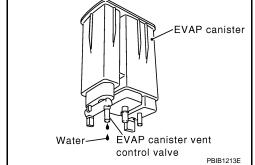
4. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- Disconnect EVAP control system pressure sensor harness connector.
- Check connectors for water.

Water should not exist.

P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >	[FOR USA (FEDERAL) AND CANADA]
Is the inspection result normal?	_
YES >> GO TO 5.	A
NO >> Replace EVAP control system pressure sensor.	
5. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR	EC
Refer to EC-736, "Component Inspection".	
Is the inspection result normal?	
YES-1 >> With CONSULT-III: GO TO 6. YES-2 >> Without CONSULT-III: GO TO 7.	C
NO >> Replace EVAP control system pressure sensor.	
6. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOL	ENOID VALVE
─────────────────────────────────────	
1. Turn ignition switch OFF.	
Reconnect harness connectors disconnected.	E
3. Start engine.4. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with	CONSULT-III Check that engine speed var-
ies according to the valve opening.	F
Is the inspection result normal?	'
YES >> GO TO 8.	
NO >> GO TO 7.	G
.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOL	ENOID VALVE
Refer to EC-722, "Component Inspection".	Н
Is the inspection result normal?	"
YES >> GO TO 8. NO >> Replace EVAP canister purge volume control solenoi	d valve
8. CHECK RUBBER TUBE FOR CLOGGING	d valve.
	deal caba
 Disconnect rubber tube connected to EVAP canister vent con Check the rubber tube for clogging. 	itroi vaive.
Is the inspection result normal?	J
YES >> GO TO 9.	
NO >> Clean the rubber tube using an air blower.	K
9. CHECK EVAP CANISTER VENT CONTROL VALVE	
Refer to EC-728, "Component Inspection".	
Is the inspection result normal?	L
YES >> GO TO 10.	
NO >> Replace EVAP canister vent control valve.	M
10. CHECK IF EVAP CANISTER SATURATED WITH WATER	
Remove EVAP canister with EVAP canister vent control valve attached.	, ,
attached. 2. Check if water will drain from EVAP canister.	N
Does water drain from the EVAP canister?	
YES >> GO TO 11.	EVAP canister
NO >> GO TO 13.	
	P



11. CHECK EVAP CANISTER

P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE [FOR USA (FEDERAL) AND CANADA]

< COMPONENT DIAGNOSIS >

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES >> GO TO 13. NO >> GO TO 12.

12. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection
 - >> Repair hose or replace EVAP canister.

13. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

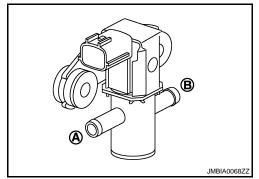
INFOID:0000000002988993

${f 1}$.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

(P)With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Turn ignition switch ON.
- 5. Select "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III.
- Touch "Qd" and "Qu" on CONSULT-III screen to adjust "PURG VOL CONT/V" opening and check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition (PURG VOL CONT/V value)	Air passage continuity between (A) and (B)
100%	Existed
0%	Not existed



Without CONSULT-III

- Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition	Air passage continuity between (A) and (B)
12V direct current supply between terminals 1 and 2	Existed
No supply	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister purge volume control solenoid valve

P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID **VALVE**

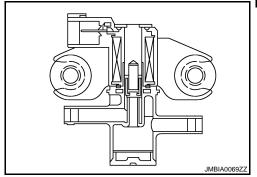
< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Description INFOID:0000000002988994

The EVAP canister purge volume control solenoid valve uses a ON/ OFF duty to control the flow rate of fuel vapor from the EVAP canister. The EVAP canister purge volume control solenoid valve is moved by ON/OFF pulses from the ECM. The longer the ON pulse, the greater the amount of fuel vapor that will flow through the valve.



DTC Logic INFOID:0000000002988995

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0444	EVAP canister purge volume control solenoid valve circuit open	An excessively low voltage signal is sent to ECM through the valve	Harness or connectors (The solenoid valve circuit is open or shorted.) EVAP canister purge volume control solenoid valve
P0445	EVAP canister purge volume control solenoid valve circuit shorted	An excessively high voltage signal is sent to ECM through the valve	Harness or connectors (The solenoid valve circuit is shorted.) EVAP canister purge volume control solenoid valve

DTC CONFIRMATION PROCEDURE

1.CONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm battery voltage is more than 11V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for at least 13 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-723, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- Turn ignition switch ON.
- Check the voltage between EVAP canister purge volume control solenoid valve harness connector and ground.

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INFOID:0000000002988996

P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

EVAP canister purge volume control solenoid valve		Ground	Voltage
Connector	Terminal		
F32	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7. F121
- Harness for open or short between EVAP canister purge volume control solenoid valve and IPDM E/R
- Harness for open or short between EVAP canister purge volume control solenoid valve and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP canister purge volume control solenoid valve harness connector and ECM harness connector.

	r purge volume lenoid valve	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F32	2	F7	25	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 4.

YES-2 >> Without CONSULT-III: GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

(P)With CONSULT-III

- 1. Reconnect all harness connectors disconnected.
- Start engine.
- Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III. Check that engine speed varies according to the valve opening.

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

5. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-725, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace EVAP canister purge volume control solenoid valve.

6.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Component Inspection

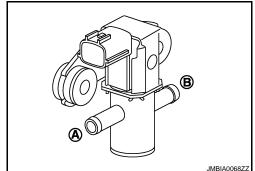
INFOID:00000000002988997

1. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

(P)With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- Turn ignition switch ON.
- Select "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III.
- Touch "Qd" and "Qu" on CONSULT-III screen to adjust "PURG VOL CONT/V" opening and check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition (PURG VOL CONT/V value)	Air passage continuity between (A) and (B)
100%	Existed
0%	Not existed



Without CONSULT-III

- Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition	Air passage continuity between (A) and (B)
12V direct current supply between terminals 1 and 2	Existed
No supply	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister purge volume control solenoid valve

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P0447 EVAP CANISTER VENT CONTROL VALVE

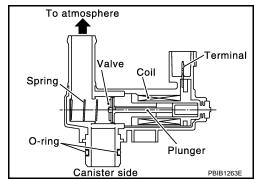
Description

The EVAP canister vent control valve is located on the EVAP canister and is used to seal the canister vent.

This solenoid valve responds to signals from the ECM. When the ECM sends an ON signal, the coil in the solenoid valve is energized. A plunger will then move to seal the canister vent. The ability to seal the vent is necessary for the on board diagnosis of other evaporative emission control system components.

This solenoid valve is used only for diagnosis, and usually remains opened.

When the vent is closed, under normal purge conditions, the evaporative emission control system is depressurized and allows "EVAP Control System" diagnosis.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0447	EVAP canister vent control valve circuit open	An improper voltage signal is sent to ECM through EVAP canister vent control valve.	Harness or connectors (The valve circuit is open or shorted.) EVAP canister vent control valve

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm battery voltage is more than 11V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait at least 8 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-726, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002989000

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

2.CHECK EVAP CANISTER VENT CONTROL VALVE CIRCUIT

(I) With CONSULT-III

- 1. Turn ignition switch OFF and then turn ON.
- Select "VENT CONTROL/V" in "ACTIVE TEST" mode with CONSULT-III.
- Touch "ON/OFF" on CONSULT-III screen.
- 4. Check for operating sound of the valve.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Clicking sound should be heard. Α Is the inspection result normal? >> GO TO 7. YES EC NO >> GO TO 3. ${f 3.}$ CHECK EVAP CANISTER VENT CONTROL VALVE POWER SUPPLY CIRCUIT 1. Turn ignition switch OFF. Disconnect EVAP canister vent control valve harness connector. 2. 3. Turn ignition switch ON. Check the voltage between EVAP canister vent control valve harness connector and ground. D EVAP canister vent control valve Voltage Ground Connector **Terminal** Е **B48** Ground Battery voltage Is the inspection result normal? YES >> GO TO 5. NO >> GO TO 4. f 4.DETECT MALFUNCTIONING PART Check the following. Harness connectors E105, M77 Harness connectors M11, B1 Н Harness connectors E69, B70 Harness for open or short between EVAP canister vent control valve and IPDM E/R >> Repair open circuit or short to ground or short to power in harness or connectors. ${f 5.}$ CHECK EVAP CANISTER VENT CONTROL VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT Turn ignition switch OFF. Disconnect ECM harness connector. Check the continuity between EVAP canister vent control valve harness connector and ECM harness connector. EVAP canister vent control valve **ECM** Continuity Connector **Terminal** Connector Terminal B48 E16 109 Existed Also check harness for short to ground and short to power. Is the inspection result normal? YES >> GO TO 7. NO >> GO TO 6. N 6.DETECT MALFUNCTIONING PART Check the following. Harness connectors E105, M77 Harness connectors M11, B1 Harness connectors E69, B70 Harness for open or short between EVAP canister vent control valve and ECM Р >> Repair open circuit or short to ground or short to power in harness or connectors. 7. CHECK RUBBER TUBE FOR CLOGGING

- Disconnect rubber tube connected to EVAP canister vent control valve.
- Check the rubber tube for clogging.

Is the inspection result normal?

EC-727 Revision: 2008 January 2008 Rogue

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

YES >> GO TO 8.

NO >> Clean the rubber tube using an air blower.

8.CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-728, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace EVAP canister vent control valve.

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

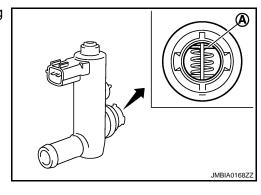
1. CHECK EVAP CANISTER VENT CONTROL VALVE-I

- 1. Turn ignition switch OFF.
- 2. Remove EVAP canister vent control valve from EVAP canister.
- 3. Check portion (A) of EVAP canister vent control valve for being rusted.

Is it rusted?

YES >> Replace EVAP canister vent control valve

NO >> GO TO 2.



INFOID:0000000002989001

2.CHECK EVAP CANISTER VENT CONTROL VALVE-II

(P)With CONSULT-III

- 1. Reconnect harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.
- 4. Check air passage continuity and operation delay time.

 Make sure new O-ring is installed properly.

Condition VENT CONTROL/V	Air passage continuity between (A) and (B)
ON	Not existed
OFF	Existed

Operation takes less than 1 second.

Without CONSULT-III

Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.

Condition	Air passage continuity between (A) and (B)
12V direct current supply between terminals (1) and (2)	Not existed
OFF	Existed

Operation takes less than 1 second.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace EVAP canister vent control valve

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

3.check evap canister vent control valve-iii

(P)With CONSULT-III

1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.

Existed

2. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.

Check air passage continuity and operation delay time.
 Make sure new O-ring is installed properly.

Condition VENT CONTROL/V	Air passage continuity between (A) and (B)
ON	Not existed

Operation takes less than 1 second.

Without CONSULT-III

OFF

1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.

Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.

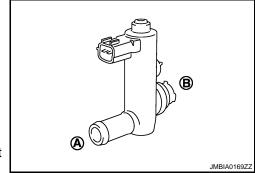
Condition	Air passage continuity between (A) and (
12V direct current supply between terminals (1) and (2)	Not existed		
OFF	Existed		

Operation takes less than 1 second.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister vent control valve



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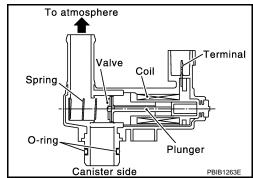
Description INFOID:000000002989002

The EVAP canister vent control valve is located on the EVAP canister and is used to seal the canister vent.

This solenoid valve responds to signals from the ECM. When the ECM sends an ON signal, the coil in the solenoid valve is energized. A plunger will then move to seal the canister vent. The ability to seal the vent is necessary for the on board diagnosis of other evaporative emission control system components.

This solenoid valve is used only for diagnosis, and usually remains opened.

When the vent is closed, under normal purge conditions, the evaporative emission control system is depressurized and allows "EVAP Control System" diagnosis.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0448	EVAP canister vent control valve close	EVAP canister vent control valve remains closed under specified driving conditions.	 EVAP canister vent control valve EVAP control system pressure sensor and the circuit Blocked rubber tube to EVAP canister vent control valve EVAP canister is saturated with water

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

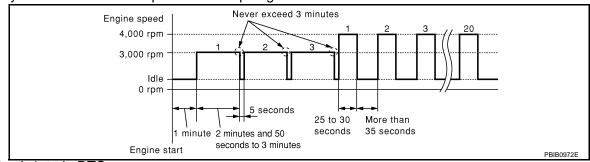
>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and let it idle for at least 1 minute.
- 4. Repeat next procedures three times.
- Increase the engine speed up to 3,000 to 3,500 rpm and keep it for 2 minutes and 50 seconds to 3 minutes.

Never exceed 3 minutes.

- Fully released accelerator pedal and keep engine idle for about 5 seconds.
- 5. Repeat next procedure 20 times.
- Quickly increase the engine speed up to 4,000 to 4,500 rpm or more and keep it for 25 to 30 seconds.
- Fully released accelerator pedal and keep engine idle for at least 35 seconds.



6. Check 1st trip DTC.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Is 1st trip DTC detected?

YES >> Go to EC-731, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002989004

1. CHECK RUBBER TUBE

- Turn ignition switch OFF.
- Disconnect rubber tube connected to EVAP canister vent control valve. 2.
- Check the rubber tube for clogging.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Clean rubber tube using an air blower.

2.CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-732. "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3.

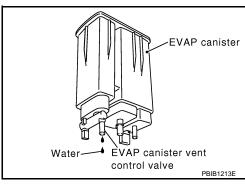
NO >> Replace EVAP canister vent control valve.

${f 3.}$ CHECK IF EVAP CANISTER SATURATED WITH WATER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Check if water will drain from the EVAP canister.

Does water drain from EVAP canister?

YES >> GO TO 4. >> GO TO 6. NO



4. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection

>> Repair hose or replace EVAP canister.

6. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- Disconnect EVAP control system pressure sensor harness connector.
- 2. Check connectors for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 7.

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

NO >> Replace EVAP control system pressure sensor.

7.check evap control system pressure sensor

Refer to EC-736, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace EVAP control system pressure sensor.

8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002989005

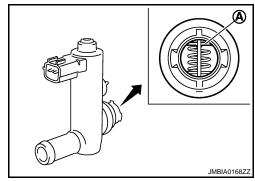
1. CHECK EVAP CANISTER VENT CONTROL VALVE-I

- 1. Turn ignition switch OFF.
- 2. Remove EVAP canister vent control valve from EVAP canister.
- 3. Check portion (A) of EVAP canister vent control valve for being rusted.

Is it rusted?

YES >> Replace EVAP canister vent control valve

NO >> GO TO 2.



2. CHECK EVAP CANISTER VENT CONTROL VALVE-II

(P)With CONSULT-III

- 1. Reconnect harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.
- 4. Check air passage continuity and operation delay time.

Make sure new O-ring is installed properly.

Condition VENT CONTROL/V	Air passage continuity between (A) and (E	
ON	Not existed	
OFF	Existed	

Operation takes less than 1 second.

♥Without CONSULT-III

Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.

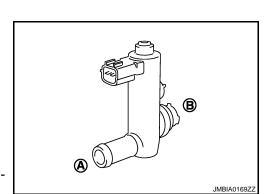
Condition	Air passage continuity between (A) and (B		
12V direct current supply between terminals (1) and (2)	Not existed		
OFF	Existed		

Operation takes less than 1 second.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace EVAP canister vent control valve



< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

${\bf 3.}{\tt CHECK\ EVAP\ CANISTER\ VENT\ CONTROL\ VALVE-III}$

(P)With CONSULT-III

1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.

2. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.

3. Check air passage continuity and operation delay time.

Make sure new	O-ring	is installed	properly.

Condition VENT CONTROL/V	Air passage continuity between (A) and (B)
ON	Not existed
OFF	Existed

Operation takes less than 1 second.

Without CONSULT-III

1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.

2. Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.

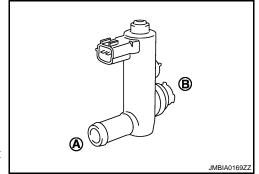
Condition	Air passage continuity between (A) and		
12V direct current supply between terminals (1) and (2)	Not existed		
OFF	Existed		

Operation takes less than 1 second.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister vent control valve



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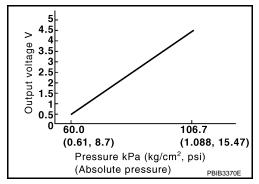
< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P0451 EVAP CONTROL SYSTEM PRESSURE SENSOR

Description INFOID:000000002989006

The EVAP control system pressure sensor detects pressure in the purge line. The sensor output voltage to the ECM increases as pressure increases.



INFOID:0000000002989007

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0451	EVAP control system pressure sensor performance	ECM detects a sloshing signal from the EVAP control system pressure sensor	Harness or connectors (EVAP control system pressure sensor circuit is shorted.) [Crankshaft position sensor (POS) circuit is shorted.] (Accelerator pedal position sensor circuit is shorted.) (Refrigerant pressure sensor circuit is shorted.) EVAP control system pressure sensor Crankshaft position sensor (POS) Accelerator pedal position sensor Refrigerant pressure sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Start engine and wait at least 40 seconds.

NOTE:

Do not depress accelerator pedal even slightly.

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-734, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002989008

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR FOR WATER

1. Disconnect EVAP control system pressure sensor harness connector.

2. Check sensor harness connector for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace harness connector.

3.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch ON.

2. Check the voltage between EVAP control system pressure sensor harness connector and ground.

EVAP control system pressure sensor		Ground	Voltage	
Connector	Terminal	Oround	vollage	
B47	3	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 4.

4. CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

E	CM	Sensor		
Connector	Terminal	Name	Connector	Terminal
F8	72	Refrigerant pressure sensor	E49	3
10	76	CKP sensor (POS)	F20	1
E10	87	APP sensor	E110	5
210	91	EVAP control system pressure sensor	B47	3

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair short to ground or short to power in harness or connectors.

5.CHECK COMPONENT

Check the following.

- Crankshaft position sensor (POS) (Refer to <u>EC-698, "Component Inspection"</u>.)
- Refrigerant pressure sensor (Refer to <u>EC-865, "Diagnosis Procedure"</u>.)

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace malfunctioning component.

O.CHECK APP SENSOR

Refer to EC-830, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 7.

7. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- 2. Go to EC-830, "Special Repair Requirement".

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[FOR USA (FEDERAL) AND CANADA]

>> INSPECTION END

8. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-736, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace EVAP control system pressure sensor.

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002989009

1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister. Always replace O-ring with a new one.
- 3. Install a vacuum pump to EVAP control system pressure sensor.
- 4. Turn ignition switch ON and check output voltage between ECM harness connector terminals under the following conditions.

	ECM		Condition	
Connector	+	_	Condition [Applied vacuum kPa (kg/cm², psi)	Voltage
Connector	Terminal	Terminal	[pp. ca racaa a (g. c , pc.)	
	86	96	Not applied	1.8 - 4.8V
E16	(EVAP control system pressure sensor signal)	(Sensor ground)	-26.7 (-0.272, -3.87)	2.1 to 2.5V lower than above value

CAUTION:

- · Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-0.952 kg/cm², -13.53 psi) or pressure over 101.3 kPa (1.033 kg/cm², 14.69 psi).

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP control system pressure sensor

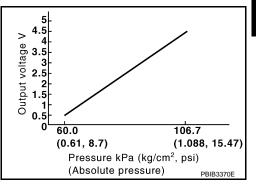
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[FOR USA (FEDERAL) AND CANADA]

P0452 EVAP CONTROL SYSTEM PRESSURE SENSOR

Description INFOID:000000002989010

The EVAP control system pressure sensor detects pressure in the purge line. The sensor output voltage to the ECM increases as pressure increases.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0452	EVAP control system pressure sensor low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (EVAP control system pressure sensor circuit is open or shorted.) [Crankshaft position sensor (POS) circuit is shorted.) (Accelerator pedal position sensor circuit is shorted.) (Refrigerant pressure sensor circuit is shorted.) EVAP control system pressure sensor Crankshaft position sensor (POS) Accelerator pedal position sensor Refrigerant pressure sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

EC-737

TESTING CONDITION:

Always perform test at a temperature of 5°C (41°F) or more.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-III.
- 5. Make sure that "FUEL T/TMP SE" is more than 0°C (32°F).
- 6. Start engine and wait at least 20 seconds.
- 7. Check 1st trip DTC.

With GST

- 1. Start engine and warm it up to normal operating temperature.
- Set voltmeter probes to ECM harness connector and ground as follows.

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[FOR USA (FEDERAL) AND CANADA]

	ECM	ECM		
Connector	Connector Terminal		Terminal	
E16	95 (Fuel tank temperature sensor signal)	E16	104 (Sensor ground)	

- 3. Make sure that the voltage is less than 4.2V.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and wait at least 20 seconds.
- 6. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-738, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002989012

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK CONNECTOR

- 1. Disconnect EVAP control system pressure sensor harness connector.
- 2. Check sensor harness connector for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace harness connector.

3.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT-I

- Turn ignition switch ON.
- Check the voltage between EVAP control system pressure sensor harness connector and ground.

EVAP control syste	em pressure sensor	Ground	Voltage
Connector	Terminal	Oround	voltage
B47	3	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 4.

f 4.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT-II

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

EVAP control system pressure sensor		E	Continuity	
Connector	Terminal	Connector	Connector Terminal	
B47	3	E16	91	Existed

Is the inspection result normal?

YES >> GO TO 6.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1, M11
- Harness connectors M77, E105
- Harness for open or short between EVAP control system pressure sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor		
Connector	Terminal	Name	Connector	Terminal
F8	72	Refrigerant pressure sensor	E49	3
76		CKP sensor (POS)	F20	1
E10	87	APP sensor	E110	5
LIU	91	EVAP control system pressure sensor	B47	3

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair short to ground or short to power in harness or connectors.

7. CHECK COMPONENT

Check the following.

- Crankshaft position sensor (POS) (Refer to EC-698, "Component Inspection".)
- Refrigerant pressure sensor (Refer to <u>EC-865</u>, "<u>Diagnosis Procedure</u>".)

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace malfunctioning component.

8. CHECK APP SENSOR

Refer to EC-830, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 9.

9. REPLACE ACCELERATOR PEDAL ASSEMBLY

- Replace accelerator pedal assembly. Refer to <u>ACC-3, "Removal and Installation"</u>.
- 2. Go to EC-830, "Special Repair Requirement".

>> INSPECTION END

10.check evap control system pressure sensor ground circuit for open and short

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

EVAP control system pressure sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		
B47	1	E16	96	Existed

4. Also check harness for short to ground and short to power.

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[FOR USA (FEDERAL) AND CANADA]

Is the inspection result normal?

YES >> GO TO 12. NO >> GO TO 11.

11. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1, M11
- Harness connectors M77, E105
- Harness for open or short between EVAP control system pressure sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

12.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

EVAP control system pressure sensor		E	Continuity		
Connector	Terminal	Connector	Terminal		
B47	2	E16	86	Existed	

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 14. NO >> GO TO 13.

13. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1. M11
- Harness connectors B10, E29
- Harness for open or short between EVAP control system pressure sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

14. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-740, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace EVAP control system pressure sensor.

15. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002989013

1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

- 1. Turn ignition switch OFF.
- Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister.
 Always replace O-ring with a new one.
- 3. Install a vacuum pump to EVAP control system pressure sensor.
- Turn ignition switch ON and check output voltage between ECM harness connector terminals under the following conditions.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

ECM + -		Condition			
		_	[Applied vacuum kPa (kg/cm ² , psi)	Voltage	
Connector	Terminal	Terminal	[ppnearaeann a (ng/em , pen/		
	86	96	Not applied	1.8 - 4.8V	
E16	(EVAP control		-26.7 (-0.272, -3.87)	2.1 to 2.5V lower than above value	

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CAUTION:

- Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-0.952 kg/cm², -13.53 psi) or pressure over 101.3 kPa (1.033 kg/ cm², 14.69 psi).

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP control system pressure sensor Е

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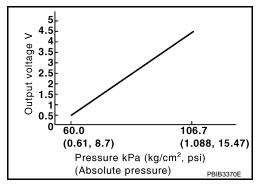
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[FOR USA (FEDERAL) AND CANADA]

P0453 EVAP CONTROL SYSTEM PRESSURE SENSOR

Description INFOID:000000002989014

The EVAP control system pressure sensor detects pressure in the purge line. The sensor output voltage to the ECM increases as pressure increases.



DTC Logic

INFOID:000000002989015

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0453	EVAP control system pressure sensor high input	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors (EVAP control system pressure sensor circuit is open or shorted.) [Crankshaft position sensor (POS) circuit is shorted.] (Accelerator pedal circuit is shorted.) (Refrigerant pressure sensor circuit is shorted.) EVAP control system pressure sensor Crankshaft position sensor (POS) Accelerator pedal position sensor Refrigerant pressure sensor EVAP canister vent control valve EVAP canister Rubber hose from EVAP canister vent control valve to vehicle frame

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Always perform test at a temperature of 5°C (41°F) or more.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Select "DATA MONITOR" mode with CONSULT-III.
- 5. Make sure that "FUEL T/TMP SE" is more than 0°C (32°F).
- Start engine and wait at least 20 seconds.
- 7. Check 1st trip DTC.

With GST

- 1. Start engine and warm it up to normal operating temperature.
- Set voltmeter probes to ECM harness connector and ground as follows.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

	ECM			EC	M		/
Connector	Termina	ıl	Connecto	-	Terminal		
E16	95 (Fuel tank temperature	e sensor signal)	E16	(\$	104 Sensor ground)		E
 Turn igr Start en Check ' 	ure that the voltage nition switch OFF and wait at least trip DTC.	nd wait at leas	st 10 secor	nds.			(
YES >>	TC detected? Go to <u>EC-743, "Dia</u> INSPECTION END		dure".				
Diagnosis	s Procedure					INFOID:0000000002989016	
1.check	GROUND CONNEC	CTION					
1. Turn igr 2. Check (nition switch OFF. ground connection E		Ground In:	spection	in <u>GI-44, "Cir</u>	cuit Inspection".	
YES >> NO >>	ction result normal? GO TO 2. Repair or replace g	round connec	ction.				
I. Disconr	CONNECTOR nect EVAP control s			narness	connector.		
2. Check s	sensor harness con	nector for wat	er.				
	er should not exist						
-	ction result normal? GO TO 3.						
NO >>	Repair or replace h						
3.CHECK	EVAP CONTROL S	YSTEM PRES	SSURE SI	ENSOR	POWER SUP	PLY CIRCUIT	
-	nition switch ON. he voltage between	EVAP contro	ol system p	ressure	sensor harne	ss connector and ground.	
EVAP contro	l system pressure senso	r Crown d	\/a!				
Connecto	or Terminal	Ground	Volta	je 			
B47	3	Ground	Approx	5V			
	ction result normal?						
	GO TO 10. GO TO 4.						
1. CHECK	EVAP CONTROL S	YSTEM PRES	SSURE SI	ENSOR	POWER SUP	PLY CIRCUIT-II	
2. Disconr 3. Check	nition switch OFF. nect ECM harness of the continuity betwo nnector.		ntrol syste	m press	ure sensor h	arness connector and ECM har-	
	l system pressure	ECM			<u> </u>		

Is the inspection	result normal?

Terminal

sensor

YES >> GO TO 6.

Connector

B47

Continuity

Existed

Terminal

91

Connector

E16

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1. M11
- Harness connectors M77, E105
- Harness for open or short between EVAP control system pressure sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

E	CM	Sensor			
Connector	Terminal	Name	Connector	Terminal	
F8	72	Refrigerant pressure sensor	E49	3	
10	76	CKP sensor (POS)	F20	1	
E10	87	APP sensor	E110	5	
EIU	91	EVAP control system pressure sensor	B47	3	

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair short to ground or short to power in harness or connectors.

7. CHECK COMPONENT

Check the following.

- Crankshaft position sensor (POS) (Refer to EC-698, "Component Inspection".)
- Refrigerant pressure sensor (Refer to EC-865, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace malfunctioning component.

8. CHECK APP SENSOR

Refer to EC-830, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 9.

9. REPLACE ACCELERATOR PEDAL ASSEMBLY

- Replace accelerator pedal assembly. Refer to <u>ACC-3, "Removal and Installation"</u>.
- 2. Go to EC-830, "Special Repair Requirement".

>> INSPECTION END

10.check evap control system pressure sensor ground circuit for open and short

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

EVAP control system pressure sensor		E	Continuity	
Connector	Terminal	Connector Terminal		
B47	1	E16	96	Existed

^{4.} Also check harness for short to ground and short to power.

< COMPONENT DIAGNOSIS > Is the inspection result normal?

YES >> GO TO 12.

NO >> GO TO 11.

11. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1, M11
- Harness connectors M77, E105
- Harness for open or short between EVAP control system pressure sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

12.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

EVAP control system pressure sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
B47	2	E16	86	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

>> GO TO 14. YES NO >> GO TO 13.

13.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors B1. M11
- Harness connectors M77, E105
- Harness for open or short between EVAP control system pressure sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

14. CHECK RUBBER TUBE

- Disconnect rubber tube connected to EVAP canister vent control valve.
- 2. Check the rubber tube for clogging.

Is the inspection result normal?

YES >> GO TO 15.

NO >> Clean the rubber tube using an air blower, repair or replace rubber tube.

15. CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-728, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace EVAP canister vent control valve.

16. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-746, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 17.

NO >> Replace EVAP control system pressure sensor.

17.CHECK IF EVAP CANISTER SATURATED WITH WATER

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EC-745

Revision: 2008 January

Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

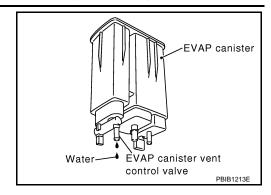
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[FOR USA (FEDERAL) AND CANADA]

2. Check if water will drain from the EVAP canister.

Does water drain from EVAP canister?

YES >> GO TO 18. NO >> GO TO 20.



18. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES >> GO TO 20. NO >> GO TO 19.

19. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection

>> Repair hose or replace EVAP canister.

20. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002989017

1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister. Always replace O-ring with a new one.
- 3. Install a vacuum pump to EVAP control system pressure sensor.
- 4. Turn ignition switch ON and check output voltage between ECM harness connector terminals under the following conditions.

ECM		O and distinct		
Connector	+	_	Condition [Applied vacuum kPa (kg/cm², psi)	Voltage
Connector	Terminal	Terminal	[rippiiod vaodam ki a (kg/om , poi/	
	86	96	Not applied	1.8 - 4.8V
E16	(EVAP control system pressure sensor signal)	(Sensor ground)	-26.7 (-0.272, -3.87)	2.1 to 2.5V lower than above value

CAUTION

- · Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-0.952 kg/cm², -13.53 psi) or pressure over 101.3 kPa (1.033 kg/cm², 14.69 psi).

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP control system pressure sensor

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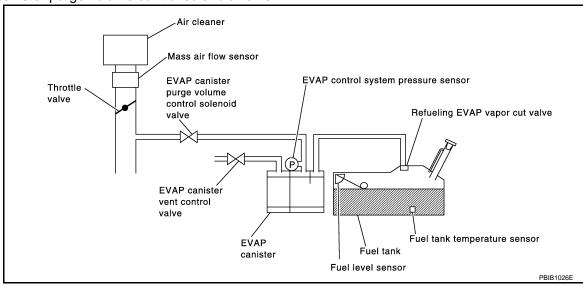
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P0455 EVAP CONTROL SYSTEM

DTC Logic

DTC DETECTION LOGIC

This diagnosis detects a very large leak (fuel filler cap fell off etc.) in EVAP system between the fuel tank and EVAP canister purge volume control solenoid valve.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0455	EVAP control system gross leak detected	EVAP control system has a very large leak such as fuel filler cap fell off, EVAP control system does not operate properly.	Fuel filler cap remains open or fails to close. Incorrect fuel tank vacuum relief valve Incorrect fuel filler cap used Foreign matter caught in fuel filler cap. Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve. Foreign matter caught in EVAP canister vent control valve. EVAP canister or fuel tank leaks EVAP purge line (pipe and rubber tube) leaks EVAP purge line rubber tube bent. Loose or disconnected rubber tube EVAP canister vent control valve and the circuit EVAP canister purge volume control solenoid valve and the circuit Fuel tank temperature sensor O-ring of EVAP canister vent control valve is missing or damaged. EVAP control system pressure sensor Refueling EVAP vapor cut valve ORVR system leaks

CAUTION:

- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.
- If the fuel filler cap is not tightened properly, the MIL may come on.
- Use only a genuine NISSAN rubber tube as a replacement.

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

CAUTION:

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Never remove fuel filler cap during the DTC CONFIRMATION PROCEDURE.

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

NOTE:

Make sure that EVAP hoses are connected to EVAP canister purge volume control solenoid valve properly.

TESTING CONDITION:

- Perform "DTC WORK SUPPORT" when the fuel level is between 1/4 and 3/4 full, and vehicle is placed on flat level surface.
- Open engine hood before conducting the following procedures.

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 4.

2. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Tighten fuel filler cap securely until ratcheting sound is heard.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 5. Make sure that the following conditions are met.

COOLAN TEMP/S: 0 - 70°C (32 - 158°F) INT/A TEMP SE: 0 - 60°C (32 - 140°F)

 Select "EVAP SML LEAK P0442/P1442" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-III.

Follow the instruction displayed.

NOTE:

If the engine speed cannot be maintained within the range displayed on the CONSULT-III screen, go to EC-496, "BASIC INSPECTION: Special Repair Requirement".

Which is displayed on CONSULT-III screen?

OK >> Go to EC-748, "Diagnosis Procedure".

NG >> GO TO 3.

3.CHECK DTC

Check DTC.

Which DTC is detected?

P0455 >> Go to <u>EC-748</u>, "<u>Diagnosis Procedure</u>". P0442 >> Go to <u>EC-714</u>, "<u>Diagnosis Procedure</u>".

4. PERFORM DTC CONFIRMATION PROCEDURE

With GST

NOTE:

Be sure to read the explanation of DIRVING PATTERN in <u>EC-896</u>, "How to <u>Set SRT Code"</u> before driving vehicle.

- 1. Start engine.
- 2. Drive vehicle according to DRIVING PATTERN.
- Stop venicie.
- 4. Turn ignition switch OFF, wait at least 10 seconds and then turn ON.
- 5. Check 1st trip DTC.

Is 1st trip DTC detected?

YES-1 >> P0455: Go to <u>EC-748</u>, "<u>Diagnosis Procedure</u>". YES-2 >> P0442: Go to <u>EC-714</u>, "<u>Diagnosis Procedure</u>". YES-3 >> P0441: Go to <u>EC-710</u>, "<u>Diagnosis Procedure</u>". NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002989019

1. CHECK FUEL FILLER CAP DESIGN

1. Turn ignition switch OFF.

< COMPONENT DIAGNOSIS >

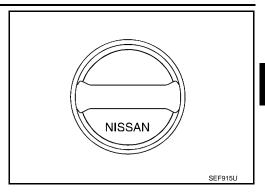
[FOR USA (FEDERAL) AND CANADA]

Check for genuine NISSAN fuel filler cap design.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace with genuine NISSAN fuel filler cap.



2.CHECK FUEL FILLER CAP INSTALLATION

Check that the cap is tightened properly by rotating the cap clockwise.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Open fuel filler cap, then clean cap and fuel filler neck threads using air blower. Then retighten until ratcheting sound is heard.

3.CHECK FUEL FILLER CAP FUNCTION

Check for air releasing sound while opening the fuel filler cap.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

f 4.CHECK FUEL TANK VACUUM RELIEF VALVE

Refer to EC-751, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace fuel filler cap with a genuine one.

CHECK EVAP PURGE LINE

Check EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks, improper connection or disconnection.

Refer to EC-545, "System Diagram".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or reconnect the hose.

6.CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 7.

7.CHECK EVAP CANISTER VENT CONTROL VALVE

Check the following.

EVAP canister vent control valve is installed properly.

Refer to EC-918, "Exploded View".

EVAP canister vent control valve.

Refer to EC-728, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

Revision: 2008 January

NO >> Repair or replace EVAP canister vent control valve and O-ring.

 $oldsymbol{\mathcal{S}}.$ CHECK FOR EVAP LEAK

Refer to EC-916, "Inspection".

Is there any leak in EVAP line?

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2008 Rogue

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

YES >> Repair or replace.

NO-1 >> With CONSULT-III: GO TO 9.

NO-2 >> Without CONSULT-III: GO TO 10.

9.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

(II) With CONSULT-III

- 1. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 2. Start engine.
- Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode.
- 4. Touch "Qu" on CONSULT-III screen to increase "PURG VOL CONT/V" opening to 100%.
- 5. Check vacuum hose for vacuum.

Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 12.

NO >> GO TO 11.

10.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

Without CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. Stop engine.
- 3. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 4. Start engine and let it idle for at least 80 seconds.
- 5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 13.

NO >> GO TO 11.

11. CHECK VACUUM HOSE

Check vacuum hoses for clogging or disconnection. Refer to EC-545, "System Diagram".

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 12.

YES-2 >> Without CONSULT-III: GO TO 13.

NO >> Repair or reconnect the hose.

12. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

(P)With CONSULT-III

1. Start engine.

Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III. Check that engine speed varies according to the valve opening.

Does engine speed vary according to the valve opening?

YES >> GO TO 14.

NO >> GO TO 13.

13. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-722, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 14.

NO >> Replace EVAP canister purge volume control solenoid valve.

14.check fuel tank temperature sensor

Refer to EC-680, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace fuel level sensor unit.

Revision: 2008 January EC-750 2008 Rogue

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

15. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-736, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace EVAP control system pressure sensor.

16. CHECK EVAP/ORVR LINE

Check EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, looseness and improper connection. For location, refer to <u>EC-859</u>, "<u>Description</u>".

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or replace hoses and tubes.

17. CHECK RECIRCULATION LINE

Check recirculation line between filler neck tube and fuel tank for clogging, kink, cracks, looseness and improper connection.

Is the inspection result normal?

YES >> GO TO 18.

NO >> Repair or replace hose, tube or filler neck tube.

18. CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-862, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 19.

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

19. CHECK INTERMITTENT INCIDENT

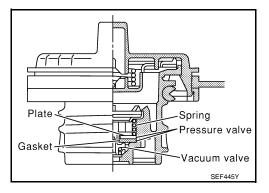
Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK FUEL FILLER CAP

- 1. Turn ignition switch OFF.
- 2. Remove fuel filler cap.
- 3. Wipe clean valve housing.



4. Install fuel filler cap adapter (commercial service tool) to fuel filler cap.

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[FOR USA (FEDERAL) AND CANADA]

5. Check valve opening pressure and vacuum.

Pressure: 15.3 - 20.0 kPa (0.156 - 0.204 kg/cm², 2.22 -

2.90 psi)

Vacuum: -6.0 to -3.3 kPa (-0.061 to -0.034 kg/cm²,

-0.87 to -0.48 psi)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

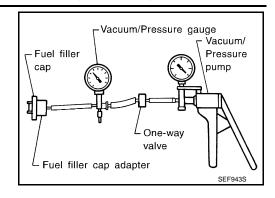
2. REPLACE FUEL FILLER CAP

Replace fuel filler cap.

CAUTION:

Use only a genuine fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.

>> INSPECTION END



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P0456 EVAP CONTROL SYSTEM

DTC Logic

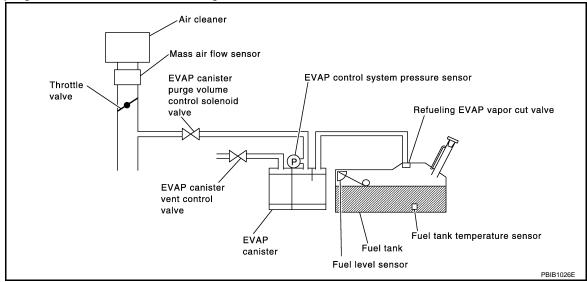
DTC DETECTION LOGIC

This diagnosis detects very small leaks in the EVAP line between fuel tank and EVAP canister purge volume control solenoid valve, using the intake manifold vacuum in the same way as conventional EVAP small leak diagnosis.

If ECM judges a leak which corresponds to a very small leak, the very small leak P0456 will be detected.

If ECM judges a leak equivalent to a small leak, EVAP small leak P0442 will be detected.

If ECM judges there are no leaks, the diagnosis will be OK.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0456	Evaporative emission control system very small leak (negative pressure check)	EVAP system has a very small leak. EVAP system does not operate properly.	 Incorrect fuel tank vacuum relief valve Incorrect fuel filler cap used Fuel filler cap remains open or fails to close. Foreign matter caught in fuel filler cap. Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve. Foreign matter caught in EVAP canister vent control valve. EVAP canister or fuel tank leaks EVAP purge line (pipe and rubber tube) leaks EVAP purge line rubber tube bent Loose or disconnected rubber tube EVAP canister vent control valve and the circuit EVAP canister purge volume control solenoid valve and the circuit Fuel tank temperature sensor O-ring of EVAP canister vent control valve is missing or damaged EVAP canister is saturated with water EVAP control system pressure sensor Refueling EVAP vapor cut valve ORVR system leaks Fuel level sensor and the circuit Foreign matter caught in EVAP canister purge volume control solenoid valve

CAUTION:

- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.
- If the fuel filler cap is not tightened properly, the MIL may come on.
- Use only a genuine NISSAN rubber tube as a replacement.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

DTC CONFIRMATION PROCEDURE

1. INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 4.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

NOTE:

- If DTC P0456 is displayed with P0442, first perform trouble diagnosis for DTC P0456.
- After repair, make sure that the hoses and clips are installed properly.
- Make sure that EVAP hoses are connected to EVAP canister purge volume control solenoid valve properly.

TESTING CONDITION:

- Open engine hood before conducting following procedure.
- If any of following conditions are met just before the DTC CONFIRMATION PROCEDURE, leave the vehicle for more than 1 hour.
- Fuel filler cap is removed.
- Fuel is refilled or drained.
- EVAP component parts is/are removed.
- Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 3.

3. PERFORM DTC CONFIRMATION PROCEDURE

(F)With CONSULT-III

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Make sure the following conditions are met.

FUEL LEVEL SE: 0.25 - 1.4V

COOLAN TEMP/S: 0 - 32°C (32 - 90°F) FUEL T/TMP SE: 0 - 35°C (32 - 95°F) INT A/TEMP SE: More than 0°C (32°F)

If NG, turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle) or refilling/draining fuel until the output voltage condition of the "FUEL LEVEL SE" meets within the range above and leave the vehicle for more than 1 hour. Then start from step 1).

- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- 5. Select "EVAP V/S LEAK P0456/P1456" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT-III.

Follow the instruction displayed.

NOTE:

If the engine speed cannot be maintained within the range displayed on CONSULT-III screen, go to <u>EC-496, "BASIC INSPECTION: Special Repair Requirement"</u>.

Which is displayed on CONSULT-III?

OK >> INSPECTION END

NG >> Go to EC-755, "Diagnosis Procedure".

4. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-755, "Component Function Check".

NOTE:

Use Component Function Check to check the overall function of the EVAP very small leak function. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-755, "Diagnosis Procedure".

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Component Function Check

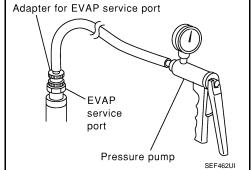
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1.PERFORM COMPONENT FUNCTION CHECK

With GST CAUTION:

- Do not use compressed air, doing so may damage the EVAP system.
- Do not start engine.
- Do not exceeded 4.12 kPa (0.042 kg/cm², 0.6 psi).
- 1. Attach the EVAP service port adapter (commercial service tool) securely to the EVAP service port.
- 2. Set the pressure pump and a hose.
- 3. Also set a vacuum gauge via 3-way connector and a hose.
- Turn ignition switch ON.
- 5. Connect GST and select Service \$08.
- 6. Using Service \$08 control the EVAP canister vent control valve (close).
- Apply pressure and make sure the following conditions are satisfied.

Pressure to be applied: 2.7 kPa (0.028 kg/cm², 0.39 psi) Time to be waited after the pressure drawn in to the EVAP system and the pressure to be dropped: 60 seconds and the pressure should not be dropped more than 0.4 kPa (0.004 kg/cm², 0.06 psi).



Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-755, "Diagnosis Procedure".

2. RELEASE PRESSURE

- 1. Disconnect GST.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Restart engine and let it idle for 90 seconds.
- 5. Keep engine speed at 2,000 rpm for 30 seconds.
- 6. Turn ignition switch OFF.

NOTE:

For more information, refer to GST Instruction Manual.

>> INSPECTION END

Diagnosis Procedure

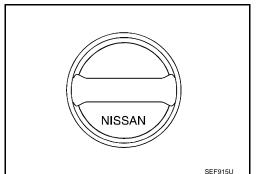
1. CHECK FUEL FILLER CAP DESIGN

- 1. Turn ignition switch OFF.
- 2. Check for genuine NISSAN fuel filler cap design.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace with genuine NISSAN fuel filler cap.



2.CHECK FUEL FILLER CAP INSTALLATION

Check that the cap is tightened properly by rotating the cap clockwise.

Is the inspection result normal?

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

YES >> GO TO 3.

NO >> Open fuel filler cap, then clean cap and fuel filler neck threads using air blower. Then retighten until ratcheting sound is heard.

3. CHECK FUEL FILLER CAP FUNCTION

Check for air releasing sound while opening the fuel filler cap.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4. CHECK FUEL TANK VACUUM RELIEF VALVE

Refer to EC-758, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace fuel filler cap with a genuine one.

5. CHECK FOR EVAP LEAK

Refer to EC-916, "Inspection".

Is there any leak in EVAP line?

YES >> Repair or replace.

NO >> GO TO 6.

6. CHECK EVAP CANISTER VENT CONTROL VALVE

Check the following.

EVAP canister vent control valve is installed properly.

Refer to EC-918, "Exploded View".

• EVAP canister vent control valve.

Refer to EC-728, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace EVAP canister vent control valve and O-ring.

7.CHECK IF EVAP CANISTER SATURATED WITH WATER

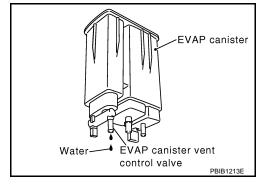
- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- 2. Check if water will drain from the EVAP canister.

Does water drain from EVAP canister?

YES >> GO TO 8.

NO-1 >> With CONSULT-III: GO TO 10.

NO-2 >> Without CONSULT-III: GO TO 11.



8. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 10.

YES-2 >> Without CONSULT-III: GO TO 11.

NO >> GO TO 9.

9. DETECT MALFUNCTIONING PART

Check the following.

P0456 EVAP CONTROL SYSTEM

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- EVAP canister for damage >> Repair hose or replace EVAP canister. 10.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection

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(P)With CONSULT-III

- 1. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 2. Start engine.
- 3. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode.
- 4. Touch "Qu" on CONSULT-III screen to increase "PURG VOL CONT/V" opening to 100%.
- 5. Check vacuum hose for vacuum.

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Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 13. NO >> GO TO 12.

11. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

Without CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. Stop engine.
- Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 4. Start engine and let it idle for at least 80 seconds.
- 5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

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Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 14. NO >> GO TO 12.

12. CHECK VACUUM HOSE

Check vacuum hoses for clogging or disconnection. Refer to EC-545, "System Diagram".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or reconnect the hose.

13. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

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Refer to EC-720, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 14.

NO >> Replace EVAP canister purge volume control solenoid valve.

14.CHECK FUEL TANK TEMPERATURE SENSOR

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Refer to EC-680, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO

>> Replace fuel level sensor unit.

15. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-736, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace EVAP control system pressure sensor.

16.CHECK EVAP PURGE LINE

Check EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks or improper connection.

P0456 EVAP CONTROL SYSTEM

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Refer to EC-545, "System Diagram".

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or reconnect the hose.

17.CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 18.

18. CHECK EVAP/ORVR LINE

Check EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, looseness and improper connection. For location, refer to <u>EC-859</u>, "<u>Description</u>".

Is the inspection result normal?

YES >> GO TO 19.

NO >> Repair or replace hoses and tubes.

19. CHECK RECIRCULATION LINE

Check recirculation line between filler neck tube and fuel tank for clogging, kink, cracks, looseness and improper connection.

Is the inspection result normal?

YES >> GO TO 20.

NO >> Repair or replace hose, tube or filler neck tube.

20.CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-862, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 21.

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

21. CHECK FUEL LEVEL SENSOR

Refer to FL-10, "2WD: Inspection" (2WD), FL-14, "AWD: Inspection" (AWD).

Is the inspection result normal?

YES >> GO TO 22.

NO >> Replace fuel level sensor unit.

22. CHECK INTERMITTENT INCIDENT

Refer to GI-41. "Intermittent Incident".

>> INSPECTION END

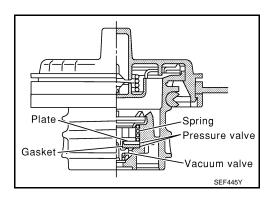
Component Inspection

INFOID:0000000002989024

2008 Rogue

1. CHECK FUEL FILLER CAP

- 1. Turn ignition switch OFF.
- 2. Remove fuel filler cap.
- 3. Wipe clean valve housing.



P0456 EVAP CONTROL SYSTEM

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

4. Install fuel filler cap adapter (commercial service tool) to fuel filler cap.

5. Check valve opening pressure and vacuum.

Pressure: 15.3 - 20.0 kPa (0.156 - 0.204 kg/cm², 2.22 -

2.90 psi)

Vacuum: -6.0 to -3.3 kPa (-0.061 to -0.034 kg/cm²,

-0.87 to -0.48 psi)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

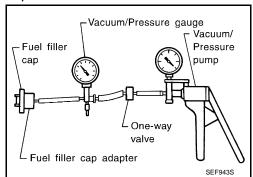
2. REPLACE FUEL FILLER CAP

Replace fuel filler cap.

CAUTION:

Use only a genuine fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.

>> INSPECTION END



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P0460 FUEL LEVEL SENSOR

Description INFOID:000000002989025

The fuel level sensor is mounted in the fuel level sensor unit.

The sensor detects a fuel level in the fuel tank and transmits a signal to the combination meter. The combination meter sends the fuel level sensor signal to the ECM through CAN communication line.

It consists of two parts, one is mechanical float and the other is variable resistor. Fuel level sensor output voltage changes depending on the movement of the fuel mechanical float.

DTC Logic

DTC DETECTION LOGIC

NOTE:

- If DTC P0460 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-594, "DTC Logic".
- If DTC P0460 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-594</u>, "DTC Logic".

When the vehicle is parked, naturally the fuel level in the fuel tank is stable. It means that output signal of the fuel level sensor does not change. If ECM senses sloshing signal from the sensor, fuel level sensor malfunction is detected.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0460	Fuel level sensor circuit noise	Even though the vehicle is parked, a signal being varied is sent from the fuel level sensor to ECM.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (The sensor circuit is open or shorted) Combination meter Fuel level sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait maximum of 2 consecutive minutes.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-760, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002989027

1. CHECK COMBINATION METER FUNCTION

Refer to MWI-43, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to MWI-43, "Diagnosis Procedure".

2.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

P0461 FUEL LEVEL SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P0461 FUEL LEVEL SENSOR

Description INFOID:0000000002989028

The fuel level sensor is mounted in the fuel level sensor unit.

The sensor detects a fuel level in the fuel tank and transmits a signal to the combination meter. The combination meter sends the fuel level sensor signal to the ECM through CAN communication line.

It consists of two parts, one is mechanical float and the other is variable resistor. Fuel level sensor output voltage changes depending on the movement of the fuel mechanical float.

DTC Logic INFOID:0000000002989029

DTC DETECTION LOGIC

NOTE:

- If DTC P0461 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-594, "DTC Logic".
- If DTC P0461 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-775, "DTC Logic".

Driving long distances naturally affect fuel gauge level.

This diagnosis detects the fuel gauge malfunction of the gauge not moving even after a long distance has been driven.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0461	Fuel level sensor circuit range/performance	The output signal of the fuel level sensor does not change within the specified range even though the vehicle has been driven a long distance.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (The sensor circuit is open or shorted) Combination meter Fuel level sensor

DTC CONFIRMATION PROCEDURE

1. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-761, "Component Function Check".

Use Component Function Check to check the overall function of the fuel level sensor function. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YFS >> INSPECTION END

NO >> Go to EC-762, "Diagnosis Procedure".

Component Function Check

1.PRECONDITIONING

WARNING:

When performing following procedure, be sure to observe the handling of the fuel. Refer to FL-7, "2WD : Removal and Installation" (2WD), FL-11, "AWD: Removal and Installation" (AWD).

TESTING CONDITION:

Before starting component function check, preparation of draining fuel and refilling fuel is required.

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 3.

2.PERFORM COMPONENT FUNCTION CHECK

(P)With CONSULT-III

NOTE:

Start from step 10, if it is possible to confirm that the fuel cannot be drained by 30 ℓ (7-7/8 US gal, 6-5/ 8 Imp gal) in advance.

EC-761 2008 Rogue Revision: 2008 January

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P0461 FUEL LEVEL SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- 1. Prepare a fuel container and a spare hose.
- 2. Release fuel pressure from fuel line, refer to EC-915, "Inspection".
- 3. Remove the fuel feed hose on the fuel level sensor unit.
- 4. Connect a spare fuel hose where the fuel feed hose was removed.
- 5. Turn ignition switch OFF and wait at least 10 seconds then turn ON.
- 6. Select "FUEL LEVEL SE" in "DATA MONITOR" mode with CONSULT-III.
- 7. Check "FUEL LEVEL SE" output voltage and note it.
- Select "FUEL PUMP RELAY" in "ACTIVE TEST" mode with CONSULT-III.
- Touch "ON" and drain fuel approximately 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal) and stop it.
- 10. Check "FUEL LEVEL SE" output voltage and note it.
- 11. Fill fuel into the fuel tank for 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal).
- 12. Check "FUEL LEVEL SE" output voltage and note it.
- 13. Confirm whether the voltage changes more than 0.03V during step 7 to 10 and 10 to 12.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-762, "Diagnosis Procedure".

${f 3.}$ PERFORM COMPONENT FUNCTION CHECK

Without CONSULT-III

NOTE:

Start from step 8, if it is possible to confirm that the fuel cannot be drained by 30 $\,\ell$ (7-7/8 US gal, 6-5/8 Imp gal) in advance.

- 1. Prepare a fuel container and a spare hose.
- 2. Release fuel pressure from fuel line. Refer to <a>EC-915, "Inspection".
- 3. Remove the fuel feed hose on the fuel level sensor unit.
- 4. Connect a spare fuel hose where the fuel feed hose was removed.
- 5. Turn ignition switch ON.
- 6. Drain fuel by 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal) from the fuel tank using proper equipment.
- 7. Confirm that the fuel gauge indication varies.
- 8. Fill fuel into the fuel tank for 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal).
- 9. Confirm that the fuel gauge indication varies.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-762, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000002989031

1. CHECK COMBINATION METER FUNCTION

Refer to MWI-43, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to MWI-43, "Diagnosis Procedure".

2.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

P0462, P0463 FUEL LEVEL SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

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INFOID:0000000002989034

P0462, P0463 FUEL LEVEL SENSOR

Description

The fuel level sensor is mounted in the fuel level sensor unit.

The sensor detects a fuel level in the fuel tank and transmits a signal to the combination meter. The combination meter sends the fuel level sensor signal to the ECM through CAN communication line.

It consists of two parts, one is mechanical float and the other is variable resistor. Fuel level sensor output voltage changes depending on the movement of the fuel mechanical float.

DTC Logic

DTC DETECTION LOGIC

NOTE:

- If DTC P0462 or P0463 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to <u>EC-594</u>, "<u>DTC Logic"</u>.
- If DTC P0462 or P0463 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-775, "DTC Logic".

This diagnosis indicates the former, to detect open or short circuit malfunction.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0462	Fuel level sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The CAN communication line is open or
P0463	Fuel level sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	shorted) Harness or connectors (The sensor circuit is open or shorted) Combination meter Fuel level sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is between 11V and 16V at ignition switch ON.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-763, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK COMBINATION METER FUNCTION

Refer to MWI-43, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 2.

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NO >> Go to MWI-43, "Diagnosis Procedure".

2. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

EC-763 2008 Rogue

P0462, P0463 FUEL LEVEL SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

[FOR USA (FEDERAL) AND CANADA]

P0500 VSS

Description INFOID:0000000002989035

The vehicle speed signal is sent to the combination meter from the "ABS actuator and electric unit (control unit)" by CAN communication line. The combination meter then sends a signal to the ECM by CAN communication line.

INFOID:0000000002989036

DTC Logic

DTC DETECTION LOGIC

NOTE:

 If DTC P0500 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-594, "DTC Logic".

 If DTC P0500 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-775, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0500	Vehicle speed sensor	The almost 0 km/h (0 MPH) signal from vehicle speed sensor is sent to ECM even when vehicle is being driven.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (The vehicle speed signal circuit is open or shorted) Vehicle speed sensor Combination meter ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 5.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 3.

3.check vehicle speed sensor function

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

(P)With CONSULT-III

- 1. Start engine.
- Read "VHCL SPEED SE" in "DATA MONITOR" mode with CONSULT-III. The vehicle speed on CON-SULT-III should exceed 10 km/h (6 mph) when rotating wheels with suitable gear position.

Is the inspection result normal?

YFS >> GO TO 4.

NO >> Go to EC-766, "Diagnosis Procedure".

4. PERFORM DTC CONFIRMATION PROCEDURE

- Select "DATA MONITOR" mode with CONSULT-III.
- Warm engine up to normal operating temperature.
- Maintain the following conditions for at least 50 consecutive seconds. CAUTION:

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Always drive vehicle at a safe speed.

ENG SPEED	1,350 - 6,000 rpm
COOLAN TEMP/S	More than 70°C (158°F)
B/FUEL SCHDL	5.5 - 31.8 msec
Shift lever	Except P or N position
PW/ST SIGNAL	OFF

4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-766, "Diagnosis Procedure".

NO >> INSPECTION END

5. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-766, "Component Function Check".

Use Component Function Check to check the overall function of the vehicle speed sensor circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-766, "Diagnosis Procedure".

Component Function Check

INFOID:0000000002989037

1. PERFORM COMPONENT FUNCTION CHECK

With GST

- 1. Lift up drive wheels.
- 2. Start engine.
- Read vehicle speed sensor signal in Service \$01 with GST.

The vehicle speed sensor on GST should be able to exceed 10 km/h (6 MPH) when rotating wheels with suitable gear position.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-766, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000002989038

${f 1.}$ CHECK DTC WITH "ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)"

Refer to BRC-15, "CONSULT-III Function" (ABS models), BRC-94, "CONSULT-III Function" (VDC models).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace.

2.CHECK COMBINATION METER

Refer to MWI-33, "CONSULT-III Function (METER/M&A)".

[FOR USA (FEDERAL) AND CANADA]

P0506 ISC SYSTEM

Description INFOID:0000000002989039

The ECM controls the engine idle speed to a specified level through the fine adjustment of the air, which is let into the intake manifold, by operating the electric throttle control actuator. The operating of the throttle valve is varied to allow for optimum control of the engine idling speed. The crankshaft position sensor (POS) detects the actual engine speed and sends a signal to the ECM.

The ECM controls the electric throttle control actuator so that the engine speed coincides with the target value memorized in the ECM. The target engine speed is the lowest speed at which the engine can operate steadily. The optimum value stored in the ECM is determined by taking into consideration various engine conditions, such as during warming up, deceleration, and engine load (air conditioner, power steering and cooling fan operation, etc.).

DTC Logic INFOID:0000000002989040

DTC DETECTION LOGIC

NOTE:

If DTC P0506 is displayed with other DTC, first perform the trouble diagnosis for the other DTC.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0506	Idle speed control system RPM lower than expected	The idle speed is less than the target idle speed by 100 rpm or more.	Electric throttle control actuator Intake air leak

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

If the target idle speed is out of the specified value, perform EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement", before conducting DTC CONFIRMATION PROCEDURE.

TESTING CONDITION:

- Before performing the following procedure, confirm that battery voltage is more than 11V at idle.
- Always perform the test at a temperature above –10°C (14°F).

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and run it for at least 1 minute at idle speed.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-767, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK INTAKE AIR LEAK

- Start engine and let it idle.
- Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> Discover air leak location and repair.

NO >> GO TO 2.

2.REPLACE ECM

- 1. Stop engine.
- Replace ECM.

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INFOID:0000000002989041

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P0506 ISC SYSTEM

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

NOTE:

Use the specified bolts described in parts information certainly when installing the ECM, or violates the Canada law.

3. Go to EC-499, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

[FOR USA (FEDERAL) AND CANADA]

P0507 ISC SYSTEM

Description INFOID:0000000002989042

The ECM controls the engine idle speed to a specified level through the fine adjustment of the air, which is let into the intake manifold, by operating the electric throttle control actuator. The operating of the throttle valve is varied to allow for optimum control of the engine idling speed. The crankshaft position sensor (POS) detects the actual engine speed and sends a signal to the ECM.

The ECM controls the electric throttle control actuator so that the engine speed coincides with the target value memorized in the ECM. The target engine speed is the lowest speed at which the engine can operate steadily. The optimum value stored in the ECM is determined by taking into consideration various engine conditions, such as during warming up, deceleration, and engine load (air conditioner, power steering and cooling fan operation, etc.).

DTC Logic INFOID:0000000002989043

DTC DETECTION LOGIC

NOTE:

If DTC P0507 is displayed with other DTC, first perform the trouble diagnosis for the other DTC.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0507	Idle speed control sys- tem RPM higher than expected	The idle speed is more than the target idle speed by 200 rpm or more.	Electric throttle control actuator Intake air leak PCV system

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

If the target idle speed is out of the specified value, perform EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement", before conducting DTC CONFIRMATION PROCEDURE.

TESTING CONDITION:

- Before performing the following procedure, confirm that battery voltage is more than 11V at idle.
- Always perform the test at a temperature above –10°C (14°F).

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and run it for at least 1 minute at idle speed.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-769, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK PCV HOSE CONNECTION

Confirm that PCV hose is connected correctly.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace.

2.check intake air leak

- 1. Start engine and let it idle.
- Listen for an intake air leak after the mass air flow sensor.

EC-769 Revision: 2008 January 2008 Rogue

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INFOID:0000000002989044

P0507 ISC SYSTEM

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Is intake air leak detected?

YES >> Discover air leak location and repair.

NO >> GO TO 3.

3.REPLACE ECM

- Stop engine.
- 2. Replace ECM.

NOTE:

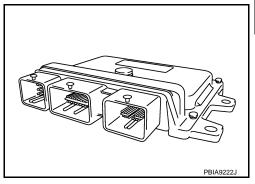
Use the specified bolts described in parts information certainly when installing the ECM, or violates the Canada law.

3. Go to EC-499, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

P0603 ECM POWER SUPPLY

Description INFOID:0000000002989045

Battery voltage is supplied to the ECM even when the ignition switch is turned OFF for the ECM memory function of the DTC memory, the air-fuel ratio feedback compensation value memory, the idle air volume learning value memory, etc.



DTC Logic INFOID:0000000002989046

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0603	ECM power supply circuit	ECM back-up RAM system does not function properly.	Harness or connectors [ECM power supply (back-up) circuit is open or shorted.] ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 1 second.
- Start engine and let it idle for 1 second.
- Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- Repeat steps 2 and 3 for four times.
- Check 1st trip DTC.

Is 1st trip DTC detected?

>> Go to EC-771, "Diagnosis Procedure". YES

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK ECM POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the voltage between ECM harness connector and ground.

EC	M	Ground	Voltage
Connector	Terminal		
F8 77		Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

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INFOID:0000000002989047

P0603 ECM POWER SUPPLY

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

2.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E8, F122
- 20A fuse (No. 62)
- IPDM E/R harness connector E15
- Harness for open or short between ECM and battery
 - >> Repair or replace harness or connectors.

3. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace harness or connectors.

4. PERFORM DTC CONFIRMATION PROCEDURE

- Erase DTC.
- 2. Perform DTC CONFIRMATION PROCEDURE.

See EC-771, "DTC Logic".

Is the 1st trip DTC P0603 displayed again?

YES >> GO TO 5.

NO >> INSPECTION END

5.REPLACE ECM

1. Replace ECM.

NOTE:

Use the specified bolts described in parts information certainly when installing the ECM, or violates the Canada law.

2. Go to EC-499, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement".

[FOR USA (FEDERAL) AND CANADA]

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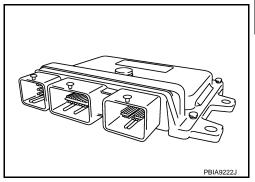
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P0605 ECM

Description

The ECM consists of a microcomputer and connectors for signal input and output and for power supply. The ECM controls the engine.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
	P0605 Engine control module	A)	ECM calculation function is malfunctioning.	
P0605		B)	ECM EEP-ROM system is malfunctioning.	• ECM
		C)	ECM self shut-off function is malfunctioning.	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure for malfunction a

- 1. Turn ignition switch ON.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-774, "Diagnosis Procedure".

NO >> GO TO 3.

3.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B

- 1. wait at least 1 second.
- 2. Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- 3. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-774, "Diagnosis Procedure".

NO >> GO TO 4.

${f 4.}$ PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION C

- wait at least 1 second.
- Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- Repeat step 2 for 32 times.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-774, "Diagnosis Procedure".

P0605 ECM

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Diagnosis Procedure

INFOID:0000000002989050

1.INSPECTION START

- 1. Erase DTC.
- 2. Perform DTC CONFIRMATION PROCEDURE.

See EC-773. "DTC Logic".

Is the 1st trip DTC P0605 displayed again?

YES >> GO TO 2.

NO >> INSPECTION END

2.REPLACE ECM

1. Replace ECM.

NOTE:

Use the specified bolts described in parts information certainly when installing the ECM, or violates the Canada law.

2. Go to <u>EC-499</u>, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement".

[FOR USA (FEDERAL) AND CANADA]

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INFOID:0000000002989053

P0607 ECM

Description

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0607	CAN communication bus	When detecting error during the initial diagnosis of CAN controller of ECM.	• ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-775, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1.INSPECTION START

1. Erase DTC.

Perform DTC CONFIRMATION PROCEDURE. See EC-775, "DTC Logic".

Is the DTC P0607 displayed again?

YES >> GO TO 2.

NO >> INSPECTION END

2.REPLACE ECM

1. Replace ECM.

Revision: 2008 January

NOTE:

Use the specified bolts described in parts information certainly when installing the ECM, or violates the Canada law.

2. Go to EC-499, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> INSPECTION END

EC-775 2008 Rogue

P0643 SENSOR POWER SUPPLY

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0643	Sensor power supply circuit short	ECM detects a voltage of power source for sensor is excessively low or high.	Harness or connectors (APP sensor 1 circuit is shorted.) (TP sensor circuit is shorted.) [Camshaft position sensor (PHASE) circuit is shorted.] Accelerator pedal position sensor Throttle position sensor Camshaft position sensor (PHASE)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-776, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002989055

1.check ground connection

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK ACCELERATOR PEDAL POSITION SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

APP s	sensor	Ground	Voltage
Connector	Connector Terminal		voltage
E110	4	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 3.

${f 3.}$ CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

P0643 SENSOR POWER SUPPLY

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

E	CM	Senso	or			Α
Connector	Terminal	Name	Connector	Terminal		
F8	47	Electric throttle control actuator	F29	1	•	EC
10	59	CMP sensor (PHASE)	F26	1		_0
E16	83	APP sensor	E110	4		
Is the inspecti		nal?				С
	OTO 4.	ground or short to power in ha	rness or conn	actors		
4.CHECK CO	•	ground or short to power in ha	III633 OF COLLE	eciors.		D
Check the foll						_
Camshaft po	owing. osition sensor	(PHASE) (Refer to EC-701, "C	Component Ins	spection".)		Е
Is the inspecti	on result norn	nal?				
	O TO 5.					
NO >> R 5.CHECK TF	•	actioning component.				F
		ant la an antiquil				_
Is the inspecti	•	ent Inspection".				G
-	OTO 9.	idi:				
	O TO 6.					
6.REPLACE	ELECTRIC T	HROTTLE CONTROL ACTUA	TOR			Н
1. Replace	electric throttle	control actuator.				_
2. Go to <u>EC</u>	<u>-501, "THROT</u>	TLE VALVE CLOSED POSITION	<u>ON LEARNIN</u>	G : Special F	Repair Requirement".	
>> IN	ISPECTION E	END				
7.CHECK AF						J
-		ent Inspection".				_
Is the inspecti	•					K
YES >> G	O TO 9.					n
_	O TO 8.					
		OR PEDAL ASSEMBLY				L
		dal assembly. Refer to ACC-3. Repair Requirement.	"Removal and	d Installation	<u>"</u> .	
2. G0 t0 <u>LC</u>	-030, Special	Repair Requirement.				M
>> 11	SPECTION E	END				
9.CHECK IN	TERMITTENT	INCIDENT				
Refer to GI-41	I, "Intermittent	: Incident".				_ N
>> 11	ISPECTION E	END				0
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P0850 PNP SWITCH

Description INFOID:000000002989056

When the shift lever position is P or N, park/neutral position (PNP) switch is ON. ECM detects the position because the continuity of the line (the ON signal) exists.

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0850	Park/neutral position switch	The signal of the park/neutral position (PNP) switch is not changed in the process of engine starting and driving.	Harness or connectors [The park/neutral position (PNP) switch circuit is open or shorted.] Park/neutral position (PNP) switch

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 5.

2. PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 3.

3. CHECK PNP SWITCH FUNCTION

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Select "P/N POSI SW" in "DATA MONITOR" mode with CONSULT-III. Then check the "P/N POSI SW" signal under the following conditions.

Position (Shift lever)	Known-good signal
N or P position	ON
Except above position	OFF

Is the inspection result normal?

YES >> GO TO 4.

NO >> Go to EC-779, "Diagnosis Procedure".

4. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Maintain the following conditions for at least 50 consecutive seconds.

CAUTION:

Always drive vehicle at a safe speed.

ENG SPEED	1,300 - 6,375 rpm
COOLAN TEMP/S	More than 70°C (158°F)
B/FUEL SCHDL	3.0 - 31.8 msec

P0850 PNP SWITCH

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< COMPO	COMPONENT DIAGNOSIS >				[FOR USA (FED	ERAL) AND CANADA]	
VHCL SPEE	ED SE	M	lore than 6	4 km/h (40 mpl	h)		
Shift lever		S	uitable pos	ition			
4. Check	1st trip DTC).					
•	OTC detected						
	> Go to <u>EC-7</u> > INSPECTI			<u>Procedure"</u> .	•		
_	RM COMPO			ON CHECK	•		
						nent Function Check	<u>"</u>
NOTE: Use Comp		ion Che	eck to che	eck the over	all function of		-· ition (PNP) switch circuit.
•	ection result	•	•	. Hot be com	iiiiiea.		
•	> INSPECTI						
NO >>	> Go to <u>EC-</u>	779, "Di	<u>iagnosis</u>	Procedure".			
Compon	ent Funct	ion C	heck				INFOID:000000002989058
1 pepea	DM 001450	>	FUNCT	ON 011501	•		
1 00000	RM COMPO		FUNCTI	ON CHECK	•		
I .FLKI O							
1. Turn ig	gnition switch		n ECM h	arness con	nector and are	yund	
1. Turn ig			en ECM h	narness con	nector and gro	ound.	
1. Turn ig			en ECM h				
1. Turn ig	the voltage	betwee			nector and gro	ound. Voltage	_
1. Turn ig 2. Check	the voltage	betwee	Ground	Cor			<u>-</u>
1. Turn ig 2. Check	the voltage ECM Termina	betwee			ndition	Voltage	- -
1. Turn ig 2. Check Connector	the voltage ECM Termina 102	betwee	Ground	Cor	ndition P or N	Voltage BATTERY VOLTAGE	
1. Turn ig 2. Check Connector E16 Is the insper	ECM Termina 102 (PNP switch) ection result	signal) normal ON EN	Ground Ground ? D	Cor Shift lever	P or N Except above	Voltage BATTERY VOLTAGE	_
1. Turn ig 2. Check Connector E16 Is the insperience YES >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	ECM Termina 102 (PNP switch ection result > INSPECTI > Go to EC-	signal) normal ON EN 779, "Di	Ground Ground ? D	Cor Shift lever	P or N Except above	Voltage BATTERY VOLTAGE	
1. Turn ig 2. Check Connector E16 Is the insperience YES >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	ECM Termina 102 (PNP switch) ection result	signal) normal ON EN 779, "Di	Ground Ground ? D	Cor Shift lever	P or N Except above	Voltage BATTERY VOLTAGE	INFOID:000000002989059
Connector E16 Is the insperious NO >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	Termina 102 (PNP switch section result > INSPECTI > Go to EC-1 is Proced	signal) normal ON EN 779, "Di	Ground Ground 1? D iagnosis	Cor Shift lever Procedure".	P or N Except above	Voltage BATTERY VOLTAGE	INFOID:000000002989059
1. Turn ig 2. Check Connector E16 Is the insperience of the insperi	Termina 102 (PNP switch section result > INSPECTI > Go to EC-1 is Proced (PNP SWITC)	signal) normal ON EN 779, "Di	Ground Ground 1? D iagnosis	Cor Shift lever Procedure".	P or N Except above	Voltage BATTERY VOLTAGE	INFOID:0000000002989059
1. Turn ig 2. Check Connector E16 Is the insperience of the content of the con	Termina 102 (PNP switch ection result > INSPECTI > Go to EC- is Proced (PNP SWITCH pnition switch nect Park/n	signal) normal ON EN 779. "Di ure CH PO	Ground Ground 12 D iagnosis WER SU	Cor Shift lever Procedure".	P or N Except above	Voltage BATTERY VOLTAGE Approx. 0V	INFOID:0000000002989059
1. Turn ig 2. Check Connector E16 Is the inspector YES >> NO >> Diagnosi 1. CHECK 1. Turn ig 2. Discon 3. Turn ig	Termina 102 (PNP switch ection result > INSPECTI > Go to EC- is Proced (PNP SWITCH gnition switch pnect Park/n gnition switch	signal) normal ON EN 779, "Di ure CH PO' h OFF. eutral ph ON.	Ground Ground 12 D iagnosis WER SU position (F	Cor Shift lever Procedure". PPLY CIRC	P or N Except above	Voltage BATTERY VOLTAGE Approx. 0V nector.	INFOID:0000000002989059
1. Turn ig 2. Check Connector E16 Is the insperience of the content of the con	Termina 102 (PNP switch ection result > INSPECTI > Go to EC- is Proced (PNP SWITCH gnition switch pnect Park/n gnition switch	signal) normal ON EN 779, "Di ure CH PO' h OFF. eutral ph ON.	Ground Ground 12 D iagnosis WER SU position (F	Cor Shift lever Procedure". PPLY CIRC	P or N Except above	Voltage BATTERY VOLTAGE Approx. 0V nector.	INFOID:000000002989059
1. Turn ig 2. Check Connector E16 Is the insperience of the content of the con	Termina 102 (PNP switch ection result > INSPECTI > Go to EC- is Proced (PNP SWITCH gnition switch nect Park/n gnition switch the voltage	signal) normal ON EN 779, "Di ure CH PO' h OFF. eutral ph ON.	Ground Ground 12 D iagnosis WER SU position (F	Cor Shift lever Procedure". PPLY CIRC	P or N Except above	Voltage BATTERY VOLTAGE Approx. 0V nector.	INFOID:000000002989059
1. Turn ig 2. Check Connector E16 Is the insperience of the content of the con	Termina 102 (PNP switch ection result > INSPECTI > Go to EC- is Proced (PNP SWITCH gnition switch pnect Park/n gnition switch	signal) normal ON EN 779, "Di ure CH PO' h OFF. eutral ph ON.	Ground Ground 1.2 D iagnosis WER SU position (Fen PNP s	Cor Shift lever Procedure". PPLY CIRC	P or N Except above	Voltage BATTERY VOLTAGE Approx. 0V nector.	INFOID:000000002989059

YES >> GO TO 3. NO >> GO TO 2.

2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E15
- 10A fuse (No. 58)
- Harness for open or short between PNP switch and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

P0850 PNP SWITCH

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

${f 3.}$ CHECK PNP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT-I

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between PNP switch harness connector and ECM harness connector.

PNP	PNP switch		ECM		
Connector	Terminal	Connector Terminal		Continuity	
F21	2	E16	102	Existed	

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- · Harness for open or short between PNP switch and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK PNP SWITCH

Refer to TM-53, "Component Inspection (Park/Neutral Position Switch)".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace PNP switch.

6.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

P1148 CLOSED LOOP CONTROL

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P1148 CLOSED LOOP CONTROL

DTC Logic

DTC DETECTION LOGIC

NOTE:

DTC P1148 is displayed with another DTC for A/F sensor 1. Perform the trouble diagnosis for the corresponding DTC.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1148	Closed loop control	The closed loop control function for bank 1 does not operate even when vehicle is driving in the specified condition.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.)
	function	The closed loop control function for bank 2 does not operate even when vehicle is driving in the specified condition.	A/F sensor 1 A/F sensor 1 heater

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P1212 TCS COMMUNICATION LINE

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P1212 TCS COMMUNICATION LINE

Description INFOID:000000002989061

This CAN communication line is used to control the smooth engine operation during the TCS operation. Pulse signals are exchanged between ECM and "ABS actuator and electric unit (control unit)".

DTC Logic

DTC DETECTION LOGIC

NOTE:

- If DTC P1212 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to <u>EC-594</u>, "<u>DTC Logic"</u>.
- If DTC P1212 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-775, "DTC Logic".
- Be sure to erase the malfunction information such as DTC not only for "ABS actuator and electric unit (control unit)" but also for ECM after TCS related repair.

Freeze frame data is not stored in the ECM for this self-diagnosis.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1212	TCS communication line	ECM can not receive the information from "ABS actuator and electric unit (control unit)" continuously.	Harness or connectors (The CAN communication line is open or shorted.) ABS actuator and electric unit (control unit) Dead (Weak) battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for at least 10 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-782, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

Go to BRC-72, "Work Flow".

INFOID:0000000002989063

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P1217 ENGINE OVER TEMPERATURE

DTC Logic INFOID:0000000002989064

DTC DETECTION LOGIC

NOTE:

- If DTC P1217 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-594, "DTC Logic".
- If DTC P1217 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-775, "DTC Logic".

If the cooling fan or another component in the cooling system malfunctions, engine coolant temperature will

When the engine coolant temperature reaches an abnormally high temperature condition, a malfunction is indicated.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P1217	Engine over tempera- ture (Overheat)	 Cooling fan does not operate properly (Overheat). Cooling fan system does not operate properly (Overheat). Engine coolant was not added to the system using the proper filling method. Engine coolant is not within the specified range. 	Harness or connectors (The cooling fan circuit is open or shorted.) IPDM E/R (Cooling fan relay-1) Cooling fan relays-2 and -3 Cooling fan motor Radiator hose Radiator Radiator cap Reservoir tank Water pump Thermostat Water control valve	F

CAUTION:

When a malfunction is indicated, be sure to replace the coolant. Refer to CO-9, "Draining" and CO-10, "Refilling". Also, replace the engine oil. Refer to LU-6, "Draining" and LU-7, "Refilling".

- Fill radiator with coolant up to specified level with a filling speed of 2 liters per minute. Be sure to use coolant with the proper mixture ratio. Refer to MA-18, "FOR NORTH AMERICA: Anti-Freeze Coolant Mixture Ratio".
- 2. After refilling coolant, run engine to ensure that no water-flow noise is emitted.

DTC CONFIRMATION PROCEDURE

$oldsymbol{1}$ -PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-783, "Component Function Check".

NOTE:

Use Component Function Check to check the overall function of the cooling fan. During this check, a DTC might not be confirmed.

Is the inspection result normal?

>> INSPECTION END YES

>> Go to EC-784, "Diagnosis Procedure". NO

Component Function Check

1.PERFORM COMPONENT FUNCTION CHECK-I

WARNING:

Never remove the radiator cap when the engine is hot. Serious burns could be caused by high pressure fluid escaping from the radiator.

Wrap a thick cloth around cap. Carefully remove the cap by turning it a quarter turn to allow built-up pressure to escape. Then turn the cap all the way off.

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

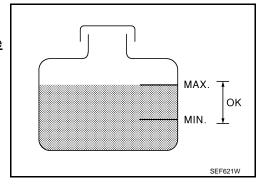
Check the coolant level in the reservoir tank and radiator.

Allow engine to cool before checking coolant level.

<u>Is the coolant level in the reservoir tank and/or radiator below the proper range?</u>

YES >> Go to EC-784, "Diagnosis Procedure".

NO >> GO TO 2.



2. PERFORM COMPONENT FUNCTION CHECK-II

Confirm whether customer filled the coolant or not.

Did customer fill the coolant?

YES >> Go to EC-784, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform component function check-iii

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- Perform "COOLING FAN" in "ACTIVE TEST" mode with CONSULT-III.
- 3. Make sure that cooling fan motors-1 and -2 operate at each speed (LOW/HI).

Without CONSULT-III

Perform IPDM E/R auto active test and check cooling fan motors operation, refer to <u>PCS-8</u>, "<u>Diagnosis</u> <u>Description</u>".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-784, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000002989066

1. CHECK COOLING FAN OPERATION

(III) With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Perform "COOLING FAN" in "ACTIVE TEST" mode with CONSULT-III.
- Make sure that cooling fan motors-1 and -2 operate at each speed (LOW/HI).

Without CONSULT-III

- Perform IPDM E/R auto active test and check cooling fan motors operation, refer to <u>PCS-8</u>, "<u>Diagnosis</u> <u>Description</u>".
- 2. Make sure that cooling fan motors-1 and -2 operate at each speed (Low/High).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-839, "Diagnosis Procedure".

2.CHECK COOLING SYSTEM FOR LEAK-I

Check cooling system for leak. Refer to CO-9, "Inspection".

Is leakage detected?

YES >> GO TO 3.

NO >> GO TO 4.

3.CHECK COOLING SYSTEM FOR LEAK-II

Check the following for leak.

- Hose
- Radiator
- Water pump

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

>> Repair or replace malfunctioning part.

4. CHECK RADIATOR CAP

Check radiator cap. Refer to CO-13, "RADIATOR CAP: Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace radiator cap.

5. CHECK THERMOSTAT

Check thermostat. Refer to CO-26, "Inspection".

Is the inspection result normal?

>> GO TO 6. YES

NO >> Replace thermostat.

6. CHECK WATER CONTROL VALVE

Check water control valve. Refer to CO-26, "Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace water control valve

7.CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-624, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace engine coolant temperature sensor.

8. CHECK MAIN 13 CAUSES

If the cause cannot be isolated, check the following.

Engine	Step	Inspection item	Equipment	Standard	Reference page
OFF	1	Blocked radiator Blocked condenser Blocked radiator grille Blocked bumper	Visual	No blocking	_
	2	Coolant mixture	Coolant tester	50 - 50% coolant mixture	MA-18, "FOR NORTH AMERICA : Anti-Freeze Coolant Mixture Ratio"
	3	Coolant level	Visual	Coolant up to MAX level in reservoir tank and radiator filler neck	CO-9, "Inspection"
	4	Radiator cap	Pressure tester	59 - 98 kPa (0.6 - 1.0 kg/cm ² , 9 - 14 psi) (Limit)	CO-13, "RADIATOR CAP : Inspection"
ON*2	5	Coolant leaks	Visual	No leaks	CO-9, "Inspection"
ON* ²	6	Thermostat	Touch the upper and lower radiator hoses	Both hoses should be hot	CO-26, "Inspection"
ON* ¹	7	Cooling fan motor	CONSULT-III	Operating	EC-838, "Component Function Check"
OFF	8	Combustion gas leak	Color checker chemical tester 4 Gas analyzer	Negative	_
ON* ³	9	Coolant temperature gauge	Visual	Gauge less than 3/4 when driving	_
		Coolant overflow to reservoir tank	Visual	No overflow during driving and idling	CO-9, "Inspection"
OFF* ⁴	10	Coolant return from reservoir tank to radiator	Visual	Should be initial level in reservoir tank	CO-9, "Inspection"

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Engine	Step	Inspection item	Equipment	Standard	Reference page
OFF	11	Water control valve	Remove and inspect the valve	Within the specified value	CO-26, "Inspection"
OFF	12	Cylinder head	Straight gauge feeler gauge	0.1 mm (0.004 in) Maximum distortion (warping)	EM-83, "Inspection"
	13	Cylinder block and pistons	Visual	No scuffing on cylinder walls or piston	EM-94, "Inspection"

^{*1:} Turn the ignition switch ON.

For more information, refer to CO-4, "Troubleshooting Chart".

^{*2:} Engine running at 3,000 rpm for 10 minutes.

^{*3:} Drive at 90 km/h (56 MPH) for 30 minutes and then let idle for 10 minutes.

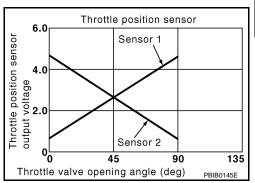
^{*4:} After 60 minutes of cool down time.

P1225 TP SENSOR

Description

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1225	Closed throttle position learning performance	Closed throttle position learning value is excessively low.	Electric throttle control actuator (TP sensor 1 and 2)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-787, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1.check electric throttle control actuator visually

- Turn ignition switch OFF.
- Remove the intake air duct.

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P1225 TP SENSOR

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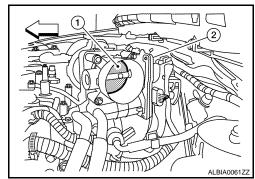
- Check if foreign matter is caught between the throttle valve (1) and the housing.
 - 2. Electric throttle control actuator

Is the inspection result normal?

YES >> GO TO 2.

NO

>> Remove the foreign matter and clean the electric throttle control actuator inside.



2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- 2. Go to EC-788, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002989070

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

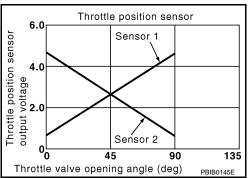
>> END

P1226 TP SENSOR

Description INFOID:000000002989071

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic (INFOID:000000002989072

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	_
P1226	Closed throttle position learning performance	Closed throttle position learning is not performed successfully, repeatedly.	Electric throttle control actuator (TP sensor 1 and 2)	_

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

>> GO TO 2.

2.perform dtc confirmation procedure

- 1. Turn ignition switch ON.
- 2. Turn ignition switch OFF, wait at least 10 seconds.
- Turn ignition switch ON.
- 4. Repeat steps 2 and 3 for 32 times.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-789, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- 1. Turn ignition switch OFF.
- 2. Remove the intake air duct.

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P1226 TP SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

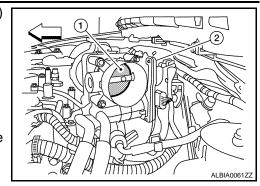
- Check if foreign matter is caught between the throttle valve (1) and the housing.
 - Electric throttle control actuator

Is the inspection result normal?

YES >> GO TO 2.

NO

>> Remove the foreign matter and clean the electric throttle control actuator inside.



2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace electric throttle control actuator.
- Go to EC-790, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002989074

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

P1421 COLD START CONTROL

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P1421 COLD START CONTROL

Description INFOID:0000000002989075

ECM controls ignition timing and engine idle speed when engine is started with prewarming up condition. This control promotes the activation of three way catalyst by heating the catalyst and reduces emissions.

INFOID:0000000002989076

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P1421 is displayed with other DTC, first perform the trouble diagnosis for other DTC.

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DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1421	Cold start emission reduction strategy monitoring	ECM does not control ignition timing and engine idle speed properly when engine is started with prewarming up condition.	Lack of intake air volumeFuel injection systemECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-III.
- Check that the "COOLAN TEMP/S" indication is between 4°C (39°F) and 36°C (97°F). If "COOLAN TEMP/S" indication is within the specified value, go to the following step. If "COOLANT TEMP/S" indication is out of the specified value, cool engine down or warm engine up and go to step 1.
- 5. Start engine and let it idle for 5 minutes.
- Check 1st trip DTC.

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-791, "Diagnosis Procedure".

>> INSPECTION END NO

INFOID:0000000002989077

Diagnosis Procedure

${f 1}$.PERFORM IDLE AIR VOLUME LEARNING

Perform EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 2.

NO >> Follow the instruction of Idle Air Volume Learning.

2.CHECK INTAKE SYSTEM

Check for the cause of intake air volume lacking. Refer to the following.

- · Crushed intake air passage
- Intake air passage clogging

EC-791 Revision: 2008 January 2008 Rogue

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P1421 COLD START CONTROL

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning part

3.check fuel injection system function

Perform DTC CONFIRMATION PROCEDURE for DTC P0171. Refer to EC-670, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Go to EC-671, "Diagnosis Procedure" for DTC P0171.

4. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Select "SELF DIAG RESULTS" mode with CONSULT-III.
- 3. Touch "ERASE".
- 4. Perform DTC CONFIRMATION PROCEDURE.

See EC-791, "DTC Logic".

With GST

- 1. Turn ignition switch ON.
- 2. Select Service \$04 with GST.
- 3. Perform DTC CONFIRMATION PROCEDURE.

See EC-791, "DTC Logic".

Is the 1st trip DTC P1421 displayed again?

YES >> GO TO 5.

NO >> INSPECTION END

5. REPLACE ECM

1. Replace ECM.

NOTE:

Use the specified bolts described in parts information certainly when installing the ECM, or violates the Canada law.

2. Go to EC-499, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

P1564 ASCD STEERING SWITCH

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P1564 ASCD STEERING SWITCH

Description INFOID:0000000002989078

ASCD steering switch has variant values of electrical resistance for each button. ECM reads voltage variation of switch, and determines which button is operated.

Refer to EC-531, "System Description" for the ASCD function.

DTC Logic INFOID:0000000002989079

DTC DETECTION LOGIC

NOTE:

If DTC P1564 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-773, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1564	ASCD steering switch	 An excessively high voltage signal from the ASCD steering switch is sent to ECM. ECM detects that input signal from the ASCD steering switch is out of the specified range. ECM detects that the ASCD steering switch is stuck ON. 	Harness or connectors (The switch circuit is open or shorted.) ASCD steering switch ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure

- Turn ignition switch ON.
- Wait at least 10 seconds. 2.
- Press MAIN switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press CANCEL switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press RESUME/ACCELERATE switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press SET/COAST switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Check DTC.

Is DTC detected?

YES >> Go to EC-793, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YS >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK ASCD STEERING SWITCH CIRCUIT

(P) With CONSULT-III

Turn ignition switch ON.

EC-793 Revision: 2008 January 2008 Rogue

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P1564 ASCD STEERING SWITCH

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- 2. Select "MAIN SW", "CANCEL SW", "RESUME/ACC SW" and "SET SW" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check each item indication under the following conditions.

Monitor item	Monitor item Condition		Indication
MAIN SW	MAIN switch	Pressed	ON
MAIN OW	WAIN SWIGH	Released	OFF
CANCEL SW	CANCEL switch	Pressed	ON
CANCLL 3W	CANCLE SWILLIN	Released	OFF
RESUME/ACC SW	RESUME/ACCELERATE switch	Pressed	ON
KLGOWIL/ACC GW	RESONIE/ACCELENATE SWITCH	Released	OFF
SFT SW	SET/COAST switch	Pressed	ON
<u></u>	OL 1/OOAO 1 SWIIGH	Released	OFF

⋈ Without CONSULT-III

- Turn ignition switch ON.
- 2. Check the voltage between ECM harness connectors.

	ECM	E	CM	Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
	85 E16 (ASCD steering		92	MAIN switch: Pressed	Approx. 0V
		(ASCD steering E16 (Switch		CANSEL switch: Pressed	Approx. 1V
E16			(Switch	SET/COAST switch: Pressed	Approx. 2V
	switch signal)		ground)	RESUME/ACCELERATE switch: Pressed	Approx. 3V
				All ASCD steering switches: Released	Approx. 4V

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 3.

${f 3.}$ CHECK ASCD STEERING SWITCH GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect combination switch harness connector M352.
- 4. Check the continuity between combination switch and ECM harness connector.

Combinat	tion switch	E	Continuity	
Connector	Terminal	Connector	Continuity	
M352	18	E16	92	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M77, E105
- Combination switch (spiral cable)
- Harness for open and short between ECM and combination switch

>> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK ASCD STEERING SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

P1564 ASCD STEERING SWITCH

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Check the continuity between ECM harness connector and combination switch.

Combina	tion switch	E	Continuity	
Connector	Terminal	Connector	Continuity	
M352	21	E10	85	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

>> GO TO 7. YES NO >> GO TO 6.

6.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M77, E105
- Combination switch (spiral cable)
- Harness for open and short between ECM and combination switch

>> Repair open circuit or short to ground or short to power in harness or connectors.

.CHECK ASCD STEERING SWITCH

Refer to EC-795, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace ASCD steering switch.

8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK ASCD STEERING SWITCH

- Disconnect combination switch (spiral cable) harness connector M352.
- 2. Check the continuity between combination switch harness connector terminals under following conditions.

Combination meter		Condition	Resistance	
Connector	Terminals	Gondinon	resistance	
		MAIN switch: Pressed	Approx. 0 Ω	
		CANCEL switch: Pressed	Approx. 250 Ω	
M352	18 and 21	SET/COAST switch: Pressed	Approx. 660 Ω	
		RESUME/ACCELERATE switch: Pressed	Approx. 1,480 Ω	
		All ASCD steering switches: Released	Approx. 4,000 Ω	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD steering switch

EC-795 Revision: 2008 January 2008 Rogue

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P1572 ASCD BRAKE SWITCH

Description INFOID:000000002989082

When the brake pedal is depressed, ASCD brake switch is turned OFF and stop lamp switch is turned ON. ECM detects the state of the brake pedal by this input of two kinds (ON/OFF signal). Refer to EC-531, "System Description" for the ASCD function.

DTC Logic

DTC DETECTION LOGIC

NOTE:

- If DTC P1572 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-773, "DTC Logic".
- This self-diagnosis has the one trip detection logic. When malfunction A is detected, DTC is not stored in ECM memory. And in that case, 1st trip DTC and 1st trip freeze frame data are displayed.
 1st trip DTC is erased when ignition switch OFF. And even when malfunction A is detected in two consecutive trips, DTC is not stored in ECM memory.

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
		A)	When the vehicle speed is above 30 km/h (19 MPH), ON signals from the stop lamp switch and the ASCD brake switch are sent to the ECM at the same time.	Harness or connectors (The stop lamp switch circuit is shorted.) Harness or connectors (The ASCD brake switch circuit is shorted.)
P1572	ASCD brake switch	B)	ASCD brake switch signal is not sent to ECM for extremely long time while the vehicle is driving.	 Stop lamp switch ASCD brake switch Incorrect stop lamp switch installation Incorrect ASCD brake switch installation ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

NOTE:

Procedure for malfunction B is not described here. It takes extremely long time to complete procedure for malfunction B. By performing procedure for malfunction A, the incident that causes malfunction B can be detected.

>> GO TO 2.

2.perform dtc confirmation procedure for malfunction a

- 1. Start engine.
- Press MAIN switch and make sure that CRUISE indicator is displayed in combination meter.
- 3. Drive the vehicle for at least 5 consecutive seconds under the following conditions.

CAUTION:

Always drive vehicle at a safe speed.

NOTÉ:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

Vehicle speed	More than 30 km/h (19 mph)
Shift lever	Suitable position

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-797, "Diagnosis Procedure".

NO >> GO TO 3.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

3.perform dtc confirmation procedure for malfunction b

Drive the vehicle for at least 5 consecutive seconds under the following conditions.

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

Vehicle speed	More than 30 km/h (19 mph)
Selector lever	Suitable position
Driving location	Depress the brake pedal for more than five seconds so as not to come off from the above-mentioned vehicle speed.

2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-797, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK OVERALL FUNCTION-I

(P) With CONSULT-III

- Turn ignition switch ON.
- Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "BRAKE SW1" indication under the following conditions.

Monitor item	Co	Indication	
BRAKE SW1	Brake pedal	Slightly depressed	OFF
	Бтаке рецаі	Fully released	ON

Without CONSULT-III

- Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

ECM		Ground	Condition		Voltage
Connector	Connector Terminal				voltage
E16	110	Ground	Brake pedal	Slightly depressed	Approx. 0V
LIO	(ASCD brake switch signal)	Ground	Brake pedar	Fully released	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK OVERALL FUNCTION-II

(P) With CONSULT-III

Select "BRAKE SW2" and check indication in "DATA MONITOR" mode.

Monitor item	Co	Indication	
BRAKE SW2	Brake pedal	Slightly depressed	ON
DIVAIL OWZ	Brake pedai	Fully released	OFF

₩ Without CONSULT-III

Check the voltage between ECM harness connector and ground.

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ECM		Ground	Condition		Voltage
Connector	Terminal	Ground	Condition		vollage
E16	106	Ground	Brake pedal	Slightly depressed	Battery voltage
LIU	(Stop lamp switch signal)	Giodila	Brake pedar	Fully released	Approx. 0V

Is the inspection result normal?

YES >> GO TO 11. NO >> GO TO 7.

3.CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between ASCD brake switch harness connector and ground.

ASCD bi	ake switch	Ground	Voltage
Connector	Terminal	Ground	voltage
E112	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 4.

4.DETECT MALFUNCTIONING PART

Check the following.

- Junction block connector E105, M77
- 10A fuse (No.1)
- · Harness for open or short between ASCD brake switch and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between ASCD brake switch harness connector and ECM harness connector.

ASCD b	orake switch	E	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E112	2	E16	110	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK ASCD BRAKE SWITCH

Refer to EC-799, "Component Inspection (ASCD Brake Switch)".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace ASCD brake switch.

7.CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect stop lamp switch harness connector.
- Check the voltage between stop lamp switch harness connector and ground.

[FOR USA (FEDERAL) AND CANADA]

< COMPONENT DIAGNOSIS >

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Stop la	amp switch	Ground	Voltage	
Connector	Terminal	Oround	vollago	
E115	1	Ground	Battery voltage	age
<u> </u>	ection result	normal?		
	> GO TO 9. > GO TO 8.			
_	CT MALFUNG		DADT	
		J I IOINING	ITANI	
	following.	E105. M77	7	
 10A fuse 	e (No.11)			
 Harness 	for open or	short betw	een stop lan	mp switch and battery
	. Donair and	an aircuit a	r chart to ar	round or abort to navor in barness or connectors
_			•	round or short to power in harness or connectors. GNAL CIRCUIT FOR OPEN AND SHORT
				GNAL CIRCUIT FOR OPEN AND SHORT
	nnect ECM h			ness connector and stop lamp switch harness connector.
2. 011001	t ti lo ooritii lai	ity botwoo	ii Low nam	icos connector and stop lamp owner harriess connector.
E	ECM	Stop lar	mp switch	
Connector	Terminal	Connector	Terminal	Continuity
E16	106	E115	2	Existed
3. Also	heck harnes	s for short	to ground a	and short to power.
Is the insp	ection result	normal?	_	
	> GO TO 10			
	• •		•	round or short to power in harness or connectors.
IU.CHE	CK STOP LA	AMP SWIT	CH	
			spection (Sto	top Lamp Switch)".
	ection result			
	> GO TO 11. > Replace st		witch	
	CK INTERMI			
Refer to G	61-41, "Interm	ittent incid	<u>ient"</u> .	
_	> INSPECTI	ON END		
_				ka Cwitah)
Compor	ieni inspe	ction (A	SCD Blar	ke Switch) INFOID:0000000002989085
1.CHECH	K ASCD BRA	KE SWIT	CH-I	
1. Turn i	gnition switch	h OFF.		
2. Disco	nnect ASCD	brake swi		
3. Checl	k the continui	ity betwee	n ASCD bra	ake switch terminals under the following conditions.
Torminal	0-	ndition	Contin	in title
Terminals		ndition	Contin	
1 and 2	Brake pedal	Fully release	ed Exist	sieu

rerminais	Condition		Continuity
1 and 2	Brake nedal	Fully released	Existed
T and 2	Brake pedal	Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK ASCD BRAKE SWITCH-II

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- Adjust ASCD brake switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Existed
r and z	Brake pedal	Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD brake switch.

Component Inspection (Stop Lamp Switch)

INFOID:0000000002989086

1. CHECK STOP LAMP SWITCH-I

- Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check the continuity between stop lamp switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Not existed
1 and 2	2 Brake pedal	Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK STOP LAMP SWITCH-II

- 1. Adjust stop lamp switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between stop lamp switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Not existed
1 and 2	Brake pedal	Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch.

P1574 ASCD VEHICLE SPEED SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P1574 ASCD VEHICLE SPEED SENSOR

Description INFOID:0000000002989087

The ECM receives two vehicle speed sensor signals via CAN communication line. One is sent from combination meter, and the other is from TCM (Transmission control module). The ECM uses these signals for ASCD control. Refer to EC-531, "System Description" for ASCD functions.

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DTC Logic

DTC DETECTION LOGIC

- If DTC P1574 is displayed with DTC U1000, U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-594, "DTC Logic".
- If DTC P1574 is displayed with DTC P0500, first perform the trouble diagnosis for DTC P0500. Refer to EC-765, "DTC Logic"
- If DTC P1574 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-773, "DTC Logic"
- If DTC P1574 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-775, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	(
P1574	ASCD vehicle speed sensor	ECM detects a difference between two vehicle speed signals is out of the specified range.	Harness or connectors (The CAN communication line is open or shorted.) (Combination meter circuit is open or shorted.) Combination meter ABS actuator and electric unit (control unit) Wheel sensor TCM ECM	-

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine.
- Drive the vehicle at more than 40 km/h (25 MPH).

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

3. Check DTC.

Is DTC detected?

YES >> Go to EC-801, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-43, "CONSULT-III Function (TRANSMISSION)".

Is the inspection result normal?

YES >> GO TO 2.

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INFOID:0000000002989089

P1574 ASCD VEHICLE SPEED SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

NO >> Perform trouble shooting relevant to DTC indicated.

 $2.\mathsf{CHECK}$ DTC WITH "ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)"

Refer to BRC-15, "CONSULT-III Function" (ABS models), BRC-94, "CONSULT-III Function" (VDC models).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace.

3. CHECK COMBINATION METER

Check combination meter function.

Refer to MWI-33, "CONSULT-III Function (METER/M&A)".

>> INSPECTION END

P1715 INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P1715 INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

Description INFOID:0000000002989090

ECM receives primary speed sensor signal from TCM through CAN communication line. ECM uses this signal for engine control.

INFOID:000000000298909:

DTC Logic

DTC DETECTION LOGIC

NOTE:

- If DTC P1715 is displayed with DTC U1000, U1001 first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-594, "DTC Logic".
- If DTC P1715 is displayed with DTC P0335, first perform the trouble diagnosis for DTC P0335. Refer to EC-695, "DTC Logic".
- If DTC P1715 is displayed with DTC P0340, first perform the trouble diagnosis for DTC P0340. Refer to EC-699, "DTC Logic".
- If DTC P1715 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-773, "DTC Logic".
- If DTC P1715 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-775, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1715	Input speed sensor (Primary speed sensor) (TCM output)	Primary speed sensor signal is different from the theoretical value calculated by ECM from secondary speed sensor signal and engine rpm signal.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (Primary speed sensor circuit is open or shorted) TCM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

Start engine and drive the vehicle at more than 50 km/h (31 MPH) for at least 5 seconds. CAUTION:

Always drive vehicle at a safe speed.

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-803, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-43, "CONSULT-III Function (TRANSMISSION)".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble shooting relevant to DTC indicated.

2.REPLACE TCM

Replace TCM.

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P1715 INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

>> INSPECTION END

P1805 BRAKE SWITCH

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P1805 BRAKE SWITCH

Description INFOID:0000000002989093

Brake switch signal is applied to the ECM through the stop lamp switch when the brake pedal is depressed. This signal is used mainly to decrease the engine speed when the vehicle is driving.

INFOID:0000000002989094

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1805	Brake switch	A brake switch signal is not sent to ECM for extremely long time while the vehicle is driving.	Harness or connectors (Stop lamp switch circuit is open or shorted.) Stop lamp switch

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Fully depress the brake pedal for at least 5 seconds.
- Erase the DTC with CONSULT-III.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-805, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK STOP LAMP SWITCH CIRCUIT

- Turn ignition switch OFF.
- Check the stop lamp when depressing and releasing the brake pedal.

Brake pedal	Stop lamp
Fully released	Not illuminated
Slightly depressed	Illuminated

Is 1st trip DTC detected?

YES >> GO TO 4. NO >> GO TO 2.

2.CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- Check the voltage between stop lamp switch harness connector and ground.

Stop lamp switch		Ground	Voltage	
Connector	Terminal	Ground	voltage	
E115	1	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

Harness connectors E105, M77

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P1805 BRAKE SWITCH

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- 10A fuse (No. 11)
- Harness for open or short between stop lamp switch and battery
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect ECM harness connector.
- 2. Check the continuity between ECM harness connector and stop lamp switch harness connector.

ECM		Stop lamp switch		Continuity
Connector	Terminal	Connector Terminal		Continuity
E16	106	E115	2	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK STOP LAMP SWITCH

Refer to EC-806, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace stop lamp switch.

6. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection (Stop Lamp Switch)

INFOID:0000000002989096

1. CHECK STOP LAMP SWITCH-I

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check the continuity between stop lamp switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Not existed
	brake pedar	Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK STOP LAMP SWITCH-II

- Adjust stop lamp switch installation. Refer to <u>BR-9. "Inspection and Adjustment"</u>.
- 2. Check the continuity between stop lamp switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Not existed
I allu Z Di	Diake pedai	Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch.

P2100, P2103 THROTTLE CONTROL MOTOR RELAY

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P2100, P2103 THROTTLE CONTROL MOTOR RELAY

Description INFOID:0000000002989104

Power supply for the throttle control motor is provided to the ECM via throttle control motor relay. The throttle control motor relay is ON/OFF controlled by the ECM. When the ignition switch is turned ON, the ECM sends an ON signal to throttle control motor relay and battery voltage is provided to the ECM. When the ignition switch is turned OFF, the ECM sends an OFF signal to throttle control motor relay and battery voltage is not provided to the ECM.

DTC Logic INFOID:0000000002989105

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2100	Throttle control motor relay circuit open	ECM detects a voltage of power source for throttle control motor is excessively low.	Harness or connectors (Throttle control motor relay circuit is open) Throttle control motor relay
P2103	Throttle control motor relay circuit short	ECM detect the throttle control motor relay is stuck ON.	Harness or connectors (Throttle control motor relay circuit is shorted) Throttle control motor relay

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V.

Witch DTC is detected?

P2100 >> GO TO 2.

P2103 >> GO TO 3.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P2100

- Turn ignition switch ON and wait at least 2 seconds.
- Start engine and let it idle for 5 seconds.
- Check DTC.

Is DTC detected?

YFS >> Go to EC-807, "Diagnosis Procedure".

>> INSPECTION END NO

3.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P2103

- Turn ignition switch ON and wait at least 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-807, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

${f 1}$.CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Disconnect IPDM E/R harness connector. 3.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

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INFOID:0000000002989106

EC-807 Revision: 2008 January 2008 Rogue

P2100, P2103 THROTTLE CONTROL MOTOR RELAY

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F7	15	E13	32	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2.DETECT MALFUNCTION PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between ECM and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT

1. Check the continuity between ECM harness connector and IPDM E/R harness connector.

ECM		IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		Continuity
F7	2	E15	52	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 4.

4. DETECT MALFUNCTION PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between ECM and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK FUSE

- 1. Disconnect 20A fuse (No. 61) from IPDM E/R.
- 2. Check 20A fuse for blown.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace 20A fuse.

6. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connectors.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P2101 ELECTRIC THROTTLE CONTROL FUNCTION

Description INFOID:0000000002989107

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc.

The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The current opening angle of the throttle valve is detected by the throttle position sensor and it provides feedback to the ECM to control the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

DTC Logic INFOID:0000000002989108

DTC DETECTION LOGIC

NOTE:

If DTC P2101 is displayed with DTC P2100 or P2119, first perform the trouble diagnosis for DTC P2100 or P2119. Refer to EC-807, "DTC Logic" or EC-815, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2101	Electric throttle control performance	Electric throttle control function does not operate properly.	Harness or connectors (Throttle control motor circuit is open or shorted) Electric throttle control actuator

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V when engine is running.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 2 seconds.
- Start engine and let it idle for 5 seconds. 2.
- Check DTC.

Is DTC detected?

YES >> Go to EC-809, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-I

Check the voltage between ECM harness connector and ground.

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

ECM		Ground	Condition	Voltage	
Connector	Terminal	Glound	Condition	voltage	
F14	2	Ground	Ignition switch OFF	Approx. 0V	
1 14	2	Giodila	Ignition switch ON	Battery voltage	

Is the inspection result normal?

YES >> GO TO 9. NO >> GO TO 3.

3.check throttle control motor relay power supply circuit

- 1. Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector.
- 3. Check the continuity between ECM harness connector and IPDM E/R harness connector.

IPDM E/R		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E13	32	F7	15	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 4.

4.DETECT MALFUNCTION PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between ECM and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-II

1. Check the continuity between ECM harness connector and IPDM E/R harness connector.

IPDM E/R		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E15	52	F7	2	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 6.

6. DETECT MALFUNCTION PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between ECM and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK FUSE

- 1. Disconnect 20A fuse (No. 61) from IPDM E/R.
- 2. Check 20A fuse for blown.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace 20A fuse.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connectors.

9.CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT FOR OPEN OR SHORT

- Turn ignition switch OFF.
- Disconnect electric throttle control actuator harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F29	5	F7 -	5	Not existed
			6	Existed
			5	Existed
			6	Not existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10.

>> Repair or replace. NO

10.CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- Remove the intake air duct.
- 2. Check if foreign matter is caught between the throttle valve (1) and the housing.
- ⟨
 ⇒: Vehicle front
- Electric throttle control actuator (2)

Is the inspection result normal?

YES >> GO TO 11.

NO >> Remove the foreign matter and clean the electric throttle control actuator inside.

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11. CHECK THROTTLE CONTROL MOTOR

Refer to EC-812, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 12.

NO >> GO TO 13.

12. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 13.

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NO >> Repair or replace harness or connectors.

13. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace malfunction electric throttle control actuator.
- 2. Go to EC-377, "Special Repair Requirement".

>> INSPECTION END

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Component Inspection

INFOID:0000000002989110

1. CHECK THROTTLE CONTROL MOTOR

- 1. Disconnect electric throttle control actuator harness connector.
- 2. Check resistance between electric throttle control actuator terminals as follows.

Terminals	Resistance	
5 and 6	Approx. 1 - 15 Ω [at 25 °C (77°F)]	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.replace electric throttle control actuator

- 1. Replace electric throttle control actuator.
- 2. Go to EC-812, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002989111

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

P2118 THROTTLE CONTROL MOTOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P2118 THROTTLE CONTROL MOTOR

Description INFOID:0000000002989112

The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The current opening angle of the throttle valve is detected by the throttle position sensor and it provides feedback to the ECM to control the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

DTC Logic INFOID:0000000002989113

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2118	Throttle control motor circuit short	ECM detects short in both circuits between ECM and throttle control motor.	Harness or connectors (Throttle control motor circuit is shorted.) Electric throttle control actuator (Throttle control motor)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure

- Turn ignition switch ON and wait at least 2 seconds.
- Start engine and let it idle for 5 seconds.
- Check DTC.

Is DTC detected?

YES >> Go to EC-813, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Disconnect electric throttle control actuator harness connector.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	5	5	Not existed	
F29		F7	6	Existed
1 23	6	1 7	5	Existed
	0		6	Not existed

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P2118 THROTTLE CONTROL MOTOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace.

3. CHECK THROTTLE CONTROL MOTOR

Refer to EC-814, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 5.

4. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace harness or connectors.

REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- 2. Go to EC-814, "Special Repair Requirement".

>> INSPECTION END

Component Inspection

INFOID:0000000002989115

1. CHECK THROTTLE CONTROL MOTOR

- Disconnect electric throttle control actuator harness connector.
- Check resistance between electric throttle control actuator terminals as follows.

Terminals	Resistance
5 and 6	Approx. 1 - 15 Ω [at 25 °C (77°F)]

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.replace electric throttle control actuator

- 1. Replace electric throttle control actuator.
- 2. Go to EC-814, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002989116

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

Description INFOID:0000000002989117

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc.

The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The throttle position sensor detects the throttle valve position, and the opening and closing speed of the throttle valve and feeds the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

DTC Logic INFOID:0000000002989118

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
	Electric throttle control		Electric throttle control actuator does not function properly due to the return spring malfunction.	
P2119	actuator	B)	Throttle valve opening angle in fail-safe mode is not in specified range.	Electric throttle control actuator
		C)	ECM detect the throttle valve is stuck open.	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure for malfunction a and b

- Turn ignition switch ON and wait at least 1 second.
- 2. Set shift lever to D position and wait at least 3 seconds.
- 3. Set shift lever to P position.
- Turn ignition switch OFF and wait at least 10 seconds.
- 5. Turn ignition switch ON and wait at least 1 second.
- 6. Set shift lever to D position and wait at least 3 seconds.
- Set shift lever to P position.
- Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- Check DTC.

Is DTC detected?

YES >> Go to EC-815, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform dtc confirmation procedure for malfunction ${ t c}$

- Turn ignition switch ON and wait at least 1 second.
- 2. Set shift lever to D position and wait at least 3 seconds.
- Set shift lever to N, P position.
- 4. Start engine and let it idle for 3 seconds.
- 5. Check DTC.

Is DTC detected?

>> Go to EC-815, "Diagnosis Procedure". YES

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

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P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

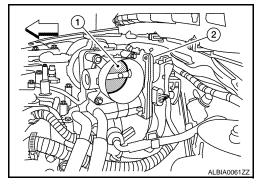
- Turn ignition switch OFF.
- 2. Remove the intake air duct.
- 3. Check if foreign matter is caught between the throttle valve (1) and the housing.
- ⟨□: Vehicle front
- Electric throttle control actuator (2)

Is the inspection result normal?

YES >> GO TO 2.

NO

>> Remove the foreign matter and clean the electric throttle control actuator inside.



2.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace electric throttle control actuator.
- 2. Go to EC-816, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002989120

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

Accelerator pedal position sensor

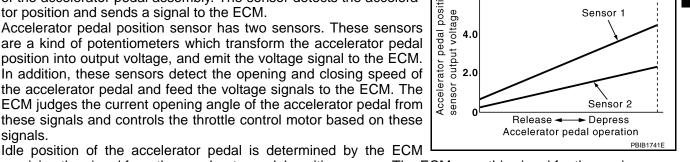
Sensor 1

P2122. P2123 APP SENSOR

Description INFOID:0000000002989121

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.

Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals.



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receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.

DTC Logic INFOID:0000000002989122

DTC DETECTION LOGIC

NOTE:

If DTC P2122 or P2123 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-776, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P2122	Accelerator pedal position sensor 1 circuit low input	An excessively low voltage from the APP sensor 1 is sent to ECM.	Harness or connectors (APP sensor 1 circuit is open or shorter)	
P2123	Accelerator pedal position sensor 1 circuit high input	An excessively high voltage from the APP sensor 1 is sent to ECM.	Accelerator pedal position sensor (APP sensor 1)	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 1 second.
- Check DTC. 2.

Is DTC detected?

YES >> Go to EC-817, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1.CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

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NO >> Repair or replace ground connection. INFOID:0000000002989123

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< COMPONENT DIAGNOSIS >

2.check app sensor 1 power supply circuit

- 1. Disconnect accelerator pedal position (APP) sensor harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between APP sensor harness connector and ground.

APP	sensor	Ground	Voltage
Connector Terminal		Ground	voilage
E110	4	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3.CHECK APP SENSOR 1 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

APP	sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E110	2	E16	84	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK APP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between APP sensor harness connector and ECM harness connector.

APP	APP sensor		ECM	
Connector	Terminal	Connector Terminal		Continuity
E110	3	E16	81	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK APP SENSOR

Refer to EC-819, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6.REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- Go to EC-819, "Special Repair Requirement".

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P2122, P2123 APP SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Component Inspection

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1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- 1. Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Check the voltage between ECM harness connector terminals.

ECM						
+		-		Condition		Voltage
Connector	Terminal	Connector	Terminal			
	81 84			Fully released	0.5 - 1.0V	
E16	(APP sensor 1 signal) (Sensor ground) E16 Accelerator peda	Accelerator pedal	Fully depressed	4.2 - 4.8V		
EIO	82	L10	100	Accelerator pedar	Fully released	0.25 - 0.5V
	(APP sensor 2 signal)		(Sensor ground)		Fully depressed	2.0 - 2.5V

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.replace accelerator pedal assembly

- 1. Replace accelerator pedal assembly.
- 2. Go to EC-819, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002989125

1. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-501, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 2.

2. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3.perform idle air volume learning

Refer to EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

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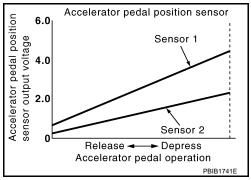
Revision: 2008 January EC-819 2008 Rogue

P2127, P2128 APP SENSOR

Description INFOID:000000002989126

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.

Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals.



Idle position of the accelerator pedal is determined by the ECM receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2127	Accelerator pedal position sensor 2 circuit low input	An excessively low voltage from the APP sensor 2 is sent to ECM.	Harness or connectors (APP sensor 2 circuit is open or shorted.) [Crankshaft position sensor (POS) circuit
P2128	Accelerator pedal position sensor 2 circuit high input	An excessively high voltage from the APP sensor 2 is sent to ECM.	is shorted.] (Refrigerant pressure sensor circuit is shorted.) (EVAP control system pressure sensor circuit is shorted.) • Accelerator pedal position sensor (APP sensor 2) • Crankshaft position sensor (POS) • Refrigerant pressure sensor • EVAP control system pressure sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-820, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002989128

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

P2127, P2128 APP SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-I

- Disconnect accelerator pedal position (APP) sensor harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

APP	sensor	Ground	Voltage
Connector Terminal		Giodila	voltage
E110	5	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 3.

3.CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-II

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

APP	APP sensor		ECM		
Connector	Terminal	Connector Terminal		Continuity	
E110	5	E16	87	Existed	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

$oldsymbol{4}.$ CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

EC	M	Sensor		
Connector	Terminal	Name	Connector	Terminal
F8	72	Refrigerant pressure sensor	E49	3
76		CKP sensor (POS)	F20	1
E16	87	APP sensor	E110	5
91	91	EVAP control system pressure sensor	B47	3

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair short to ground or short to power in harness or connectors.

5.CHECK COMPONENT

Check the following.

- Crankshaft position sensor (POS) (Refer to <u>EC-698, "Component Inspection"</u>.)
- EVAP control system pressure sensor (Refer to <u>EC-736, "Component Inspection"</u>.)
- Refrigerant pressure sensor (Refer to <u>EC-865</u>, "<u>Diagnosis Procedure</u>".)

Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace malfunctioning component.

$oldsymbol{\circ}$.CHECK APP SENSOR 2 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between APP sensor harness connector and ECM harness connector.

EC-821 Revision: 2008 January 2008 Rogue

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APP sensor		E	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E110	1	E16	100	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

7.CHECK APP SENSOR 2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between APP sensor harness connector and ECM harness connector.

APP sensor		ECM		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
E110	2	E16	82	Existed	

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK APP SENSOR

Refer to EC-822, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 9.

9. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- 2. Go to EC-823, "Special Repair Requirement".

>> INSPECTION END

10. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002989129

1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- Reconnect all harness connectors disconnected.
- Turn ignition switch ON.
- 3. Check the voltage between ECM harness connector terminals.

	ECM						
+ -		-	Condition		Voltage		
Connector	Terminal	Connector	Terminal				
	81 84			Fully released	0.5 - 1.0V		
E16	(APP sensor 1 signal)	E16	(Sensor ground)	Accelerator pedal	Fully depressed	4.2 - 4.8V	
LIO	82 100		Accelerator pedar	Fully released	0.25 - 0.5V		
	(APP sensor 2 signal)				Fully depressed	2.0 - 2.5V	

P2127, P2128 APP SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

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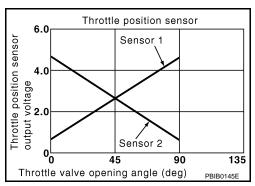
YES >> INSPECTION END NO >> GO TO 2. Α 2.replace accelerator pedal assembly Replace accelerator pedal assembly. EC Go to EC-823, "Special Repair Requirement". >> INSPECTION END Special Repair Requirement INFOID:0000000002989130 1. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING D Refer to EC-501, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement". Е >> GO TO 2. 2.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING F Refer to EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement". >> GO TO 3. 3.PERFORM IDLE AIR VOLUME LEARNING Refer to EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement". Н >> END K L M Ν

P2135 TP SENSOR

Description INFOID:0000000002989131

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P2135 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to <u>EC-776, "DTC Logic"</u>.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2135	Throttle position sensor circuit range/performance	Rationally incorrect voltage is sent to ECM compared with the signals from TP sensor 1 and TP sensor 2.	Harness or connector (TP sensor 1 and 2 circuit is open or shorted.) Electric throttle control actuator (TP sensor 1 and 2)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-824, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002989133

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT-I

1. Disconnect electric throttle control actuator harness connector.

P2135 TP SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- 2. Turn ignition switch ON.
- 3. Check the voltage between electric throttle control actuator harness connector and ground.

Electric throttle of	control actuator	Ground	Voltage	
Connector	Connector Terminal		voltage	
F29	1	Ground	Approx. 5V	

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Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3. CHECK THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT-II

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- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between electric throttle control actuator harness connector and ground.

Electric throttle of	ontrol actuator	EC	CM	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F29	1	F8	47	Existed

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Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit.

4.CHECK THROTTLE POSITION SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

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- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between electric throttle control actuator harness connector and ground.

Electric throttle of	ectric throttle control actuator		ECM		
Connector	Terminal	Connector	Terminal	Continuity	
F57	4	F8	36	Existed	

4. Also check harness for short to ground and short to power.

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Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

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${f 5.}$ CHECK THROTTLE POSITION SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between electric throttle control actuator harness connector and ground.

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Electric throttle of	control actuator	EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F29	F20 2		37	Existed
1 29	3	F8	38	LAISIGU

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2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6.check throttle position sensor

Refer to EC-826, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 7.

7.replace electric throttle control actuator

- 1. Replace electric throttle control actuator.
- 2. Go to EC-826, "Special Repair Requirement".

>> INSPECTION END

8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002989134

1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set shift lever to D position.
- 6. Check the voltage between ECM harness connector terminals.

	ECM			Condition					
+		_				Voltage			
Connector	Terminal	Connector	Terminal						
	37 (TD corpor 1				Fully released	More than 0.36V			
F8	(TP sensor 1 signal)	36			36 F8 (Sensor ground)		A coolerator padal	Fully depressed	Less than 4.75V
Fö	38	Fδ	`	`		Accelerator pedal	Fully released	Less than 4.75V	
	(TP sensor 2 signal)				Fully depressed	More than 0.36V			

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.replace electric throttle control actuator

- Replace electric throttle control actuator.
- Go to EC-826, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002989135

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

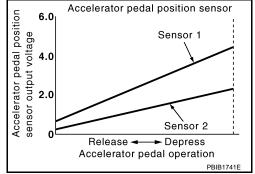
>> END

P2138 APP SENSOR

Description INFOID:0000000002989136

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.

Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals.



Accelerator pedal position sensor

Idle position of the accelerator pedal is determined by the ECM

receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.

DTC Logic INFOID:0000000002989137

DTC DETECTION LOGIC

NOTE:

If DTC P2138 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-776, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2138	Accelerator pedal position sensor circuit range/performance	Rationally incorrect voltage is sent to ECM compared with the signals from APP sensor 1 and APP sensor 2.	Harness or connector (APP sensor 1 and 2 circuit is open or shorted.) [Crankshaft position sensor (POS) circuit is shorted.) (Refrigerant pressure sensor circuit is shorted.) (EVAP control system sensor circuit is shorted.) Accelerator pedal position sensor (APP sensor 1 and 2) Crankshaft position sensor (POS) Refrigerant pressure sensor EVAP control system pressure sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2.perform dtc confirmation procedure

- Start engine and let it idle for 1 second. 1.
- Check DTC.

Is DTC detected?

YES >> Go to EC-828, "Diagnosis Procedure".

NO >> INSPECTION END EC

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[FOR USA (FEDERAL) AND CANADA]

Diagnosis Procedure

INFOID:0000000002989138

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK APP SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between APP sensor harness connector and ground.

APP	sensor	Ground	Voltage	
Connector	Terminal	Ground	voltage	
E110	4	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or shot to power in harness or connectors.

3.CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch ON.
- 2. Check the voltage between APP sensor harness connector and ground.

APP sensor		Ground	Voltage	
	Connector	Terminal		voltage
	E110	5	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 4.

4. CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-II

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

APP sensor		ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
E110	5	E16	87	Existed	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or shot to power in harness or connectors.

${f 5.}$ CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

EC	M	Sensor		_
Connector	Terminal	Name	Connector	Terminal
F8	72	Refrigerant pressure sensor	E49	3
	76	CKP sensor (POS)	F20	1

P2138 APP SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
E16	87	APP sensor	E110	5	
	91	EVAP control system pressure sensor	B47	3	

EC

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Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair short to ground or short to power in harness or connectors.

6. CHECK COMPONENT

Check the following.

- Crankshaft position sensor (POS) (Refer to <u>EC-698, "Component Inspection"</u>.)
- EVAP control system pressure sensor (Refer to <u>EC-736, "Component Inspection"</u>.)
- Refrigerant pressure sensor (Refer to EC-865, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 11.

>> Replace malfunctioning component. NO

7.CHECK APP SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between APP sensor harness connector and ECM harness connector as follows.

APP	sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E110	2	E16	84	Existed
EIIU	1		100	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to ground or shot to power in harness or connectors.

8.CHECK APP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between APP sensor harness connector and ECM harness connector as follows.

APP	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E110	6	E16	82	Existed
E110	3	L10	81	LAISIEU

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or shot to power in harness or connectors.

9. CHECK APP SENSOR

Refer to EC-830, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> GO TO 10.

10.REPLACE ACCELERATOR PEDAL ASSEMBLY

- Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- Go to EC-830, "Special Repair Requirement".

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>> INSPECTION END

11. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002989139

1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- 1. Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Check the voltage between ECM harness connector terminals.

	ECM						
	+		-	Condition		Voltage	
Connector	Terminal	Connector	Terminal				
	81		84	Accelerator pedal	Fully released	0.5 - 1.0V	
E16	(APP sensor 1 signal)		(Sensor ground)		Fully depressed	4.2 - 4.8V	
L10	82	LIU	100	Accelerator pedar	Fully released	0.25 - 0.5V	
	(APP sensor 2 signal)		(Sensor ground)		Fully depressed	2.0 - 2.5V	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Go to EC-830, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002989140

1. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-501, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 2.

2. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-501, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3.perform idle air volume learning

Refer to EC-502, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END

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P2A00 A/F SENSOR 1

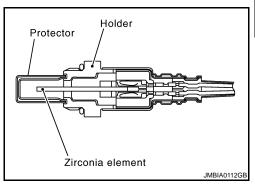
Description INFOID:0000000002989143

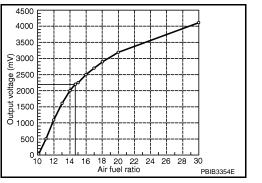
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800° C (1,472°F).





DTC Logic

DTC DETECTION LOGIC

To judge the malfunction, the A/F signal computed by ECM from the A/F sensor 1 signal is monitored not to be shifted to LEAN side or RICH side.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P2A00	Air fuel ratio (A/F) sensor 1 circuit range/performance	 The output voltage computed by ECM from the A/F sensor 1 signal is shifted to the lean side for a specified period. The A/F signal computed by ECM from the A/F sensor 1 signal is shifted to the rich side for a specified period. 	 A/F sensor 1 A/F sensor 1 heater Fuel pressure Fuel injector Intake air leaks

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Clear the mixture ratio self-learning value. Refer to <u>EC-503</u>, "MIXTURE RATIO SELF-LEARNING VALUE <u>CLEAR</u>: Special Repair Requirement".
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Keep engine speed between 2,500 and 3,000 rpm for 20 minutes.
- 6. Check 1st trip DTC\$.

P2A00 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Is 1st trip DTC detected?

YES >> Go to EC-832, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002989145

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.RETIGHTEN A/F SENSOR 1

Loosen and retighten the A/F sensor 1. Refer to EM-32, "Removal and Installation".

>> GO TO 3.

3.CHECK FOR INTAKE AIR LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> GO TO 4.

NO >> Repair or replace.

4.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to <u>EC-503</u>, "MIXTURE RATIO SELF-LEARNING VALUE <u>CLEAR</u>: Special Repair Requirement".
- 2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 or P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171or P0172. Refer to <u>EC-670, "DTC Logic"</u> or <u>EC-674, "DTC Logic"</u>.

NO >> GO TO 5.

5. CHECK HARNESS CONNECTOR

- 1. Turn ignition switch OFF.
- Disconnect A/F sensor 1 harness connector.
- 3. Check harness connector for water.

Water should not exit.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace harness connector.

O.CHECK A/F SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Turn ignition switch ON.
- 2. Check the voltage between A/F sensor 1 harness connector and ground.

A/F s	ensor 1	Ground	Voltage	
Connector	Terminal	Ground		
F27	4	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

7. DETECT MALFUNCTIONING PART

P2A00 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

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>> Repair or replace harness or connectors.

8.check a/f sensor 1 input signal circuit for open and short

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F	sensor 1	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F27	1	F8	45	Existed
F21	2	1-0	49	LAISIEU

Check the continuity between ECM harness connector or A/F sensor 1 harness connector and ground.

A/F s	sensor 1	ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Ground	Continuity
F27	1	F8	45	Ground	Not existed
F2/	2	1.0	49	Giodila	INOL EXISTED

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9. CHECK A/F SENSOR 1 HEATER

Refer to EC-601, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 11.

10. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace.

11.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

Do vou have CONSULT-III?

YES >> GO TO 12.

NO >> GO TO 13.

12.CONFIRM A/F ADJUSTMENT DATA

(P)With CONSULT-III

Turn ignition switch ON.

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P2A00 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

- 2. Select "A/F ADJ-B1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Make sure that "0.000" is displayed on CONSULT-III screen.

Is "0.000" displayed?

YES >> INSPECTION END

NO >> GO TO 13.

13.clear the mixture ratio self-learning value

Clear the mixture ratio self-learning value. Refer to <u>EC-503</u>, "MIXTURE RATIO SELF-LEARNING VALUE <u>CLEAR</u>: Special Repair Requirement".

Do you have CONSULT-III?

YES >> GO TO 14.

NO >> INSPECTION END

14. CONFIRM A/F ADJUSTMENT DATA

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Select "A/F ADJ-B1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Make sure that "0.000" is displayed on CONSULT-III screen.

>> INSPECTION END

ASCD BRAKE SWITCH

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

ASCD BRAKE SWITCH

Description INFOID:0000000002989146

When the brake pedal is depressed, ASCD brake switch is turned OFF and stop lamp switch is turned ON. ECM detects the state of the brake pedal by this input of two kinds (ON/OFF signal).

Refer to EC-531, "System Description" for the ASCD function.

Component Function Check

CHECK FOR ASCD BRAKE SWITCH FUNCTION

(II) With CONSULT-III

- 1. Turn ignition switch ON.
- Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "BRAKE SW1" indication under the following conditions.

Monitor item	Co	Indication	
BRAKE SW1	Brake pedal	Slightly depressed	OFF
	втаке редаг	Fully released	ON

W Without CONSULT-III

- 1. Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

ECM		- Ground Con		ndition	Voltage
Connector	Terminal	Giodila	Col	Tullion Voltage	
E16	110	Ground	Brake pedal	Slightly depressed	Approx. 0V
E10	(ASCD brake switch signal)		brake pedal	Fully released	Battery voltage

Is the inspection result normal?

YES >> INSPECTION END.

NO >> Refer to EC-835, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- Turn ignition switch ON.
- Check the voltage between ASCD brake switch harness connector and ground.

ASCD bi	rake switch	Ground	Voltage	
Connector	Terminal	Giodila	voltage	
E112	1	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E105, M77
- 10A fuse (No. 1)
- Harness for open or short between ASCD brake switch and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

EC-835 Revision: 2008 January 2008 Rogue

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ASCD BRAKE SWITCH

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

${f 3.}$ CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between ASCD brake switch harness connector and ECM harness connector.

ASCD brake switch		E	Continuity			
	Connector	Terminal	Connector	Terminal	Continuity	
	E112	2	E16	110	Existed	

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK ASCD BRAKE SWITCH

Refer to EC-836, "Component Inspection (ASCD Brake Switch)".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace ASCD brake switch.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection (ASCD Brake Switch)

INFOID:0000000002989149

1.CHECK ASCD BRAKE SWITCH-I

- 1. Turn ignition switch OFF.
- Disconnect ASCD brake switch harness connector.
- 3. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Existed
r and z	brake pedar	Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK ASCD BRAKE SWITCH-II

- Adjust ASCD brake switch installation. Refer to <u>BR-9</u>, "Inspection and Adjustment".
- 2. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Condition Continuit		Continuity
1 and 2	Brake pedal	Fully released	Existed		
1 and 2	brake pedar	Slightly depressed	Not existed		

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD brake switch.

ASCD INDICATOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

ASCD INDICATOR

Description INFOID:000000002989150

ASCD indicator lamp illuminates to indicate ASCD operation status. Lamp has two indicators, CRUISE and SET, and is integrated in combination meter.

CRUISE lamp illuminates when MAIN switch on ASCD steering switch is turned ON to indicated that ASCD system is ready for operation.

SET lamp illuminates when following conditions are met.

- CRUISE lamp is illuminated.
- SET/COAST switch on ASCD steering switch is turned ON while vehicle speed is within the range of ASCD setting.

SET lamp remains lit during ASCD control.

Refer to EC-531, "System Description" for the ASCD function.

Component Function Check

1. ASCD INDICATOR FUNCTION

Check ASCD indicator under the following conditions.

ASCD INDICATOR	CONDITION		SPECIFICATION
CRUISE LAMP	Ignition switch: ON MAIN switch: Pressed at the 1st time →at the 2nd time		$ON \to OFF$
MAIN switch: ON		ASCD: Operating	ON
SET LAMP	When vehicle speed: Be- tween 40 km/h (25 MPH) and 144 km/h (89 MPH)	ASCD: Not operating	OFF

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-837, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK DTC

Check that DTC U1000 or U1001 is not displayed.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble diagnosis for DTC U1000, U1001. Refer to EC-594, "DTC Logic".

2.CHECK COMBINATION METER OPERATION

Refer to MWI-33, "CONSULT-III Function (METER/M&A)".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check combination meter circuit. Refer to MWI-9, "SPEEDOMETER: System Diagram".

3.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

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COOLING FAN

Description INFOID:000000002989153

The ECM controls the cooling fan corresponding to the vehicle speed, engine coolant temperature, refrigerant pressure, and air conditioner ON signal. The control system has 3-step control [HIGH/LOW/OFF].

COOLING FAN MOTOR

The cooling fan operates at each speed when the current flows in the cooling fan motor as follows.

Cooling for aroud	Cooling fan motor terminals		
Cooling fan speed	(+)	(-)	
Middle (MID)	1	3 and 4	
	2	3 and 4	
	1 and 2	3	
	1 and 2	4	
High (HI)	1 and 2	3 and 4	

The cooling fan operates at low (LOW) speed when cooling fan motors-1 and -2 are circuited in series under middle speed condition.

Refer to EC-538, "System Description".

Component Function Check

INFOID:0000000002989154

1. CHECK COOLING FAN LOW SPEED FUNCTION

(II) With CONSULT-III

- 1. Turn ignition switch ON.
- Perform "COOLING FAN" in "ACTIVE TEST" mode with CONSULT-III and touch "LOW" on the CON-SULT-III screen.
- 3. Make sure that cooling fans operates at low speed.

8 Without CONSULT-III

- Start engine and let it idle.
- 2. Turn air conditioner switch and blower fan switch ON.
- Make sure that cooling fan operates at low speed.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Check cooling fan low speed control circuit. Refer to "PROCEDURE A" in EC-839, "Diagnosis Procedure".

2. CHECK COOLING FAN HIGH SPEED FUNCTION

(II) With CONSULT-III

- 1. Touch "HI" on the CONSULT-III screen.
- Make sure that cooling fans operates at higher speed than low speed.

Without CONSULT-III

- Turn ignition switch OFF.
- 2. Turn air conditioner switch and blower fan switch OFF.
- 3. Disconnect engine coolant temperature sensor harness connector.
- 4. Connect 150Ω resistor to engine coolant temperature sensor harness connector.
- 5. Restart engine and make sure that cooling fan operates at higher speed than low speed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Check cooling fan high speed control circuit. Refer to "PROCEDURE B" in <u>EC-839</u>, "<u>Diagnosis Procedure"</u>.

COOLING FAN [FOR USA (FEDERAL) AND CANADA] < COMPONENT DIAGNOSIS > Diagnosis Procedure INFOID:0000000002989155 Α PROCEDURE A CHECK GROUND CONNECTION EC Turn ignition switch OFF. Check ground connection E38. Refer to Ground Inspection in GI-44, "Circuit Inspection". Is the inspection result normal? YES >> GO TO 2. NO >> Repair or replace ground connection. 2.CHECK COOLING FAN MOTORS POWER SUPPLY CIRCUIT-I D Disconnect cooling fan motor-2 harness connector. Check the voltage between cooling fan motor-2 harness connector and ground. Cooling fan motor-2 Ground Voltage Connector Terminal E54 Ground Battery voltage 2 Also check harness for short to ground or short to power. Is the inspection result normal? YES >> GO TO 4. NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- 40A fusible link (letter M)
- Harness for open or short between cooling fan motor-2 and battery

>> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK COOLING FAN MOTORS POWER SUPPLY CIRCUIT-II

- 1. Disconnect cooling fan relay-4.
- Turn ignition switch ON.
- Check the voltage between cooling fan relay-4 harness connector and ground.

Cooling fan relay-4		Ground	Voltage
Connector	Terminal	Ground	voltage
E57	2	Ground	Battery voltage

Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 6. NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between cooling fan relay-4 and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK COOLING FAN MOTORS GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect cooling fan motor-1 harness connector.

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[FOR USA (FEDERAL) AND CANADA]

3. Check the continuity between cooling fan motor-1 harness connector and ground.

Cooling fan motor-1		Ground	Continuity	
Connector	Terminal	Giodila	Continuity	
E53	3	Ground	Existed	
LJJ	4	Giodila	LXISIEU	

4. Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

7.CHECK COOLING FAN MOTORS CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect IPDM E/R harness connector E13.
- Check the continuity between cooling fan motor-2 harness connector and cooling fan relay-4 harness connector.

Cooling fan motor-2		Cooling fan relay-4		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E54	3	E57	3	Existed

Check the continuity between cooling fan relay-4 harness connector and cooling fan motor-1 harness connector and ground.

Cooling f	Cooling fan relay-4		Cooling fan motor-1	
Connector	Terminal	Connector Terminal		Continuity
E57	5	E53	2	Existed

4. Check the continuity between cooling fan relay-4 harness connector and IPDM E/R harness connector.

Cooling f	an relay-4	IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		Continuity
E57	1	E13	31	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK COOLING FAN RELAY-4

Refer to EC-844, "Component Inspection (Cooling Fan Relay)".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace cooling fan relay.

$\mathbf{9}.$ CHECK COOLING FAN MOTORS

Refer to EC-843. "Component Inspection (Cooling Fan Motor)".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace malfunctioning cooling fan motor.

10. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connector.

COOLING FAN

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

PROCEDURE B

1. CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21, E38. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK IPDM E/R POWER SUPPLY CIRCUIT

- Disconnect IPDM E/R harness connector E10.
- Check the voltage between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Voltage
Connector	Terminal	Orouna	voltage
E10	6	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- 40A fusible link (letter K)
- Harness for open or short between IPDM E/R and battery

>> Repair open circuit or short to ground or short to power in harness or connectors.

f 4 .CHECK IPDM E/R GROUND CIRCUIT FOR OPEN ANF SHORT

- Disconnect IPDM E/R harness connector E11.
- 2. Check the continuity between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal	Giodila	Continuity
E11	11	Ground	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5}$.CHECK COOLING FAN MOTORS POWER SUPPLY CIRCUIT-I

- Disconnect cooling fan motor-2 harness connector.
- Check the voltage between cooling fan motor-2 harness connector and ground.

Cooling fan motor-2		Ground	Voltage
Connector	Terminal	Giodila	vollage
F54	1	Ground	Battery voltage
L34	2	Giodila	Battery Voltage

Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

40A fusible link (letter M)

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- · Harness for open or short between cooling fan motor-2 and battery
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

7.CHECK COOLING FAN MOTORS POWER SUPPLY CIRCUIT-II

- 1. Disconnect cooling fan relay-5.
- Turn ignition switch ON.
- Check the voltage between cooling fan relay-5 harness connector and ground.

Cooling fan relay-5		Ground	Voltage	
Connector	Terminal	Ground	voitage	
E59	2	Ground	Battery voltage	

4. Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 9. NO >> GO TO 8.

8. DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between cooling fan relay-5 and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

9. CHECK COOLING FAN MOTORS GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect cooling fan motor-1 harness connector.
- Check the continuity between cooling fan motor-1 harness connector and ground.

Cooling fan motor-1		Ground	Continuity	
Connector	Terminal	Giodila	Continuity	
E53	3	Ground	Existed	
LOO	4	Giodila	LAISIEU	

Check the continuity between cooling fan relay-5 harness connector and ground.

Cooling fan relay-5		Ground	Continuity	
Connector	Terminal	Ground	Continuity	
E59	5	Ground	Existed	

5. Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

10.check cooling fan motors circuit for open and short

- 1. Disconnect IPDM E/R harness connector E15.
- 2. Check the continuity between cooling fan motor-2 harness connector and cooling fan relay-5 harness connector.

Cooling fa	an motor-2	Cooling fan relay-5		Continuity
Connector	Terminal	Connector Terminal		Continuity
E54	4	E59	3	Existed

COOLING FAN

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

3. Check the continuity between cooling fan motor-2 harness connector and IPDM E/R harness connector.

Cooling fan motor-2		IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		Continuity
E54	3	E10	7	Existed

4. Check the continuity between cooling fan relay-5 harness connector and IPDM E/R harness connector.

Cooling f	an relay-5	IPDM E/R				Continuity
Connector	Terminal	Connector Terminal		Outilitally		
E59	1	E15	50	Existed		

5. Check the continuity between cooling fan motor-1 harness connector and IPDM E/R harness connector.

Cooling fa	an motor-1	IPDM E/R				Continuity
Connector	Terminal	Connector Terminal		Continuity		
E53	1	F10	4	Existed		
L33	2		8	LAISIEU		

6. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

11. CHECK COOLING FAN RELAY-5

Refer to EC-844, "Component Inspection (Cooling Fan Relay)".

Is the inspection result normal?

YES >> GO TO 12.

NO >> Replace cooling fan relay.

12. CHECK COOLING FAN MOTORS

Refer to EC-843, "Component Inspection (Cooling Fan Motor)".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace malfunctioning cooling fan motor.

13. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connector.

Component Inspection (Cooling Fan Motor)

1. CHECK COOLING FAN MOTORS

- 1. Turn ignition switch OFF.
- 2. Disconnect cooling fan motor-1 and -2 harness connectors E53, E54.
- 3. Supply cooling fan motor terminals with battery voltage and check operation.

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< COMPONENT DIAGNOSIS >

Cooling fan motor terminals		Operation	
(+)	(-)	— Operation	
1	3 and 4		
2	3 and 4	Cooling fans operates at low speed.	
1 and 2	3	— Cooling lans operates at low speed.	
1 and 2	4		
1 and 2	3 and 4	Cooling fans operates at high speed.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace cooling fan motor.

Component Inspection (Cooling Fan Relay)

1. CHECK COOLING FAN RELAYS

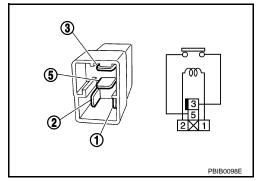
- 1. Turn ignition switch OFF.
- 2. Remove cooling fan relay.
- 3. Check the continuity between cooling fan relay terminals under the following conditions.

Terminals	Conditions	Continuity
3 and 5	12V direct current supply between terminals 1 and 2	Existed
5 and 5	No current supply	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace cooling fan relay.



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ELECTRICAL LOAD SIGNAL

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

ELECTRICAL LOAD SIGNAL

Description INFOID:0000000002989158

The electrical load signal (Headlamp switch signal, rear window defogger switch signal, etc.) is transferred through the CAN communication line from BCM to ECM via IPDM E/R.

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Component Function Check

1. CHECK REAR WINDOW DEFOGGER SWITCH FUNCTION

- Turn ignition switch ON.
- Connect CONSULT-III and select "DATA MONITOR" mode. 2.
- Select "LOAD SIGNAL" and check indication under the following conditions.

Monitor item	Condition		Indication
LOAD SIGNAL	Rear window defogger switch	ON	ON
	Rear window delogger switch	OFF	OFF

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-845, "Diagnosis Procedure".

2.CHECK LIGHTING SWITCH FUNCTION

Check "LOAD SIGNAL" indication under the following conditions.

Monitor item	Co	Indication	
LOAD SIGNAL Lighting switch	Lighting switch	ON at 2nd position	ON
	Lighting Switch	OFF	OFF

Is the inspection result normal?

YES >> GO TO 3.

NO >> Go to EC-845, "Diagnosis Procedure".

3.check heater fan control switch function

Select "HEATER FAN SW" and check indication under the following conditions.

Monitor item Condition			Indication
HEATER FAN SW	Heater fan control switch	ON	ON
	neater fan control switch	OFF	OFF

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-845, "Diagnosis Procedure".

Diagnosis Procedure

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1.INSPECTION START

Confirm the malfunctioning circuit (rear window defogger, headlamp or heater fan). Refer to EC-845, "Component Function Check".

Which circuit is related to the incident?

Rear window defogger>>GO TO 2.

Headlamp>>GO TO 3.

Heater fan>>GO TO 4.

2.CHECK REAR WINDOW DEFOGGER SYSTEM

Refer to DEF-4, "System Diagram".

ELECTRICAL LOAD SIGNAL

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

>> INSPECTION END

3.CHECK HEADLAMP SYSTEM

Refer to EXL-8, "System Diagram" (XENON TYPE) or EXL-136, "System Diagram" (HALOGEN TYPE).

>> INSPECTION END

4. CHECK HEATER FAN CONTROL SYSTEM

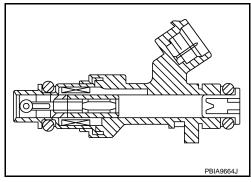
Refer to VTL-3, "System Description".

>> INSPECTION END

FUEL INJECTOR

Description INFOID:0000000002989161

The fuel injector is a small, precise solenoid valve. When the ECM supplies a ground to the fuel injector circuit, the coil in the fuel injector is energized. The energized coil pulls the ball valve back and allows fuel to flow through the fuel injector into the intake manifold. The amount of fuel injected depends upon the injection pulse duration. Pulse duration is the length of time the fuel injector remains open. The ECM controls the injection pulse duration based on engine fuel needs.



Component Function Check

1.INSPECTION START

Turn ignition switch to START.

Is any cylinder ignited?

YES >> GO TO 2.

NO >> Go to EC-847, "Diagnosis Procedure".

2.CHECK FUEL INJECTOR FUNCTION

(P)With CONSULT-III

- Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- Make sure that each circuit produces a momentary engine speed drop.

Without CONSULT-III

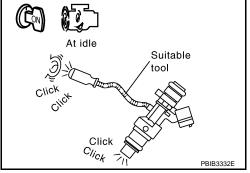
- 1. Let engine idle.
- Listen to each fuel injector operating sound.

Clicking noise should be heard.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-847, "Diagnosis Procedure".



Diagnosis Procedure

1. CHECK FUEL INJECTOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect fuel injector harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between fuel injector harness connector and ground.

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	Fuel injecto	Craund	\/=lt====	
Cylinder	Connector	Terminal	Ground	Voltage
1	F37	1		
2	F38	1	Ground	Battery voltage
3	F39	1	Ground	Dattery voltage
4	F40	1		

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- IPDM E/R harness connector E14
- 15A fuse (No. 64)
- · Harness for open or short between fuel injector and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

3.check fuel injector output signal circuit for open and short

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between fuel injector harness connector and ECM harness connector.

Fuel injector			EC	Continuity	
Cylinder	Connector	Terminal	Connector	Terminal	Continuity
1	F37	2		32	
2	F38	2	F7	31	Existed
3	F39	2	17	30	LAISIEU
4	F40	2		29	

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK FUEL INJECTOR

Refer to EC-848, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace malfunctioning fuel injector.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

Component Inspection

1. CHECK FUEL INJECTOR

- 1. Turn ignition switch OFF.
- Disconnect fuel injector harness connector.

FUEL INJECTOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Check resistance between fuel injector terminals as follows.

Terminals	Resistance
1 and 2	11.1 - 14.3Ω [at 10 -60°C (50 - 140°F)]

Is the inspection result normal?

YES	>> INSPECTION END
-----	-------------------

NO >> Replace malfunctioning fuel injector. EC

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FUEL PUMP

Description INFOID:000000002989165

Sensor	Input signal to ECM	ECM Function	Actuator
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	` ' Engine speed"		Fuel pump relay ↓
Battery	Battery voltage*		Fuel pump

^{*:} ECM determines the start signal status by the signals of engine speed and battery voltage.

The ECM activates the fuel pump for several seconds after the ignition switch is turned ON to improve engine startability. If the ECM receives a engine speed signal from the camshaft position sensor (PHASE), it knows that the engine is rotating, and causes the pump to operate. If the engine speed signal is not received when the ignition switch is ON, the engine stalls. The ECM stops pump operation and prevents battery discharging, thereby improving safety. The ECM does not directly drive the fuel pump. It controls the ON/OFF fuel pump relay, which in turn controls the fuel pump.

Condition	Fuel pump operation	
Ignition switch is turned to ON.	Operates for 1 second.	
Engine running and cranking	Operates.	
When engine is stopped	Stops in 1.5 seconds.	
Except as shown above	Stops.	

Component Function Check

INFOID:0000000002989166

1. CHECK FUEL PUMP FUNCTION

- 1. Turn ignition switch ON.
- 2. Pinch fuel feed hose (1) with two fingers.
- <□: Vehicle front

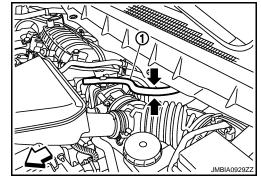
NO

Fuel pressure pulsation should be felt on the fuel feed hose for 1 second after ignition switch is turned ON.

Is the inspection result normal?

YES >> INSPECTION END

>> EC-850, "Diagnosis Procedure".



INFOID:0000000002989167

Diagnosis Procedure

1. CHECK FUEL PUMP POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between ECM harness connector and ground.

E	СМ	Ground	Voltage	
Connector Terminal		Ground	vollage	
F7 14		Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 2.

2. CHECK FUEL PUMP POWER SUPPLY CIRCUIT-II

[FOR USA (FEDERAL) AND CANADA]

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- 1. Turn ignition switch OFF.
- 2. Disconnect IDPDM E/R harness connector E13.
- Check the continuity between IPDM E/R harness connector and ECM harness connector.

ECM		IPDI	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F7	14	E13	33	Existed

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R connector E13
- Harness for open or short between ECM and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

4.CHECK 15A FUSE

- 1. Disconnect 15A fuse (No. 57) from IPDM E/R.
- 2. Check 15A fuse.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace fuse.

5. CHECK FUEL PUMP POWER SUPPLY CIRCUIT-III

- 1. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 2. Check the continuity between IPDM E/R harness connector and "fuel level sensor unit and fuel pump" and ground.

IPDM E/R		Fuel level	Continuity	
Connector	Terminal	Connector Terminal		
E14	46	B40	5	Existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E105, M77
- Harness connectors M11, B1
- Harness for open or short between "fuel level sensor unit and fuel pump" and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK FUEL PUMP GROUND CIRCUIT

1. Check the continuity between "fuel level sensor unit and fuel pump" and ground.

Fuel level s and fue		Ground	Continuity	
Connector	Terminal			
B40	3	Ground	Existed	

2. Also heck harness for short to power.

FUEL PUMP

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to power in harness or connectors.

8. CHECK FUEL PUMP

Refer to EC-852, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace fuel pump.

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connectors.

Component Inspection

INFOID:0000000002989168

1. CHECK FUEL PUMP

- 1. Turn ignition switch OFF.
- 2. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 3. Check resistance between "fuel level sensor unit and fuel pump" terminals as follows.

Terminals	Resistance
3 and 5	0.2 - 5.0 Ω [at 25°C (77°F)]

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace "fuel level sensor unit and fuel pump".

IGNITION SIGNAL

Description INFOID:0000000002989169

The ignition signal from the ECM is sent to and amplified by the power transistor. The power transistor turns ON and OFF the ignition coil primary circuit. This ON/OFF operation induces the proper high voltage in the coil secondary circuit.

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INFOID:0000000002989171

INFOID:0000000002989170

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Component Function Check

1.INSPECTION START

Turn ignition switch OFF, and restart engine.

Does the engine start?

YES-1 >> With CONSULT-III: GO TO 2.

YES-2 >> Without CONSULT-III: GO TO 3.

NO >> Go to <u>EC-853</u>, "<u>Diagnosis Procedure</u>".

2. IGNITION SIGNAL FUNCTION

(P) With CONSULT-III

- 1. Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- 2. Make sure that each circuit produces a momentary engine speed drop.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-853, "Diagnosis Procedure".

3.ignition signal function

(X) Without CONSULT-III

- 1. Let engine idle.
- 2. Read the voltage signal between ECM harness connector and ground.

ECM		Ground	Voltage signal
Connector	Terminal	Cround	voltage digital
	9		
	10		20mSec/div
11		Ground	
F7	21	Ground	2V/div JMBIA0085GB

NOTE:

The pulse cycle changes depending on rpm at idle.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-853, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK IGNITION COIL POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch OFF, wait at least 10 seconds and then turn ON.
- 2. Check the voltage between ECM harness connector and ground.

ECM		Ground	Voltage
Connector	Terminal	Glound	voltage
E16	105	Ground	Battery voltage

IGNITION SIGNAL

[FOR USA (FEDERAL) AND CANADA]

< COMPONENT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-590, "Diagnosis Procedure".

2.CHECK IGNITION COIL POWER SUPPLY CIRCUIT-II

- 1. Turn ignition switch OFF.
- 2. Disconnect condenser-1 harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between condenser-1 harness connector and ground.

Condenser		Ground	Voltage
Connector	Terminal	Ground	vollage
F26	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 3.

3.check ignition coil power supply circuit-iii

- Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector E15.
- 3. Check the continuity between IPDM E/R harness connector and condenser-1 harness connector.

IPDM E/R		Conde	Continuity	
Connector	Terminal	Connector		
E15	47	F13	1	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> Go to EC-590, "Diagnosis Procedure".

NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between IPDM E/R and condenser-1
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

CHECK CONDENSER-1 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Check the continuity between condenser-1 harness connector and ground.

Condenser-1		Ground	Continuity
Connector	Terminal	Orouna	Continuity
F13	2	Ground	Existed

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK CONDENSER

Refer to EC-857, "Component Inspection (Condenser-1)"

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace condenser.

< COMPONENT DIAGNOSIS >

7.CHECK IGNITION COIL POWER SUPPLY CIRCUIT-IV

- 1. Reconnect all harness connectors disconnected.
- Disconnect ignition coil harness connector.
- Turn ignition switch ON.
- Check the voltage between ignition coil harness connector and ground.

Ignition coil			Ground	Voltage
Cylinder	Connector	Terminal	Ground	voltage
1	F33	3		Battery voltage
2	F34	3	Ground	
3	F35	3	Giodila	
4	F36	3		

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

8.CHECK IGNITION COIL GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Check the continuity between ignition coil harness connector and ground.

Ignition coil			Ground	Continuity
Cylinder	Connector	Terminal	Terminal Ground	
1	F33	2		Existed
2	F34	2	Ground	
3	F35	2	Giodila	
4	F36	2		

3. Also check harness for short to power.

Is the inspection result normal?

>> GO TO 9. YES

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9.CHECK IGNITION COIL OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Disconnect ECM harness connector.
- Check the continuity between ECM harness connector and ignition coil harness connector.

Ignition coil			E	Continuity	
Cylinder	Connector	Terminal	Connector	Terminal	Continuity
1	F33	1		11	
2	F34	1	F7	10	Existed
3	F35	1		9	Existed
4	F36	1		21	

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

10.CHECK IGNITION COIL WITH POWER TRANSISTOR

Refer to EC-856, "Component Inspection (Ignition Coil with Power Transistor)".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace malfunctioning ignition coil with power transistor.

EC-855 Revision: 2008 January 2008 Rogue

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11. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection (Ignition Coil with Power Transistor)

INFOID:0000000002989172

1. CHECK IGNITION COIL WITH POWER TRANSISTOR-I

- 1. Turn ignition switch OFF.
- 2. Disconnect ignition coil harness connector.
- 3. Check resistance between ignition coil terminals as follows.

Terminals	s Resistance Ω [at 25°C (77°F)		
1 and 2	Except 0 or ∞		
1 and 3	Except 0		
2 and 3			

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace malfunctioning ignition coil with power transistor.

2.check ignition coil with power transistor-ii

CAUTION:

Do the following procedure in the place where ventilation is good without the combustible.

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Remove fuel pump fuse in IPDM E/R to release fuel pressure.

NOTE:

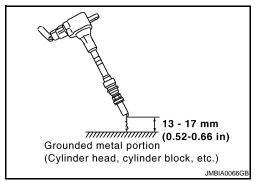
Do not use CONSULT-III to release fuel pressure, or fuel pressure applies again during the following procedure.

- 4. Start engine.
- 5. After engine stalls, crank it two or three times to release all fuel pressure.
- 6. Turn ignition switch OFF.
- 7. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 8. Remove ignition coil and spark plug of the cylinder to be checked.
- 9. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 10. Connect spark plug and harness connector to ignition coil.
- 11. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- 12. Crank engine for about three seconds, and check whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

CAUTION:

 Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.



• It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken. NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace malfunctioning ignition coil with power transistor.

IGNITION SIGNAL

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Component Inspection (Condenser-1)

INFOID:0000000002989173

1. CHECK CONDENSER-1

- 1. Turn ignition switch OFF.
- 2. Disconnect condenser-1 harness connector.
- 3. Check resistance between condenser-1 terminals as follows.

Terminals	Resistance
1 and 2	Above 1 MΩ [at 25°C (77°F)]

Is the inspection result normal?

YES >> INSPECTION END NO >> Replace condenser-1.

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MALFUNCTION INDICATOR LAMP

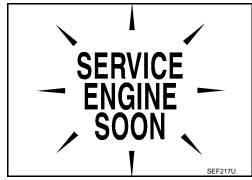
Description INFOID:000000002989174

The Malfunction Indicator Lamp (MIL) is located on the combination meter.

The MIL will light up when the ignition switch is turned ON without the engine running. This is a bulb check.

When the engine is started, the MIL should go off. If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.

For details, refer to EC-858, "Diagnosis Procedure".



Component Function Check

INFOID:0000000002989175

1. CHECK MIL FUNCTION

- 1. Turn ignition switch ON.
- 2. Make sure that MIL lights up.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-858, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000002989176

1. CHECK DTC

Check that DTC U1000 or U1001 is not displayed.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble diagnosis for DTC U1000, U1001. Refer to EC-594, "Diagnosis Procedure".

2. CHECK DTC WITH METER

Refer to MWI-33, "CONSULT-III Function (METER/M&A)".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace.

3. CHECK INTERMITTENT INCIDENT

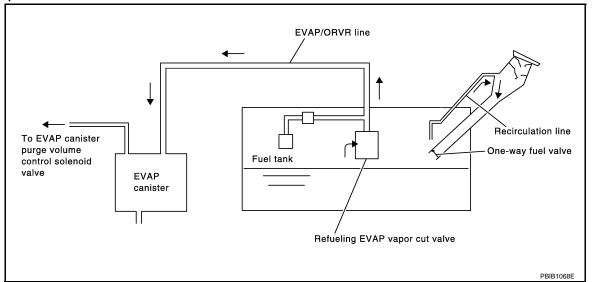
Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace combination meter.

NO >> Repair or replace.

Description



From the beginning of refueling, the air and vapor inside the fuel tank go through refueling EVAP vapor cut valve and EVAP/ORVR line to the EVAP canister. The vapor is absorbed by the EVAP canister and the air is released to the atmosphere.

When the refueling has reached the full level of the fuel tank, the refueling EVAP vapor cut valve is closed and refueling is stopped because of auto shut-off. The vapor which was absorbed by the EVAP canister is purged during driving.

WARNING:

When conducting inspections below, be sure to observe the following:

- Put a "CAUTION: FLAMMABLE" sign in workshop.
- Do not smoke while servicing fuel system. Keep open flames and sparks away from work area.
- Be sure to furnish the workshop with a CO2 fire extinguisher.

CAUTION:

- Before removing fuel line parts, carry out the following procedures:
- Put drained fuel in an explosion-proof container and put lid on securely.
- Release fuel pressure from fuel line. Refer to <u>EC-915</u>, "Inspection".
- Disconnect battery ground cable.
- Always replace O-ring when the fuel gauge retainer is removed.
- Do not kink or twist hose and tube when they are installed.
- Do not tighten hose and clamps excessively to avoid damaging hoses.
- After installation, run engine and check for fuel leaks at connection.
- Do not attempt to top off the fuel tank after the fuel pump nozzle shuts off automatically. Continued refueling may cause fuel overflow, resulting in fuel spray and possibly a fire.

Component Function Check

1. CHECK ORVE FUNCTION

Check whether the following symptoms are present.

- Fuel odor from EVAP canister is strong.
- Cannot refuel/Fuel odor from the fuel filler opening is strong while refueling.

Is any symptom present?

>> Go to EC-859, "Diagnosis Procedure". YES

>> INSPECTION END NO

Diagnosis Procedure

1.INSPECTION START

Check whether the following symptoms are present.

A: Fuel odor from EVAP canister is strong.

EC-859 Revision: 2008 January 2008 Rogue

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< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

B: Cannot refuel/Fuel odor from the fuel filler opening is strong while refueling.

Which symptom is present?

- A >> GO TO 2.
- B >> GO TO 7.

2. CHECK EVAP CANISTER

- 1. Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Weigh the EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES >> GO TO 3.

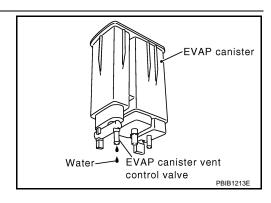
NO >> GO TO 4.

3. CHECK IF EVAP CANISTER SATURATED WITH WATER

Check if water will drain from EVAP canister.

Does water drain from the EVAP canister?

YES >> GO TO 4. NO >> GO TO 6.



4. REPLACE EVAP CANISTER

Replace EVAP canister with a new one.

>> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the EVAP hose between EVAP canister and vehicle frame for clogging or poor connection.

>> Repair or replace EVAP hose.

6. CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-862, "Component Inspection".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

7. CHECK EVAP CANISTER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- 2. Weigh the EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 2.1 kg (4.6 lb).

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 9.

8. CHECK IF EVAP CANISTER SATURATED WITH WATER

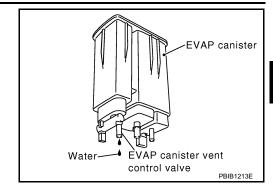
< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

Check if water will drain from EVAP canister.

Does water drain from the EVAP canister?

YES >> GO TO 9. NO >> GO TO 11.



9. REPLACE EVAP CANISTER

Replace EVAP canister with a new one.

>> GO TO 10.

10.DETECT MALFUNCTIONING PART

Check the EVAP hose between EVAP canister and vehicle frame for clogging or poor connection.

>> Repair or replace EVAP hose.

11. CHECK VENT HOSES AND VENT TUBES

Check hoses and tubes between EVAP canister and refueling control valve for clogging, kink, looseness and improper connection.

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace hoses and tubes.

12. CHECK FILLER NECK TUBE

Check recirculation line for clogging, dents and cracks.

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace filler neck tube.

13. CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-862, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 14.

>> Replace refueling EVAP vapor cut valve with fuel tank. NO

14. CHECK FUEL FILLER TUBE

Check filler neck tube and hose connected to the fuel tank for clogging, dents and cracks.

Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace fuel filler tube.

15. CHECK ONE-WAY FUEL VALVE-I

Check one-way valve for clogging.

Is the inspection result normal?

YES >> GO TO 16.

Revision: 2008 January

>> Repair or replace one-way fuel valve with fuel tank.

16.CHECK ONE-WAY FUEL VALVE-II

- Make sure that fuel is drained from the tank.
- 2. Remove fuel filler tube and hose.

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[FOR USA (FEDERAL) AND CANADA]

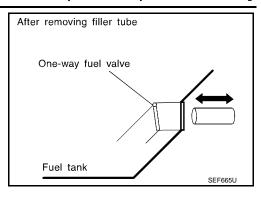
Check one-way fuel valve for operation as follows.
 When a stick is inserted, the valve should open, when removing stick it should close.

Do not drop any material into the tank.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace fuel filler tube or replace one-way fuel valve with fuel tank.



INFOID:0000000002989180

Component Inspection

1. INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

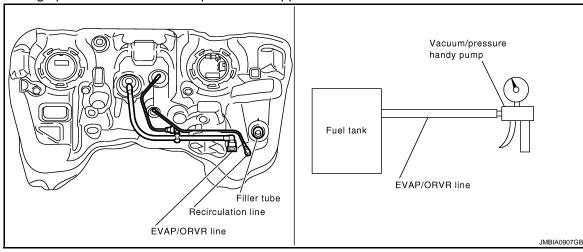
2. CHECK REFUELING EVAP VAPOR CUT VALVE

(I) With CONSULT-III

- 1. Remove fuel tank. Refer to <u>FL-15</u>, "2WD: Removal and Installation" (2WD), <u>FL-18</u>, "AWD: Removal and Installation" (AWD).
- 2. Drain fuel from the tank as follows:
- Remove fuel feed hose located on the fuel gauge retainer.
- Connect a spare fuel hose, one side to fuel gauge retainer where the hose was removed and the other side to a fuel container.
- Drain fuel using "FUEL PUMP RELAY" in "ACTIVE TEST" mode with CONSULT-III.
- Check refueling EVAP vapor cut valve for being stuck to close as follows.
 Blow air into the refueling EVAP vapor cut valve (from the end of EVAP/ORVR line hose), and check that the air flows freely into the tank.
- 4. Check refueling EVAP vapor cut valve for being stuck to open as follows.
- Connect vacuum pump to hose end.
- Remove fuel gauge retainer with fuel gauge unit.

Always replace O-ring with new one.

- Put fuel tank upside down.
- Apply vacuum pressure to hose end [-13.3 kPa (-0.136 kg/cm³, -1.93 psi)] with fuel gauge retainer remaining open and check that the pressure is applicable.



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

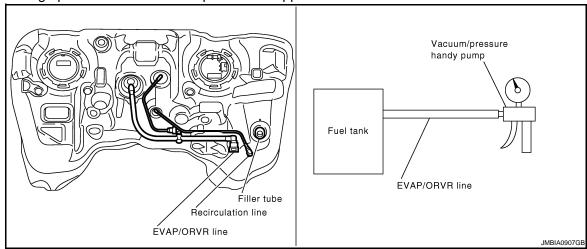
3.CHECK REFUELING EVAP VAPOR CUT VALVE

®Without CONSULT-III

- 1. Remove fuel tank. Refer to <u>FL-15</u>, "2WD : Removal and Installation" (2WD), <u>FL-18</u>, "AWD : Removal and <u>Installation"</u> (AWD).
- Drain fuel from the tank as follows:
- Remove fuel gauge retainer.
- Drain fuel from the tank using a handy pump into a fuel container.
- Check refueling EVAP vapor cut valve for being stuck to close as follows.
 Blow air into the refueling EVAP vapor cut valve (from the end of EVAP/ORVR line hose), and check that the air flows freely into the tank.
- 4. Check refueling EVAP vapor cut valve for being stuck to open as follows.
- Connect vacuum pump to hose end.
- Remove fuel gauge retainer with fuel gauge unit.

Always replace O-ring with new one.

- Put fuel tank upside down.
- Apply vacuum pressure to hose end [-13.3 kPa (-0.136 kg/cm³, -1.93 psi)] with fuel gauge retainer remaining open and check that the pressure is applicable.



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

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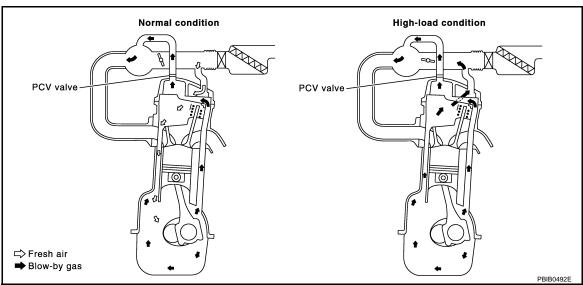
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POSITIVE CRANKCASE VENTILATION

Description INFOID:000000002989181



This system returns blow-by gas to the intake manifold.

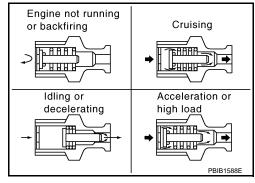
The positive crankcase ventilation (PCV) valve is provided to conduct crankcase blow-by gas to the intake manifold.

During partial throttle operation of the engine, the intake manifold sucks the blow-by gas through the PCV valve.

Normally, the capacity of the valve is sufficient to handle any blow-by and a small amount of ventilating air. The ventilating air is drawn from the air inlet tubes into the crankcase. In this process the air passes through the hose connecting air inlet tubes to rocker cover.

Under full-throttle condition, the manifold vacuum is insufficient to draw the blow-by flow through the valve. The flow goes through the hose connection in the reverse direction.

On vehicles with an excessively high blow-by, the valve does not meet the requirement. This is because some of the flow will go through the hose connection to the air inlet tubes under all conditions.



INFOID:0000000002989182

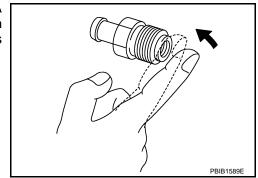
Component Inspection

1. CHECK PCV VALVE

With engine running at idle, remove PCV valve from rocker cover. A properly working valve makes a hissing noise as air passes through it. A strong vacuum should be felt immediately when a finger is placed over valve inlet.

Is the inspection result normal?

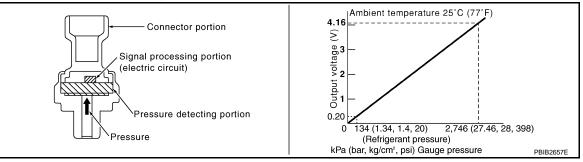
YES >> INSPECTION END NO >> Replace PCV valve.



REFRIGERANT PRESSURE SENSOR

Description INFOID:0000000002989183

The refrigerant pressure sensor is installed at the condenser of the air conditioner system. The sensor uses an electrostatic volume pressure transducer to convert refrigerant pressure to voltage. The voltage signal is sent to ECM, and ECM controls cooling fan system.



Component Function Check

1. CHECK REFRIGERANT PRESSURE SENSOR OVERALL FUNCTION

- Start engine and warm it up to normal operating temperature.
- Turn A/C switch and blower fan switch ON.
- Check the voltage between ECM harness connector terminals.

	Voltage		
Connector	Terminal	Terminal	
F8	39 (Refrigerant pressure sensor signal)	40 (Sensor ground)	1.0 - 4.0V

Is the inspection result normal?

YFS >> INSPECTION END

NO >> Go to EC-865, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn A/C switch and blower fan switch OFF.
- Stop engine.
- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

>> GO TO 2. YES

NO >> Repair or replace ground connection.

2.CHECK REFRIGERANT PRESSURE SENSOR POWER SUPPLY CIRCUIT

- Disconnect refrigerant pressure sensor harness connector.
- Turn ignition switch ON. 2.
- Check the voltage between refrigerant pressure sensor harness connector and ground.

Refrigerant pre	ssure sensor	Ground	Voltage
Connector	Terminal	Ground	voltage
E49	3	Ground	Approx. 5V

Is the inspection result normal?

>> GO TO 4. YES

EC-865 Revision: 2008 January 2008 Rogue

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REFRIGERANT PRESSURE SENSOR

< COMPONENT DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

NO >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F123, E6
- Harness for open or short between ECM and refrigerant pressure sensor
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK REFRIGERANT PRESSURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between refrigerant pressure sensor harness connector and ECM harness connector.

Refrigerant pre	ssure sensor	E	Continuity	
Connector	Terminal	Connector	Connector Terminal	
E49	1	F8	40	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6. NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F123, E6
- Harness for open or short between ECM and refrigerant pressure sensor
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK REFRIGERANT PRESSURE SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between ECM harness connector and refrigerant pressure sensor harness connector.

Refrigerant pre	ssure sensor	ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
E49	2	F8	39	Existed	

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

7. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F123, E6
- · Harness for open or short between ECM and refrigerant pressure sensor
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace refrigerant pressure sensor.

NO >> Repair or replace.

ECU DIAGNOSIS

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Reference Value INFOID:0000000002989186

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VALUES ON THE DIAGNOSIS TOOL

Remarks:

1 Specification data are reference values.

1 Specification data are output/input values which are detected or supplied by the ECM at the connector.

* Specification data may not be directly related to their components signals/values/operations.

I.e. Adjust ignition timing with a timing light before monitoring IGN TIMING, because the monitor may show the specification data in spite of the ignition timing not being adjusted to the specification data. this IGN TIMING monitors the data calculated by the ECM according to the signals input from the camshaft position sensor and other ignition timing related sensors.

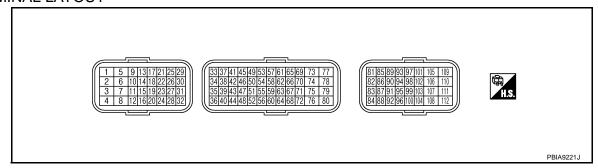
Monitor Item		Values/Status					
ENG SPEED	Run engine and compare CONS	Almost the same speed as the tachometer indication.					
MAS A/F SE-B1	See EC-583, "Diagnosis Procedur	<u>e"</u> .					
B/FUEL SCHDL	See EC-583, "Diagnosis Procedure".						
A/F ALPHA-B1	See EC-583, "Diagnosis Procedur	See EC-583, "Diagnosis Procedure".					
COOLAN TEMP/S	Engine: After warming up		More than 70°C (158°F)				
A/F SEN1 (B1)	Engine: After warming up	Maintaining engine speed at 2,000 rpm	Fluctuates around 2.2 V				
HO2S2 (B1)	are met Engine: After warming up	,000 rpm quickly after the following conditions veen 3,500 and 4,000 rpm for 1 minute and at	0 - 0.3V ←→ Approx. 0.6 - 1.0V				
HO2S2 MNTR (B1)	Revving engine from idle up to 3 are met. Engine: After warming up After keeping engine speed betv idle for 1 minute under no load	$LEAN \longleftrightarrow RICH$					
VHCL SPEED SE	Turn drive wheels and compare dication.	Almost the same speed as speedometer indication					
BATTERY VOLT	Ignition switch: ON (Engine stop	11 - 14V					
A CO EL O EN 4	Ignition switch: ON (Engine stopped)	Accelerator pedal: Fully released	0.5 - 1.0V				
ACCEL SEN 1		Accelerator pedal: Fully depressed	4.2 - 4.8V				
A C C E L C E N C*1	Ignition switch: ON (Engine stopped)	Accelerator pedal: Fully released	0.5 - 1.0V				
ACCEL SEN 2*1		Accelerator pedal: Fully depressed	4.2 - 4.8V				
TD 05N 4 54	Ignition switch: ON	Accelerator pedal: Fully released	More than 0.36V				
TP SEN 1-B1	(Engine stopped)Shift lever: D	Accelerator pedal: Fully depressed	Less than 4.75V				
	Ignition switch: ON	Accelerator pedal: Fully released	More than 0.36V				
TP SEN 2-B1* ¹	(Engine stopped)Shift lever: D	Accelerator pedal: Fully depressed	Less than 4.75V				
FUEL T/TMP SE	Ignition switch: ON	1	Indicates fuel tank temperature				
INT/A TEMP SE	Ignition switch: ON	Indicates intake air temperature					
EVAP SYS PRES	Ignition switch: ON		Approx. 1.8 - 4.8V				
FUEL LEVEL SE	Ignition switch: ON	Depending on fuel level of fuel tank					
START SIGNAL	• Ignition switch: ON \rightarrow START $-$	→ ON	$OFF \to ON \to OFF$				
CLSD THL POS	Ignition switch: ON	Accelerator pedal: Fully released	ON				
CLOD INL PUO	(Engine stopped)	OFF					

Monitor Item	C	ondition	Values/Status
	- F	Air conditioner switch: OFF	OFF
AIR COND SIG	Engine: After warming up, idle the engine	Air conditioner switch: ON (Compressor operates.)	ON
D/N DOCL CW/	- Impition pusitable ONI	Shift lever: P or N	ON
P/N POSI SW	Ignition switch: ON	Selector lever: Except above	OFF
DW/CT CICNAL	Engine: After warming up, idle the	Steering wheel: Not being turned	OFF
PW/ST SIGNAL	engine	Steering wheel: Being turned	ON
LOAD CICNAL	a logition quitable ON	Rear window defogger switch: ON and/or Lighting switch: 2nd position	ON
LOAD SIGNAL	Ignition switch: ON	Rear window defogger switch and lighting switch: OFF	OFF
IGNITION SW	• Ignition switch: $ON \rightarrow OFF \rightarrow ON$		$ON \to OFF \to ON$
LIEATED EAN OW	Engine: After warming up, idle the	Heater fan switch: ON	ON
HEATER FAN SW	engine	Heater fan switch: OFF	OFF
	a lowition quitter ON	Brake pedal: Fully released	OFF
BRAKE SW	Ignition switch: ON	Brake pedal: Slightly depressed	ON
	Engine: After warming up	Idle	2.0 - 3.0 msec
INJ PULSE-B1	Shift lever: P or NAir conditioner switch: OFFNo load	2,000 rpm	1.9 - 2.9 msec
	Engine: After warming up	Idle	10° - 20° BTDC
IGN TIMING	Shift lever: P or NAir conditioner switch: OFFNo load	2,000 rpm	25° - 45° BTDC
• Shift lever: P or N	Engine: After warming up	Idle	10% - 35%
	Air conditioner switch: OFF	2,500 rpm	10% - 35%
	Engine: After warming up	Idle	1.0 - 4.0 g·m/s
MASS AIRFLOW	Shift lever: P or NAir conditioner switch: OFFNo load	2,500 rpm	4.0 - 10.0 g·m/s
PURG VOL C/V	Engine: After warming up Shift lever: P or N Air conditioner switch: OFF	Idle (Accelerator pedal: Not depressed even slightly, after engine starting.)	0%
	No load	2,000 rpm	20% - 90%
	Engine: After warming up	Idle	-5° - 5°CA
INT/V TIM (B1)	Shift lever: P or NAir conditioner switch: OFFNo load	2,000 rpm	Approx. 0° - 20°CA
	Engine: After warming up Shift lever: P or N	Idle	0%
INT/V SOL (B1)	Air conditioner switch: OFF No load	2,000 rpm	Approx. 0% - 60%
	- Fraince Afficiency	Air conditioner switch: OFF	OFF
AIR COND RLY	Engine: After warming up, idle the engine	Air conditioner switch: ON (Compressor operates)	ON
FUEL PUMP RLY	For 1 seconds after turning ignition Engine running or cranking	 For 1 seconds after turning ignition switch: ON Engine running or cranking 	
	Except above		OFF
VENT CONT/V	Ignition switch: ON	OFF	
THRTL RELAY	Ignition switch: ON		ON

Monitor Item	С	ondition	Values/Status	-
HO2S2 HTR (B1)	Engine speed: Below 3,600 rpm a Engine: After warming up Keeping the engine speed betwee idle for 1 minute under no load	fter the following conditions are met. n 3,500 and 4,000 rpm for 1 minute and at	ON	
	Engine speed: Above 3,600 rpm	OFF		
I/P PULLY SPD	Vehicle speed: More than 20 km/h	Almost the same speed as the tachometer indication	-	
VEHICLE SPEED	Turn drive wheels and compare Codication.	ONSULT-III value with the speedometer in-	Almost the same speed as the speedometer indication	=
IDL A/V LEARN	Engine: running	Idle air volume learning has not been performed yet.	YET	=
IDE A, V LEAKIN	- Engine. running	Idle air volume learning has already been performed successfully.	CMPLT	
TRVL AFTER MIL	Ignition switch: ON	Vehicle has traveled after MIL has turned ON.	0 - 65,535 km (0 - 40,723 miles)	
A/F S1 HTR (B1)	Engine: After warming up, idle the (More than 140 seconds after star)		4 - 100%	
AC PRESS SEN	Engine: Idle Both A/C switch and blower fan sv	vitch: ON (Compressor operates)	1.0 - 4.0V	
VHCL SPEED SE	Turn drive wheels and compare Condication.	ONSULT-III value with the speedometer in-	Almost the same speed as the speedometer indication	
SET VHCL SPD	Engine: Running	ASCD: Operating	The preset vehicle speed is displayed	_
MAIN SW	Ignition switch: ON	MAIN switch: Pressed	ON	_
WAIN SW	ignition switch. Civ	MAIN switch: Released	OFF	_
CANCEL SW	Ignition switch: ON	CANCEL switch: Pressed	ON	_
07414022 0 44	ignition switch. Civ	CANCEL switch: Released	OFF	_
RESUME/ACC SW	Ignition switch: ON	RESUME/ACCELERATE switch: Pressed	ON	_
1120mz//100 011	ignitor owion. Or	RESUME/ACCELERATE switch: Released	OFF	_
SET SW	Ignition switch: ON	SET/COAST switch: Pressed	ON	_
	ignition owners or	SET/COAST switch: Released	OFF	_
BRAKE SW1	Ignition switch: ON	Brake pedal: Fully released	ON	_
(ASCD brake switch)	ig.men emem en	Brake pedal: Slightly depressed	OFF	_
BRAKE SW2	Ignition switch: ON	Brake pedal: Fully released	OFF	_
(Stop lamp switch)	3	Brake pedal: Slightly depressed	ON	_
VHCL SPD CUT	Ignition switch: ON		NON	_
LO SPEED CUT	Ignition switch: ON		NON OFF	_
AT OD MONITOR	Ignition switch: ON	Ignition switch: ON		
AT OD CANCEL	Ignition switch: ON		OFF	_
CRUISE LAMP	Ignition switch: ON	MAIN switch: Pressed at the 1st time \rightarrow at the 2nd time	$ON \to OFF$	_
	MAIN switch: ON When vehicle and Returned 10.	ASCD: Operating	ON	_
SET LAMP	When vehicle speed: Between 40 km/h (25 MPH) and 144 km/h (89 MPH)	ASCD: Not operating	OFF	
A/F ADJ-B1	Engine: running	<u> </u>	-0.330 - 0.330	-

^{*1:} Accelerator pedal position sensor 2 signal and throttle position sensor 2 signal are converted by ECM internally. Thus, they differ from ECM terminals voltage signal.

TERMINAL LAYOUT



PHYSICAL VALUES

NOTE:

- ECM is located behind the passenger side instrument lower panel. For this inspection, remove passenger side instrument lower panel.
- Specification data are reference values and are measured between each terminal and ground.
- Pulse signal is measured by CONSULT-III.

Term	Terminal No. Description			Value		
+	_	Signal name	Input/ Output	Condition	(Approx.)	
2 (P)	112 (B)	Throttle control motor power supply	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)	
4 (R)	112 (B)	A/F sensor 1 heater	Output	[Engine is running]Warm-up conditionIdle speed	2.9 - 8.8 V★ 50mSec/div 5V/div JMBIA008	182GB
5 (GR)	6 (L)	Throttle control motor 1 (Open)	Output	[Ignition switch: ON] • Engine stopped • Shift lever: D • Accelerator pedal: Fully depressed	0 - 14 V★ 1mSec/div 5V/div JMBIA008	183GB
6 (L)	5 (GR)	Throttle control motor 2 (Close)	Output	[Ignition switch: ON] • Engine stopped • Shift lever: D • Accelerator pedal: Fully released	0 - 14 V★ 1mSec/div 5V/div JMBIA008	84GB

ECM

Termi	nal No.	Description			Value	
+	_	Signal name	Input/ Output	Condition	(Approx.)	
9 (R) 10 (W)	112	Ignition signal No. 3 Ignition signal No. 2		 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	0 - 0.1 V★ 50mSec/div 2V/div JMBIA0900GB	
11 (SB)	(B)	Ignition signal No. 1	Output		0 - 0.2 V★ 50mSec/div	
21 (G)		Ignition signal No. 4		[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	2V/div JMBIA0901GB	
12 (B) 16 (B)	_	ECM ground	_	_	_	
13 (Y)	112 (B)	Heated oxygen sensor 2 heater	Output	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	10 V★ 50mSec/div 5V/div JMBIA0902GB	
					[Ignition switch: ON]Engine stopped[Engine is running]Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14 V)
14 (GR)	112 (B)	Fuel pump relay	Output	[Ignition switch: ON] • For 1 second after turning ignition switch ON [Engine is running]	0 - 1.0 V	
(OII)	(ט)			[Engine is running]More than 1 second after turning ignition switch ON	BATTERY VOLTAGE (11 - 14 V)	
15 (V)	112 (B)	Throttle control motor relay	Output	[Ignition switch: $ON \rightarrow OFF$]	0 - 1.0 V ↓ BATTERY VOLTAGE (11 - 14 V)	
				[Ignition switch: ON]	0 - 1.0 V	
24 (L)	112 (B)	ECM relay (Self shut-off)	Output	[Engine is running][Ignition switch: OFF]A few seconds after turning ignition switch OFF	0 - 1.0 V	
(L)	(ט)	(Join Shut-Oil)		[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14 V)	

Term	inal No.	Description			Val.	
+	_	Signal name	Input/ Output	Condition	Value (Approx.)	
25	112	EVAP canister purge vol-	Output	[Engine is running]Idle speedAccelerator pedal: Not depressed even slightly, after engine starting	BATTERY VOLTAGE (11 - 14 V) 50mSec/div 20V/div JMBIA0087GB	
(Y)	(B)	ume control solenoid valve	Output	[Engine is running]Engine speed: About 2,000 rpm (More than 100 seconds after starting engine.)	BATTERY VOLTAGE (11 - 14 V) 50mSec/div 20V/div JMBIA0903GB	
29 (P)		Fuel injector No. 4		[Engine is running] • Warm-up condition • Idle speed	BATTERY VOLTAGE (11 - 14 V)★ 50mSec/div	
30 (LG)	112	Fuel injector No. 3			NOTE: The pulse cycle changes depending on rpm at idle	10V/div JMBIA0089GB
31 (BR)	(B)	Fuel injector No. 2	Output	[Engine is running]	BATTERY VOLTAGE (11 - 14 V)★ 50mSec/div	
32 (GR)		Fuel injector No. 1		Warm-up condition Engine speed: 2,000 rpm	10V/div JMBIA0090GB	
33 (P)	35 (L)	Heated oxygen sensor 2	Input	 [Engine is running] Revving engine from idle to 3,000 rpm quickly after the following conditions are met Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	0 - 1.0 V	
35 (L)	_	Sensor ground (Heated oxygen sensor 2)	_	_	_	
36 (R)	_	Sensor ground (Throttle position sensor)	_	_	_	

ECM

Termi	nal No.	Description			Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
37	36	Throttle position sensor 1	Input	[Ignition switch: ON]Engine stoppedShift lever: DAccelerator pedal: Fully released	More than 0.36 V
(W)	(R)		прис	[Ignition switch: ON]Engine stoppedShift lever: DAccelerator pedal: Fully depressed	Less than 4.75 V
38	36	Throttle position sensor 2	Input	[Ignition switch: ON]Engine stoppedShift lever: DAccelerator pedal: Fully released	Less than 4.75 V
(G)	(R)	Throttle position sensor 2	при	[Ignition switch: ON]Engine stoppedShift lever: DAccelerator pedal: Fully depressed	More than 0.36 V
39 (Y)	40 (W)	Refrigerant pressure sensor	Input	 [Engine is running] Warm-up condition Both A/C switch and blower fan motor switch: ON (Compressor operates) 	1.0 - 4.0 V
40 (W)	_	Sensor ground (Refrigerant pressure sensor)	_	_	
45 (V)	49 (LG)	A/F sensor 1 (bank 1)	Input	[Ignition switch: ON]	2.2 V
46 (P)	52 (O)	Engine coolant temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with engine coolant temperature.
47 (B)	36 (R)	Sensor power supply (Throttle position sensor)	_	[Ignition switch: ON]	5 V
49 (LG)	112 (B)	A/F sensor 1	Input	[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	1.8 V Output voltage varies with air fuel ratio.
50 (BR)	56 (R)	Intake air temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with intake air temperature.
52 (O)	_	Sensor ground (Engine coolant temperature sensor)	_	_	_
56 (R)	_	Sensor ground (Mass air flow sensor, Intake air temperature sensor)	_	_	_
58	56	Mass air flow sensor	Input	[Engine is running]Warm-up conditionIdle speed	0.8 - 1.2 V
(L)	(R)	IVIASS AII IIUW SEIISUI	iiiput 	[Engine is running]Warm-up conditionEngine speed: 2,500 rpm	1.4 - 1.8 V
59 (V)	64 (Y)	Sensor power supply [Camshaft position sensor (PHASE)]	_	[Ignition switch: ON]	5 V
60 (B)	_	Sensor ground [Crankshaft position sensor (POS)]	_	_	_

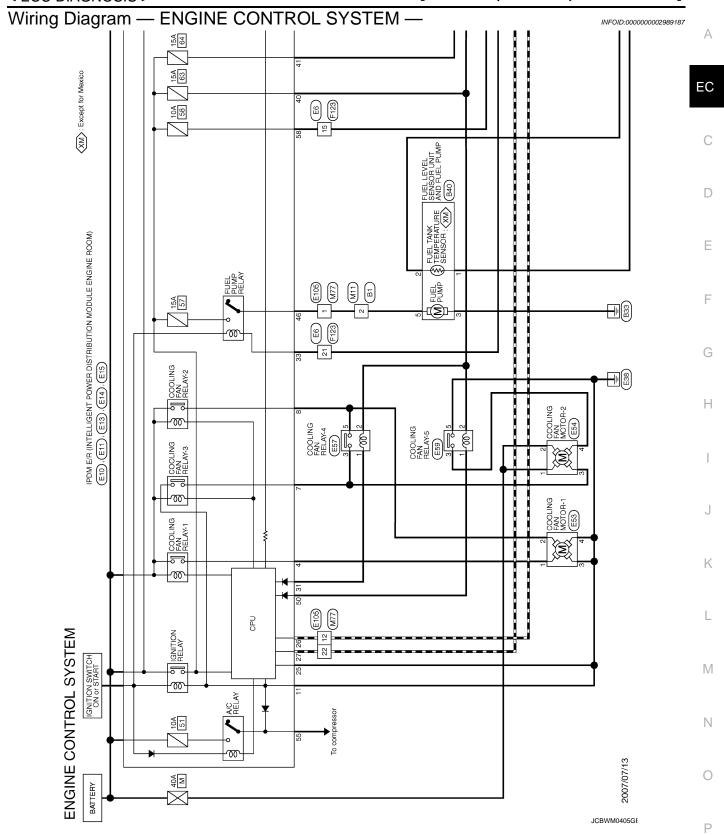
Termi	inal No.	Description			Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
61 (W)	67 (—)	Knock sensor	Input	[Engine is running] • Idle speed	2.5 V
64 (Y)	_	Sensor ground [Camshaft position sensor (PHASE)]	_	_	_
65	60	Crankshaft position sensor	Input	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	3.0 V★ 2mSec/div 2wSec/div JMBIA0514GB
(R)	(B)	(POS)	три	[Engine is running] • Engine speed: 2,000 rpm	3.0 V★ 2mSec/div 2mSec/div 2V/div JMBIA0515GB
67 (—)	_	Sensor ground (Knock sensor)	_	_	_
69		Camshaft position sensor (PHASE)	Input	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	1.0 - 4.0 V★ 10mSec/div 2V/div JMBIA0904GB
(G)	64 (Y)			[Engine is running] • Engine speed is 2,000 rpm	1.0 - 4.0 V★ 10mSec/div 2V/div JMBIA0905GB
72 (L)	40 (W)	Sensor power supply (Refrigerant pressure sensor)	_	[Ignition switch: ON]	5 V
76 (P)	60 (B)	Sensor power supply [Crankshaft position sensor (POS)]	_	[Ignition switch: ON]	5 V
77 (R)	112 (B)	Power supply for ECM (Back-up)	Input	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14 V)

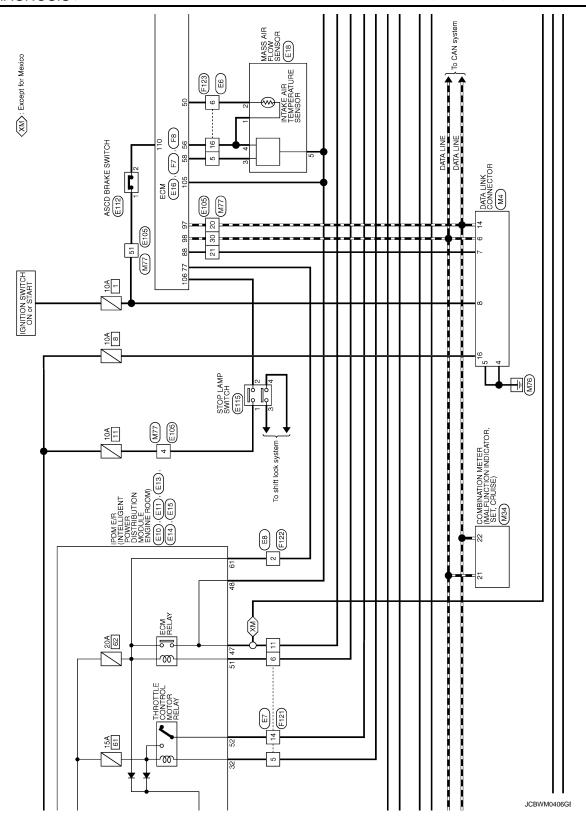
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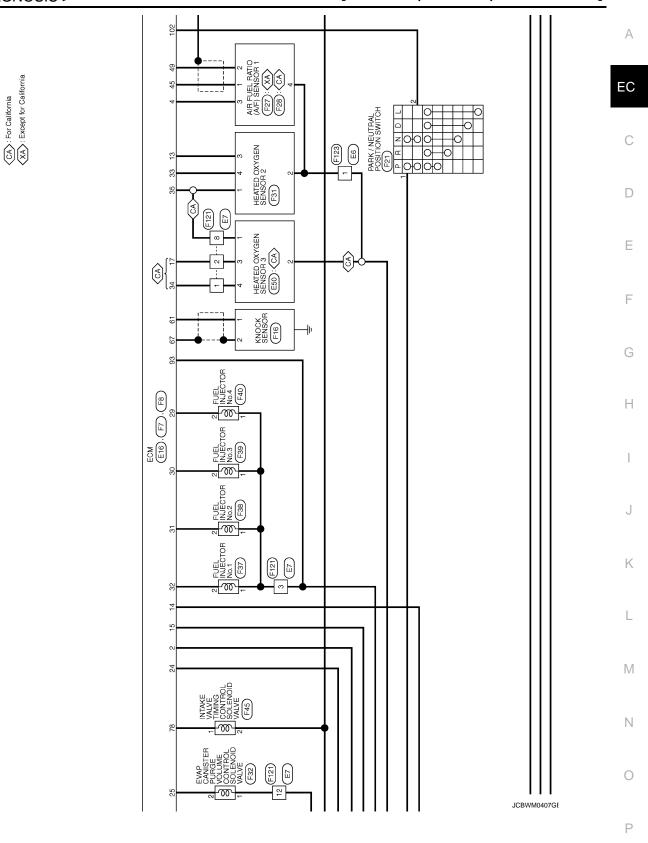
Termi	nal No.	Description			Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
				[Engine is running]Warm-up conditionIdle speed	0 V
78 (O)	112 (B)	Intake valve timing control solenoid valve	Output	[Engine is running]Warm-up conditionEngine speed: 2,000rpm	7 - 10 V★ 2mSec/div 5V/div JMBIA0906GB
81	84	Accelerator pedal position	Input	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully released	0.5 - 1.0 V
(SB)	(Y)	sensor 1	mpat	[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully depressed	4.2 - 4.8 V
82	100	Accelerator pedal position		[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully released	0.25 - 0.5 V
(G)	(W)	sensor 2	Input	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully depressed	2.0 - 2.5 V
83 (R)	84 (Y)	Sensor power supply (Accelerator pedal position sensor 1)	_	[Ignition switch: ON]	5 V
84 (Y)	_	Sensor ground (Accelerator pedal position sensor 1)	-	_	_
				[Ignition switch: ON] • ASCD steering switch: OFF	4 V
				[Ignition switch: ON] • MAIN switch: Pressed	0 V
85 (R)	92 (W)	ASCD steering switch	Input	[Ignition switch: ON] • CANCEL switch: Pressed	1 V
\ '	(/			[Ignition switch: ON] • RESUME/ACCELERATE switch: Pressed	3 V
				[Ignition switch: ON] • SET/COAST switch: Pressed	2 V
86 (BR)	96 (P)	EVAP control system pressure sensor	Input	[Ignition switch: ON]	1.8 - 4.8 V
87 (V)	100 (W)	Sensor power supply (Accelerator pedal position sensor 2)	_	[Ignition switch: ON]	5 V
88 (L)	112 (B)	Data link connector	Input/ Output	[Ignition switch: ON] • GST: Disconnected	BATTERY VOLTAGE (11 - 14 V)
91 (Y)	96 (P)	Sensor power supply (EVAP control system pressure sensor)	-	[Ignition switch: ON]	5 V
92 (W)	_	Sensor ground (ASCD steering switch)	_	_	_

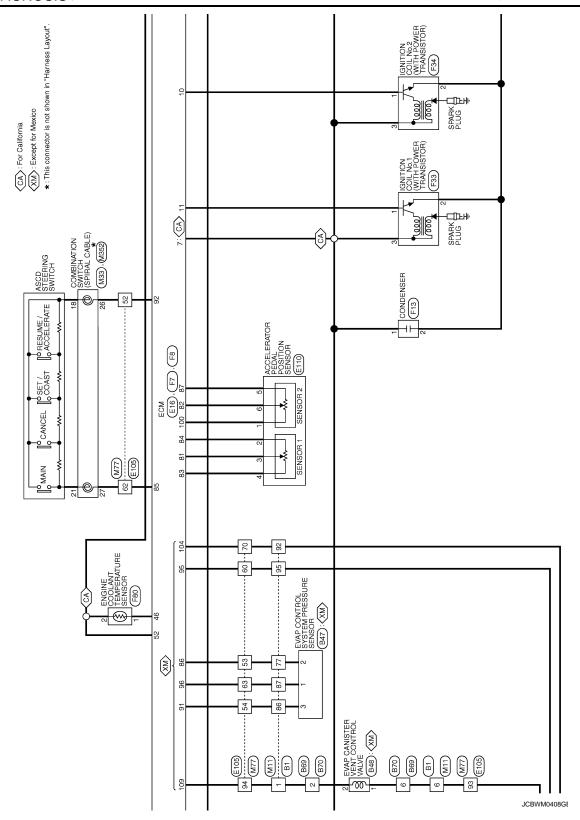
Term	inal No.	Description			Volue
+	_	Signal name	Input/ Output	Condition	Value (Approx.)
93	112			[Ignition switch: OFF]	0 V
93 (O)	(B)	Ignition switch	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
95 (O)	104 (B)	Fuel tank temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with fuel tank temperature.
96 (P)	_	Sensor ground (EVAP control system pressure sensor)	_	_	_
97 (P)	_	CAN communication line	_	_	_
98 (L)	_	CAN communication line	_	_	_
100 (W)	_	Sensor ground (Accelerator pedal position sensor 2)	_	_	_
102	112	PNP switch	lanut	[Ignition switch: ON] • Shift lever: P or N	BATTERY VOLTAGE (11 - 14 V)
(LG)	(B)	FINE SWILCH	Input -	[Ignition switch: ON] • Shift lever: Except above	0 V
104 (B)	_	Sensor ground (Fuel tank temperature sensor)	_	_	_
105 (R)	112 (B)	Power supply for ECM	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
106	112	Stop lamp switch	Input	[Ignition switch: OFF] • Brake pedal: Fully released	0 V
(Y)	(B)	Stop famp switch	Input	[Ignition switch: OFF] • Brake pedal: Slightly depressed	BATTERY VOLTAGE (11 - 14 V)
107 (B) 108 (B)	_	ECM ground	_	_	_
109 (W)	112 (B)	EVAP canister vent control valve	Output	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
110	112	ASCD brake switch	Input	[Ignition switch: ON] • Brake pedal: Slightly depressed	0 V
(GR)	(B)		•	[Ignition switch: ON] Brake pedal: Fully released	BATTERY VOLTAGE (11 - 14 V)
111 (B) 112 (B)	_	ECM ground	_	_	_

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)









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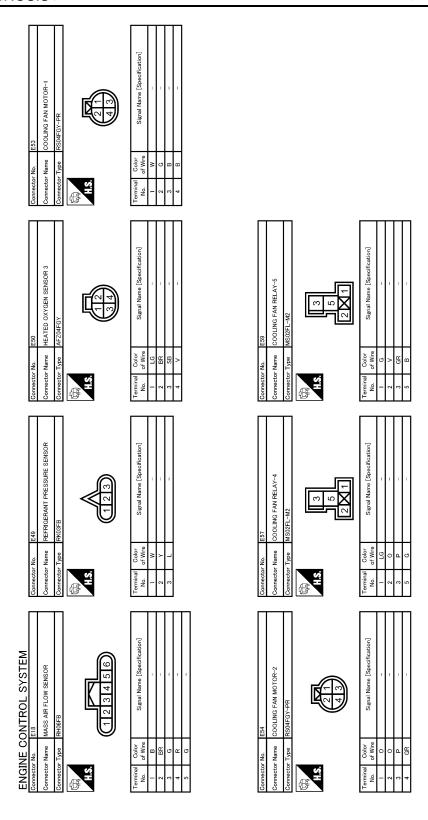
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С 107 108 111 112 CA): For California CRANKSHAFT POSITION SENSOR (POS) (F20) D F121 E7 Е CAMSHAFT POSITION SENSOR (PHASE) (F26) F , F7), F8 G ECM E16), 19 20 F123 THROTTLE POSITION SENSOR Н SENSOR 1 TUMBLE CONTROL VALVE ACTUATOR (F41): CA THROTTLE CONTROL MOTOR J K (S) L SPARK PLUG ₽ M Ν SPARK PLUG □ 0 JCBWM0409GE Ρ

Connector No. B48 Commetter Name EVAP CANISTER VENT CONTROL VALVE Commetter Type EUZFB-RS H.S.	Terminal Color No. of Wire Signal Name [Specification] 1 BR –	Connector No. E7 Connector Name WIFE TO WIFE Connector Type INS16AMV-CS	Terminal Color Signal Name Specification] No. of Wire Signal Name Specification] No. of Wire Signal Name Specification] No. of Wire No. of Wire
Connector No. B47 Connector Name EVAP CONTROL SYSTEM PRESSURE Connector Type EUSFGY-RS H.S.	Terminal Color Signal Name (Specification) 1 P -	Connector No. E6 Connector Name WIRE TO WIRE Connector Type TR24MW-1V	Terminal Color Signal Name (Specification) No. of Wire Signal Name (Specification) 1 BR
Connector No. 840 Connector Name FUEL LEVEL SENSOR UNIT AND FUEL	Terminal Color Signal Name [Specification] No. of Wire S S S S S S S S S	Connector No. 670 Connector Name WIRE TO WIRE Connector Type NSOBMW-CS A.S. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Terminal Color Signal Name [Specification] No. of Wire S W -
ENGINE CONTROL SYSTEM Connector Name WIRE TO WIRE Connector Type TH80MV-CSIB-TM4 H.S.	Terminal Color Signal Name [Specification]	Connector No. 869 Connector Name WIRE TO WIRE Connector Type NISOFFW-CS ##\$	Terminal Color No. of Wire 2 W 6 BR -

JCBWM0410GE

Connector No. E13 Connector Name IPDM E.P. (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) Connector Type THIZFW-NH LS 28 27 28 25 24 23 34 33 32 31 30 29	Terminal Color Signal Name Specification] Color Signal Name Specification] 25 B Color Co	95 O TF 96 P GNDA-FIPRES 97 L VEHCAN-I 100 W GNDA-APSZ 102 LG NUDA-TF 106 R GNDA-TF 106 Y BRAKE 107 B GND 110 GR GND 111 B GND 112 B GND 112 B GND	A EC
Connector No. EII Connector Name IPDM E/R (INTELLIGENT POWER INSTREMENT ON MODILE ENGINE ROOM) Connector Type M08FB-LC LLS 11 10 9 14 13 12	Terminal Color Signal Name [Specification] 11 B	Connector Name	E F G
Connector No. E10 Connector Name IDSTRBUTION MODULE ENGINE ROOM) Connector Type M/05FW-LC M.S. E 4 3 8 7 6	Terminal Color Signal Name [Specification] Orlor Signal Name [Specification]	Connector Name E15 Connector Name DOM E-R (WTELLIGENT POWER DISTRBUTION MODULE ENGINE ROOM)	J K
ENGINE CONTROL SYSTEM Connector No. E8 Connector Name WIRE TO WIRE Connector Type MOZNW-LC MAS	Terminal Color Signal Name (Specification) 2 R	Connector No. E14 Connector No. E14 Connector Name PDM E.R (NTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) Connector Type NS12FBR-CS 39 38 37 36 35	M N
			JCBWM0411GE



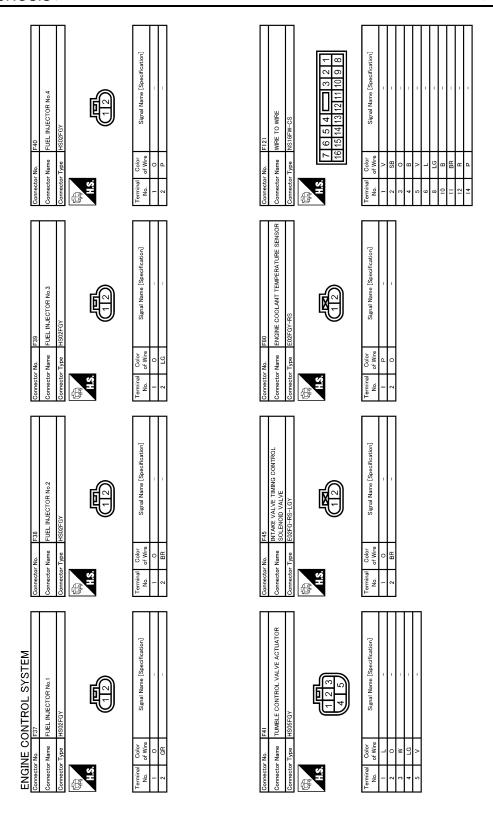
JCBWM0412GE

Connector No. E110	A C C
	E F G
PECM MAAAR	H J K
Name Wife TO Wife	M N
JCBWM0413GE	Р

ನರ	49	9 8	AF-1	Connector No.	F13	-
Connector Name ECM	90 25	품 0	GNDA-TW,SCVPOS	Connector Name	CONDENSER	Connector Name KNOCK SENSOR
Connector Type MAA40FBR-MEA8-RH	54	W	SCVPOS	Connector Type	M02FW-LC	Connector Type E02FG-RS-LGY
	58	œ _	QA-,GNDA-TAI	4		
J.	29	>	AVCC1-PHASE#1	E		定
33 37 41 45 49 53 57 61 65 69 73 77	09	В	GND-POS	ė	Ţ-	
75	19	× >	KNK1		Ļ	(12)
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	92	*	POS[Except for North America]			
ē	67	SHELD	GNDA-KNK1	la	Signal Name [Specification]	ja
of Wire	69		PHASE#1	No. of Wire		No. of Wire
000	7/	10	AVCCZ-PDF,SCVPOS	, e		
	77	. ~	BATT	┨		1
œ	78	0	CVTC#1			
*						
9						
39 Y PDPRES						
W G						
45 V AF+1						
46 P TW						
47 B AVCC1-TPS-B1						
Connector No. F20	Connector No.	No. F21		Connector No.	F26	Connector No. F27
Connector Name CRANKSHAFT POSITION SENSOR(POS)	Connector Name		PARK / NEUTRAL POSITION SWITCH	Connector Name	CAMSHAFT POSITION SENSOR (PHASE)	Connector Name AIR FUEL RATIO (A/F) SENSOR 1
Connector Type RH03FB	Connector Type	П	RK08FG	Connector Type	RH03FB	Connector Type AF204FGY
HS.	是 H.S.			是 H.S.	Ę	\$1 \$1
(1 <u>23</u>)			5 1 2 3 5 1 2 3		<u>(123</u>)	
Terminal Color Signal Name [Specification]	Terminal No.	Color of Wire	Signal Name [Specification]	Terminal Color No. of Wire	Signal Name [Specification]	Terminal Color Signal Name [Specification]
2 B	- 2	2 R		2 < <	1 1	1 V =
2 2				. g	_	3 R -
3 W -[Except for North America]						4 BR -

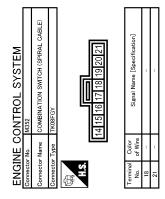
JCBWM0414GE

Connector No. F32 Connector Name EVAP CANISTER PURGE VOLUME Connector Type EUZFL-RS-LGY LIS	Terminal Color Signal Name [Specification]	Connector No. F36 Connector Name IGNITION COIL No.4 (WITH POWER Connector Type EUSFGV-RS LIS	Terminal Color No. of Mine Signal Mame [Specification] 1	EC C
Connector No. F31 Connector Name HEATED OXYGEN SENSOR 2 Connector Type AFZO4FB AFZO4FB AFZO4FB	Terminal Golor Signal Name (Specification) No. of Wire Signal Name (Specification)	Connector No. F35 Connector Name IGNITION COIL No.3 (WITH POWER TRANSISTOR) Connector Type EUSFGY-RS H.S.	No. of Wire Signal Name [Specification] No. of Wire Signal Name [Specification] 2	E F G
Connector No. F29 Connector Name ELECTRIC THROTTLE CONTROL ACTUATOR Connector Type RH06FB H.S. (123456)	Terminal Golor Signal Name [Specification] No. of Wire Signal Name [Specification]	Connector No. F34 Connector Name IGNITION COIL No.2 (WITH POWER TRANSISTOR) Connector Type EDSFCY-RS H.S.	Terminal Color Signal Name [Specification] No. of Wie No. of	J K
ENGINE CONTROL SYSTEM Connector No. P28 Connector Name AIR FUEL RATIO (A/F) SENSOR 1 Connector Type AFZ04FDGY H.S. AZ04FDGY AIR PAZ04FDGY AIR PAZ	Terminal Golor Signal Name [Specification] No. of Wire Very	Connector No. F33 Connector Name IGMITION COIL. No.1 (WITH POWER TRANSSITOR) Connector Type EG9FGY-RS H.S.	Terminal Color Nigmal Name [Specification] No. of Wire Sigmal Name [Specification] 1 SB	M N O
				Р



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Connector No. MII Connector Name WIRE TO WIRE Connector Type THROFW-CS16-TM4 Name	No. Of Wire Signal Name [Specification] 1	60 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	A EC C
Connector No. M4 Connector Name DATA LINK CONNECTOR Connector Type BD16FW H.S. 9 10 1112 13 14 15 16 1 1 2 3 4 5 6 7 8	Terminal Color Signal Name [Specification] No. of Wire Signal Name [Specification] Signal Name [Specification]	Connector No. M77 Connector Name WRE TO WIRE Connector Type TH80WW-CS16-TM4 1	E F G
Connector No. F123 Connector Name WIRE TO WIRE Connector Type ITX24FW-1V LA. 1.1 10 9 8 7 6 5 4 3 2 1 24 123 22 21 20 19 18 17 16 15 14 13 12	Terminal Color No. 97 Wire Signal Name [Specification] 5 L 15 LG 15 LG 16 R 17 R 18 L 18 L 19 Y 20 W	Connector No. MS4 Connector Name COMBINATION METER	J K
Connector No. F122 Connector Name WIRE TO WIRE Connector Type M02FW-LC ALS.	Terminal Color No. of Wire 2 R	Connector No. M33	M N O
			JCBWM0417GE



JCBWM0418GE

INFOID:0000000002989188

Fail Safe
NON DTC RELATED ITEM

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Engine operating condition in fail-safe mode	Detected items	Remarks	Reference page
Engine speed will not rise more than 2,500 rpm due to the fuel cut	Malfunction indicator lamp circuit	When there is an open circuit on MIL circuit, the ECM cannot warn the driver by lighting up MIL when there is malfunction on engine control system. Therefore, when electrical controlled throttle and part of ECM related diagnoses are continuously detected as NG for 5 trips, ECM warns the driver that engine control system malfunctions and MIL circuit is open by means of operating fail-safe function. The fail-safe function also operates when above diagnoses except MIL circuit are detected and demands the driver to repair the malfunction.	EC-858

DTC RELATED ITEM

DTC No.	Detected items	Engine opera	Engine operating condition in fail-safe mode		
P0011	Intake valve timing control	The signal is not energized to the ir control does not function.	ntake valve timing control solenoid valve and the valve		
P0102 P0103	Mass air flow sensor circuit	Engine speed will not rise more that	an 2,400 rpm due to the fuel cut.		
P0117 P0118	Engine coolant tempera- ture sensor circuit		determined by ECM based on the following conditions coolant temperature decided by ECM.		
		Condition	Engine coolant temperature decided (CONSULT-III display)		
		Just as ignition switch is turned ON or START	40°C (104°F)		
		Approx. 4 minutes or more after starting engine	80°C (176°F)		
		Except as shown above	40 - 80°C (104 - 176°F) (Depends on the time)		
		When the fail-safe system for engine coolant temperature sensor is activated, the cooling fan operates while engine is running.			
P0122 P0123 P0222 P0223 P2132 P2133 P2135	Throttle position sensor	order for the idle position to be with	tle control actuator in regulating the throttle opening in nin +10 degrees. need of the throttle valve to be slower than the norma		
P0500	Vehicle speed sensor	When the fail-safe system for vehicle speed sensor is activated, the cooling fan operates (Highest) while engine is running.			
P0643	Sensor power supply	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.			
P0605	ECM	(When ECM calculation function is malfunctioning:) ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring. ECM deactivates ASCD operation.			
P1805	Brake switch	ECM controls the electric throttle control actuator by regulating the throttle opening to a small range. Therefore, acceleration will be poor.			
		Vehicle condition	Driving condition		
		When engine is idling	Normal		
		When accelerating	Poor acceleration		
P2100 P2103	Throttle control motor relay	ECM stops the electric throttle confixed opening (approx. 5 degrees)	trol actuator control, throttle valve is maintained at a by the return spring.		
P2101	Electric throttle control function	ECM stops the electric throttle confixed opening (approx. 5 degrees)	trol actuator control, throttle valve is maintained at a by the return spring.		

DTC No.	Detected items	Engine operating condition in fail-safe mode
P2118	Throttle control motor	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.
P2119	Electric throttle control actuator	(When electric throttle control actuator does not function properly due to the return spring malfunction:) ECM controls the electric throttle actuator by regulating the throttle opening around the idle position. The engine speed will not rise more than 2,000 rpm.
		(When throttle valve opening angle in fail-safe mode is not in specified range:) ECM controls the electric throttle control actuator by regulating the throttle opening to 20 degrees or less.
		(When ECM detects the throttle valve is stuck open:) While the vehicle is driving, it slows down gradually by fuel cut. After the vehicle stops, the engine stalls. The engine can restart in N or P (CVT), Neutral (M/T) position, and engine speed will not exceed 1,000 rpm or more.
P2122 P2123 P2127 P2128 P2138	Accelerator pedal position sensor	The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees. The ECM regulates the opening speed of the throttle valve to be slower than the normal condition. So, the acceleration will be poor.

DTC Inspection Priority Chart

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If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	Detected items (DTC)						
1	U1000 U1001 CAN communication line						
	P0101 P0102 P0103 Mass air flow sensor						
	P0112 P0113 P0127 Intake air temperature sensor						
	P0117 P0118 P0125 Engine coolant temperature sensor						
	P0122 P0123 P0222 P0223 P1225 P1226 P2135 Throttle position sensor						
	P0128 Thermostat function						
	P0181 P0182 P0183 Fuel tank temperature sensor						
	P0327 P0328 Knock sensor						
	P0335 Crankshaft position sensor (POS)						
	P0340 Camshaft position sensor (PHASE)						
	P0460 P0461 P0462 P0463 Fuel level sensor						
	P0500 Vehicle speed sensor						
	• P0605 P0607 ECM						
	P0643 Sensor power supply						
	P0705 P0850 Park/neutral position (PNP) switch						
	• P1610 - P1615 NATS						
	P2122 P2123 P2127 P2128 P2138 Accelerator pedal position sensor						

Priority	Detected items (DTC)	
2	 P0031 P0032 Air fuel ratio (A/F) sensor 1 heater P0037 P0038 Heated oxygen sensor 2 heater P0075 Intake valve timing control solenoid valve 	A
	 P0130 P0131 P0132 P0133 P2A00 Air fuel ratio (A/F) sensor 1 P0137 P0138 P0139 Heated oxygen sensor 2 P0441 EVAP control system purge flow monitoring 	EC
	 P0443 P0444 P0445 EVAP canister purge volume control solenoid valve P0447 P0448 EVAP canister vent control valve P0451 P0452 P0453 EVAP control system pressure sensor P0603 ECM power supply 	С
	 P0710 P0715 P0720 P0740 P0744 P0745 P0746 P0776 P0778 P0840 P0845 P1740 P1777 P1778 CVT related sensors, solenoid valves and switches P1217 Engine over temperature (OVERHEAT) P1805 Brake switch 	D
	 P2100 P2103 Throttle control motor relay P2101 Electric throttle control function P2118 Throttle control motor 	Е
3	 P0011 Intake valve timing control P0171 P0172 Fuel injection system function P0300 - P0304 Misfire P0420 Three way catalyst function 	F
	 P0442 P0456 EVAP control system (SMALL LEAK, VERY SMALL LEAK) P0455 EVAP control system (GROSS LEAK) P0506 P0507 Idle speed control system P1148 Closed loop control 	G
	 P1212 TCS communication line P1421 Cold start control P1564 ASCD steering switch P1572 ASCD brake switch 	Н
	 P1574 ASCD vehicle speed sensor P1715 Primary speed sensor P2119 Electric throttle control actuator 	I

DTC Index

×:Applicable —: Not applicable

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Items	DTC)* ¹				Reference	K
(CONSULT-III screen terms)	SDI code		Trip	MIL	page		
CAN COMM CIRCUIT	U1000	1000*4	_	1	×	EC-594	L
CAN COMM CIRCUIT	U1001	1001*4	_	2	_	EC-594	
NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	P0000	0000	_	_	Flashing* ⁷	_	M
INT/V TIM CONT-B1	P0011	0011	_	2	×	EC-595	Ν
A/F SEN1 HTR (B1)	P0031	0031	_	2	×	EC-599	
A/F SEN1 HTR (B1)	P0032	0032	_	2	×	EC-599	
HO2S2 HTR (B1)	P0037	0037	_	2	×	EC-602	0
HO2S2 HTR (B1)	P0038	0038	_	2	×	EC-602	
INT/V TIM V/CIR-B1	P0075	0075	_	2	×	EC-605	Р
MAF SEN/CIRCUIT-B1	P0101	0101	_	2	×	EC-608	
MAF SEN/CIRCUIT-B1	P0102	0102	_	1	×	EC-615	
MAF SEN/CIRCUIT-B1	P0103	0103	_	1	×	EC-615	
IAT SEN/CIRCUIT-B1	P0112	0112	_	2	×	EC-620	
IAT SEN/CIRCUIT-B1	P0113	0113	_	2	×	EC-620	

lto:	DTC	*1				Doforonos
Items (CONSULT-III screen terms)	CONSULT-III GST* ²	ECM*3	SRT code	Trip	MIL	Reference page
ECT SEN/CIRC	P0117	0117	_	1	×	EC-623
ECT SEN/CIRC	P0118	0118	_	1	X	EC-623
TP SEN 2/CIRC-B1	P0122	0122	_	1	X	EC-626
TP SEN 2/CIRC-B1	P0123	0123	_	1	×	EC-626
ECT SENSOR	P0125	0125	_	2	×	EC-629
IAT SENSOR-B1	P0127	0127	_	2	X	EC-632
THERMSTAT FNCTN	P0128	0128	_	2	×	EC-634
A/F SENSOR1 (B1)	P0130	0130	_	2	×	EC-636
A/F SENSOR1 (B1)	P0131	0131	_	2	×	EC-640
A/F SENSOR1 (B1)	P0132	0132	_	2	×	EC-643
A/F SENSOR1 (B1)	P0133	0133	×	2	X	EC-646
HO2S2 (B1)	P0137	0137	×	2	×	EC-651
HO2S2 (B1)	P0138	0138	×	2	×	EC-657
HO2S2 (B1)	P0139	0139	×	2	×	EC-664
FUEL SYS-LEAN-B1	P0171	0171	_	2	×	EC-670
FUEL SYS-RICH-B1	P0172	0172	_	2	×	EC-674
FTT SENSOR	P0181	0181	_	2	×	EC-678
FTT SEN/CIRCUIT	P0182	0182	_	2	×	EC-681
FTT SEN/CIRCUIT	P0183	0183	_	2	×	EC-681
TP SEN 1/CIRC-B1	P0222	0222	_	1	×	EC-684
TP SEN 1/CIRC-B1	P0223	0223	_	1	×	EC-684
MULTI CYL MISFIRE	P0300	0300	_	2	×	EC-687
CYL 1 MISFIRE	P0301	0301	_	2	×	EC-687
CYL 2 MISFIRE	P0302	0302	_	2	×	EC-687
CYL 3 MISFIRE	P0303	0303	_	2	×	EC-687
CYL 4 MISFIRE	P0304	0304	_	2	×	EC-687
KNOCK SEN/CIRC-B1	P0327	0327	_	2	_	EC-693
KNOCK SEN/CIRC-B1	P0328	0328	_	2	_	EC-693
CKP SEN/CIRCUIT	P0335	0335	_	2	×	EC-695
CMP SEN/CIRC-B1	P0340	0340	_	2	×	EC-699
TW CATALYST SYS-B1	P0420	0420	×	2	×	EC-703
EVAP PURG FLOW/MON	P0441	0441	×	2	×	EC-708
EVAP SMALL LEAK	P0442	0442	×	2	×	EC-713
PURG VOLUME CONT/V	P0443	0443	_	2	×	EC-719
PURG VOLUME CONT/V	P0444	0444	_	2	×	EC-723
PURG VOLUME CONT/V	P0445	0445	_	2	×	EC-723
VENT CONTROL VALVE	P0447	0447	_	2	×	EC-726
VENT CONTROL VALVE	P0448	0448	_	2	×	EC-730
EVAP SYS PRES SEN	P0451	0451	_	2	×	EC-734
EVAP SYS PRES SEN	P0452	0452	_	2	×	EC-737
EVAP SYS PRES SEN	P0453	0453	_	2	×	EC-742
EVAP GROSS LEAK	P0455	0455	_	2	×	EC-747

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Itama	DTC	_* *1				Reference
Items (CONSULT-III screen terms)	CONSULT-III GST* ²	ECM*3	SRT code	Trip	MIL	page
EVAP VERY SML LEAK	P0456	0456	×* ⁶	2	×	EC-753
FUEL LEV SEN SLOSH	P0460	0460	_	2	×	EC-760
FUEL LEVEL SENSOR	P0461	0461	_	2	×	EC-761
FUEL LEVL SEN/CIRC	P0462	0462	_	2	×	EC-763
FUEL LEVL SEN/CIRC	P0463	0463	_	2	×	EC-763
VEH SPEED SEN/CIRC*5	P0500	0500	_	2	×	EC-765
ISC SYSTEM	P0506	0506	_	2	×	EC-767
ISC SYSTEM	P0507	0507	_	2	×	EC-769
ECM BACK UP/CIRCUIT	P0603	0603	_	2	×	EC-771
ECM	P0605	0605	_	1 or 2	× or —	EC-773
ECM	P0607	0607	_	1	×	EC-775
SENSOR POWER/CIRC	P0643	0643	_	1	×	EC-776
PNP SW/CIRC	P0705	0705	_	2	×	<u>TM-52</u>
ATF TEMP SEN/CIRC	P0710	0710	_	1	×	TM-55
INPUT SPD SEN/CIRC	P0715	0715	_	2	×	<u>TM-57</u>
VEH SPD SEN/CIR AT*5	P0720	0720	_	2	×	TM-61
TCC SOLENOID/CIRC	P0740	0740	_	2	×	TM-67
A/T TCC S/V FNCTN	P0744	0744	_	2	×	TM-69
L/PRESS SOL/CIRC	P0745	0745	_	2	×	<u>TM-71</u>
PRS CNT SOL/A FCTN	P0746	0746	_	1	×	TM-73
PRS CNT SOL/B FCTN	P0776	0776	_	2	×	TM-75
PRS CNT SOL/B CIRC	P0778	0778	_	2	×	<u>TM-78</u>
TR PRS SENS/A CIRC	P0840	0840	_	2	×	<u>TM-85</u>
TR PRS SENS/B CIRC	P0845	0845	_	2	×	<u>TM-91</u>
P-N POS SW/CIRCUIT	P0850	0850	_	2	×	EC-778
CLOSED LOOP-B1	P1148	1148	_	1	×	EC-781
TCS/CIRC	P1212	1212	_	2	_	EC-782
ENG OVER TEMP	P1217	1217	_	1	×	EC-783
CTP LEARNING-B1	P1225	1225	_	2	_	EC-787
CTP LEARNING-B1	P1226	1226	_	2	_	EC-789
COLD START CONTROL	P1421	1421	_	2	×	EC-791
ASCD SW	P1564	1564	_	1	_	EC-793
ASCD BRAKE SW	P1572	1572	_	1	_	EC-796
ASCD VHL SPD SEN	P1574	1574	_	1	_	EC-801
LOCK MODE	P1610	1610	_	2	_	<u>SEC-33</u> *8 <u>SEC-181</u> *9
ID DISCORD,IMMU-ECM	P1611	1611	_	2	_	SEC-34*8 SEC-182*9
CHAIN OF ECM-IMMU	P1612	1612	_	2	_	<u>SEC-36</u> *8 <u>SEC-184</u> *9
CHAIN OF IMMU-KEY	P1614	1614	_	2	_	SEC-37*8 SEC-185*9

INFOID:0000000002989191

Items	DTC*1					Reference	
(CONSULT-III screen terms)	CONSULT-III GST* ²	ECM* ³	SRT code	Trip	MIL	page	
DIFFERENCE OF KEY	P1615	1615	_	2	_	SEC-39*8 SEC-187*9	
IN PULY SPEED	P1715	1715	_	2	_	EC-803	
LU-SLCT SOL/CIRC	P1740	1740	_	2	×	<u>TM-106</u>	
STEP MOTOR CIRC	P1777	1777	_	1	×	<u>TM-109</u>	
STEP MOTOR FNCT	P1778	1778	_	2	×	<u>TM-112</u>	
BRAKE SW/CIRCUIT	P1805	1805	_	2	_	EC-805	
ETC MOT PWR-B1	P2100	2100	_	1	×	EC-807	
ETC FNCTN/CIRC-B1	P2101	2101	_	1	×	EC-809	
ETC MOT PWR	P2103	2103	_	1	×	EC-807	
ETC MOT-B1	P2118	2118	_	1	×	EC-813	
ETC ACTR-B1	P2119	2119	_	1	×	EC-815	
APP SEN 1/CIRC	P2122	2122	_	1	×	EC-817	
APP SEN 1/CIRC	P2123	2123	_	1	×	EC-817	
APP SEN 2/CIRC	P2127	2127	_	1	×	EC-820	
APP SEN 2/CIRC	P2128	2128	_	1	×	EC-820	
TP SENSOR-B1	P2135	2135	_	1	×	EC-824	
APP SENSOR	P2138	2138	_	1	×	EC-827	
A/F SENSOR1 (B1)	P2A00	2A00	_	2	×	EC-831	

^{*1: 1}st trip DTC No. is the same as DTC No.

How to Set SRT Code

To set all SRT codes, self-diagnosis for the items indicated above must be performed one or more times. Each diagnosis may require a long period of actual driving under various conditions.

WITH CONSULT-III

Perform corresponding DTC CONFIRMATION PROCEDURE one by one based on Performance Priority in the table on "SRT Item".

WITHOUT CONSULT-III

The most efficient driving pattern in which SRT codes can be properly set is explained on the next page. The driving pattern should be performed one or more times to set all SRT codes.

^{*2:} This number is prescribed by SAE J2012.

^{*3:} In Diagnostic Test Mode II (Self-diagnostic results), this number is controlled by NISSAN.

^{*4:} The troubleshooting for this DTC needs CONSULT-III.

^{*5:} When the fail-safe operations for both self-diagnoses occur, the MIL illuminates.

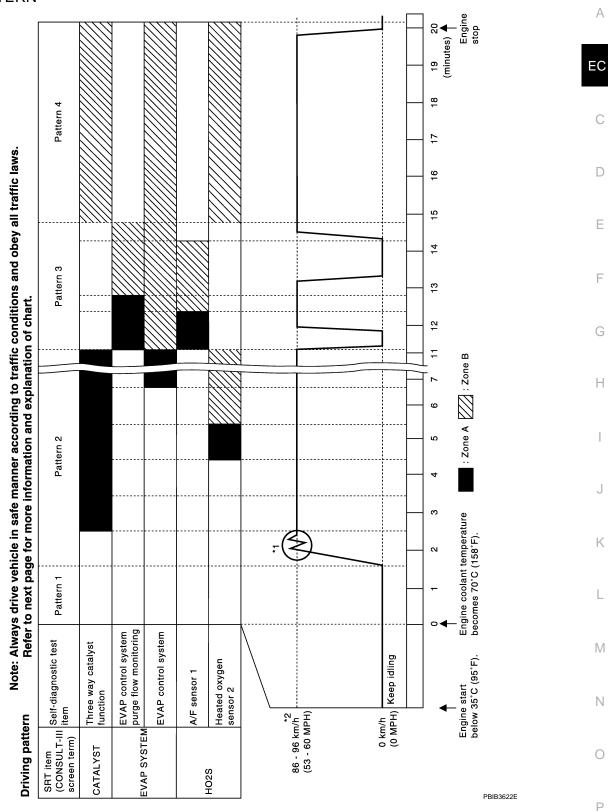
^{*6:} SRT code will not be set if the self-diagnostic result is NG.

^{*7:} When the ECM is in the mode of displaying SRT status, MIL may flash. For the details, refer to "How to Display SRT Status".

^{*8:} Models with intelligent system

^{*9:} Models without intelligent system

DRIVING PATTERN



 The time required for each diagnosis varies with road surface conditions, weather, altitude, individual driving habits, etc.

Zone A refers to the range where the time, required for the diagnosis under normal conditions*, is the shortest.

Zone B refers to the range where the diagnosis can still be performed if the diagnosis is not completed within zone A.

^{*:} Normal conditions refer to the following:

- Sea level
- Flat road
- Ambient air temperature: 20 30°C (68 86°F)
- Diagnosis is performed as quickly as possible under normal conditions.
 Under different conditions [For example: ambient air temperature other than 20 30°C (68 86°F)], diagnosis may also be performed.

Pattern 1:

- The engine is started at the engine coolant temperature of -10 to 35°C (14 to 95°F)
 [where the voltage between the ECM terminals 46 (Engine coolant temperature sensor signal) and 52
 (Sensor ground) is 3.0 4.3V].
- The engine must be operated at idle speed until the engine coolant temperature is greater than 70°C (158°F) [where the voltage between the ECM terminals 46 (Engine coolant temperature sensor signal) and 52 (Sensor ground) is lower than 1.4V].
- The engine is started at the fuel tank temperature of warmer than 0°C (32°F) [where the voltage between the ECM terminal 95 (Fuel tank temperature sensor signal) and 104 (Sensor ground) is less than 4.1V].

Pattern 2:

When steady-state driving is performed again even after it is interrupted, each diagnosis can be conducted.
 In this case, the time required for diagnosis may be extended.

Pattern 3:

- Operate vehicle following the driving pattern shown in the figure.
- Release the accelerator pedal during decelerating vehicle speed from 90 km/h (56 MPH) to 0 km/h (0 MPH).

Pattern 4:

- The accelerator pedal must be held very steady during steadystate driving.
- If the accelerator pedal is moved, the test must be conducted all over again.
- *1: Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH), then release the accelerator pedal and keep it released for more than 10 seconds. Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH) again.
- *2: Checking the vehicle speed with GST is advised.

Suggested Transmission Gear Position for CVT Models Set the selector lever in the D position.

Test Value and Test Limit



2008 Rogue

The following is the information specified in Service \$06 of SAE J1979.

The test value is a parameter used to determine whether a system/circuit diagnostic test is OK or NG while being monitored by the ECM during self-diagnosis. The test limit is a reference value which is specified as the maximum or minimum value and is compared with the test value being monitored.

These data (test value and test limit) are specified by On Board Monitor ID (OBDMID), Test ID (TID), Unit and Scaling ID and can be displayed on the GST screen.

The items of the test value and test limit will be displayed with GST screen which items are provided by the ECM. (e.g., if the bank 2 is not applied on this vehicle, only the items of the bank 1 is displayed)

	OBD-	Self-diagnostic test item		Tes	alue and t limit display)	_
Item	MID		DTC	TID	Unit and Scaling ID	Description
			P0131	83H	0BH	Minimum sensor output voltage for test cycle
			P0131	84H	0BH	Maximum sensor output voltage for test cycle
			P0130	85H	0BH	Minimum sensor output voltage for test cycle
			P0130	86H	0BH	Maximum sensor output voltage for test cycle
	0411	Air fuel ratio (A/F) sensor 1	P0133	87H	04H	Response rate: Response ratio (Lean to Rich)
	01H	(Bank 1)	P0133	88H	04H	Response rate: Response ratio (Rich to Lean)
			P2A00	89H	84H	The amount of shift in air fuel ratio
			P2A00	8AH	84H	The amount of shift in air fuel ratio
ПООС			P0130	8BH	0BH	Difference in sensor output voltage
HO2S			P0133	8CH	83H	Response gain at the limited frequency
			P0138	07H	0CH	Minimum sensor output voltage for test cycle
	02H	Heated oxygen sensor 2 (Bank 1)	P0137	08H	0CH	Maximum sensor output voltage for test cycle
			P0138	80H	0CH	Sensor output voltage
			P0139	81H	0CH	Difference in sensor output voltage
	03H	Heated oxygen sensor 3 (Bank 1)	P0143	07H	0CH	Minimum sensor output voltage for test cycle
			P0144	08H	0CH	Maximum sensor output voltage for test cycle
			P0146	80H	0CH	Sensor output voltage
			P0145	81H	0CH	Difference in sensor output voltage
			P0151	83H	0BH	Minimum sensor output voltage for test cycle
			P0151	84H	0BH	Maximum sensor output voltage for test cycle
			P0150	85H	0BH	Minimum sensor output voltage for test cycle
			P0150	86H	0BH	Maximum sensor output voltage for test cycle
	05U	Air fuel ratio (A/F) sensor 1	P0153	87H	04H	Response rate: Response ratio (Lean to Rich)
	05H	5H (Bank 2)	P0153	88H	04H	Response rate: Response ratio (Rich to Lean)
			P2A03	89H	84H	The amount of shift in air fuel ratio
			P2A03	8AH	84H	The amount of shift in air fuel ratio
HO2S			P0150	8BH	0BH	Difference in sensor output voltage
1023			P0153	8CH	83H	Response gain at the limited frequency
			P0158	07H	0CH	Minimum sensor output voltage for test cycle
	06H	Heated oxygen sensor 2	P0157	08H	0CH	Maximum sensor output voltage for test cycle
	ООП	(Bank 2)	P0158	80H	0CH	Sensor output voltage
			P0159	81H	0CH	Difference in sensor output voltage
			P0163	07H	0CH	Minimum sensor output voltage for test cycle
	0711	Heated oxygen sensor 3	P0164	08H	0CH	Maximum sensor output voltage for test cycle
	07H	(Bank2)	P0166	80H	0CH	Sensor output voltage
			P0165	81H	0CH	Difference in sensor output voltage

	OBD- MID	Self-diagnostic test item	DTC	Test value and Test limit (GST display)		
Item				TID	Unit and Scaling ID	Description
			P0420	80H	01H	O2 storage index
	21H	Three way catalyst function (Bank1)	P0420	82H	01H	Switching time lag engine exhaust index value
		tion (Banki)	P2423	83H	0CH	Difference in 3rd O2 sensor output voltage
CATA-			P2423	84H	84H	O2 storage index in HC trap catalyst
LYST			P0430	80H	01H	O2 storage index
	22H	Three way catalyst func- tion (Bank2)	P0430	82H	01H	Switching time lag engine exhaust index value
		tion (Dankz)	P2424	83H	0CH	Difference in 3rd O2 sensor output voltage
			P2424	84H	84H	O2 storage index in HC trap catalyst
	31H	EGR function	P0400	80H	96H	Low Flow Faults: EGR temp change rate (short term)
			P0400	81H	96H	Low Flow Faults: EGR temp change rate (long term)
EGR SYSTEM			P0400	82H	96H	Low Flow Faults: Difference between max EGR temp and EGR temp under idling condition
			P0400	83H	96H	Low Flow Faults: Max EGR temp
			P1402	84H	96H	High Flow Faults: EGR temp increase rate
	39H	EVAP control system leak (Cap Off)	P0455	80H	0CH	Difference in pressure sensor output voltage before and after pull down
EVA D	звн	EVAP control system leak (Small leak)	P0442	80H	05H	Leak area index (for more than 0.04inch)
EVAP SYSTEM	зСН	EVAP control system (Very small leak)	P0456	80H	05H	Leak area index (for more than 0.02inch)
			P0456	81H	FDH	Maximum internal pressure of EVAP system during monitoring
	3DH	Purge flow system	P0441	83H	0CH	Difference in pressure sensor output voltage before and after vent control value close
	41H	A/F sensor 1 heater (Bank 1)	Low Input:P0031 High Input:P0032	81H	0BH	Converted value of Heater electric current to voltage
O2 SEN- SOR	42H	Heated oxygen sensor 2 (Bank 1)	Low Input:P0037 High Input:P0038	80H	0CH	Converted value of Heater electric current to voltage
	43H	Heated oxygen sensor 3 (Bank 1)	P0043	80H	0CH	Converted value of Heater electric current to voltage
HEATER	45H	A/F sensor 1 heater (Bank 2)	Low Input:P0051 High Input:P0052	81H	0BH	Converted value of Heater electric current to voltage
	46H	Heated oxygen sensor 2 (Bank 2)	Low Input:P0057 High Input:P0058	80H	0CH	Converted value of Heater electric current to voltage
	47H	Heated oxygen sensor 3 (Bank 2)	P0063	80H	0CH	Converted value of Heater electric current to voltage

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[FOR USA (FEDERAL) AND CANADA]

	OBD-			Tes	alue and t limit display)		-
Item	MID	Self-diagnostic test item	DTC	TID	Unit and Scaling ID	Description	=
			P0411	80H	01H	Secondary Air Injection System Incorrect Flow Detected	_
			Bank1: P0491 Bank2: P0492	81H	01H	Secondary Air Injection System Insufficient Flow	-
SEC-	SEC-		P2445	82H	01H	Secondary Air Injection System Pump Stuck Off	=
OND-	71H	Secondary Air system	P2448	83H	01H	Secondary Air Injection System High Airflow	-
ARY AIR			Bank1: P2440 Bank2: P2442	84H	01H	Secondary Air Injection System Switching Valve Stuck Open	=
			P2440	85H	01H	Secondary Air Injection System Switching Valve Stuck Open	=
			P2444	86H	01H	Secondary Air Injection System Pump Stuck On	=
	0411	Fuel injection system	P0171 or P0172	80H	2FH	Long term fuel trim	-
FUEL	81H	function (Bank 1)	P0171 or P0172	81H	24H	The number of lambda control clamped	_
SYSTEM	82H	Fuel injection system	P0174 or P0175	80H	2FH	Long term fuel trim	_
	ŏ∠Ħ	function (Bank 2)	P0174 or P0175	81H	24H	The number of lambda control clamped	-

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	OBD-			Tes	alue and t limit display)		
Item	MID	Self-diagnostic test item	DTC	TID	Unit and Scaling ID	Description	
			P0301	80H	24H	Misfiring counter at 1000rev of the first cylinder	
			P0302	81H	24H	Misfiring counter at 1000rev of the second cylinder	
			P0303	82H	24H	Misfiring counter at 1000rev of the third cylin der	
			P0304	83H	24H	Misfiring counter at 1000rev of the fourth cylinder	
			P0305	84H	24H	Misfiring counter at 1000rev of the fifth cylinder	
			P0306	Misfiring counter at 1000rev of the sixth der			
		P0307	86H	24H	Misfiring counter at 1000rev of the seventh cylinder		
			P0308	87H	24H	Misfiring counter at 1000rev of the eighth cylinder	
MISFIRE	A1H	Multiple Cylinder Minfire	P0300	88H	24H	Misfiring counter at 1000rev of the multiple cylinders	
MISTINE	АІП	Multiple Cylinder Misfire	P0301	89H	24H	Misfiring counter at 200rev of the first cylinde	
			P0302	8AH	24H	Misfiring counter at 200rev of the second cylinder	
			P0303	8BH	24H	Misfiring counter at 200rev of the third cylinder	
			P0304	8CH	24H	Misfiring counter at 200rev of the fourth cylin der	
			P0305	8DH	24H	Misfiring counter at 200rev of the fifth cylinde	
			P0306	8EH	24H	Misfiring counter at 200rev of the fifth cylinde	
			P0307	8FH	24H	Misfiring counter at 200rev of the fifth cylinde	
			P0308	90H	24H	Misfiring counter at 200rev of the fifth cylinde	
			P0300	91H	24H	Misfiring counter at 1000rev of the single cylinder	
			P0300	92H	24H	Misfiring counter at 200rev of the single cylin der	
			P0300	93H	24H	Misfiring counter at 200rev of the multiple cylinders	

[FOR USA (FEDERAL) AND CANADA]

	OBD-			Tes	alue and t limit display)	
Item	MID	Self-diagnostic test item	DTC	TID	Unit and Scaling ID	Description
	A2H	No.1 Cylinder Misfire	P0301	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0301	0CH	24H	Misfire counts for last/current driving cycles
	АЗН	No.2 Cylinder Misfire	P0302	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0302	0CH	24H	Misfire counts for last/current driving cycles
	A4H	No.3 Cylinder Misfire	P0303	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0303	0CH	24H	Misfire counts for last/current driving cycles
	A5H	No.4 Cylinder Misfire	P0304	овн	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
/ISFIRE			P0304	0CH	24H	Misfire counts for last/current driving cycles
/IISFIKE	A6H	No.5 Cylinder Misfire	P0305	овн	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0305	0CH	24H	Misfire counts for last/current driving cycles
	A7H	No.6 Cylinder Misfire	P0306	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
		-	P0306	0CH	24H	Misfire counts for last/current driving cycles
	A8H	No.7 Cylinder Misfire	P0307	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0307	0CH	24H	Misfire counts for last/current driving cycles
	A9H	No.8 Cylinder Misfire	P0308	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0308	0CH	24H	Misfire counts for last/current driving cycles

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< SYMPTOM DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

SYMPTOM DIAGNOSIS

ENGINE CONTROL SYSTEM SYMPTOMS

Symptom Table

SYSTEM — BASIC ENGINE CONTROL SYSTEM

							S	/MPT	ОМ						
		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warrant	y symptom code	AA	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА	
Fuel	Fuel pump circuit	1	1	2	3	2		2	2			3		2	EC-850
	Fuel pressure regulator system	3	3	4	4	4	4	4	4	4		4			EC-915
	Fuel injector circuit	1	1	2	3	2		2	2			2			EC-847
	Evaporative emission system	3	3	4	4	4	4	4	4	4		4			EC-546
Air	Positive crankcase ventilation system	3	3	4	4	4	4	4	4	4		4	1		EC-864
	Incorrect idle speed adjustment						1	1	1	1		1			EC-500
	Electric throttle control actuator	1	1	2	3	3	2	2	2	2		2		2	EC-809 EC-815
Ignition	Incorrect ignition timing adjustment	3	3	1	1	1		1	1			1			EC-500
	Ignition circuit	1	1	2	2	2		2	2			2			EC-853
Main po	wer supply and ground circuit	2	2	3	3	3		3	3		2	3			EC-590
Mass air	flow sensor circuit	1			2										EC-608 EC-615
Engine o	coolant temperature sensor circuit	'					3			3					EC-623 EC-629
Air fuel r	ratio (A/F) sensor 1 circuit		1	2	3	2		2	2			2			EC-636 EC-640 EC-643 EC-646 EC-831
Throttle	position sensor circuit						2			2					EC-626 EC-684 EC-787 EC-789 EC-824
Accelera	ator pedal position sensor circuit			3	2	1									EC-817 EC-820 EC-827
Knock s	ensor circuit			2								3			EC-693

< SYMPTOM DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

						S'	YMPT	ОМ						
	HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty symptom code	AA	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА	
Crankshaft position sensor (POS) circuit	2	2												EC-695
Camshaft position sensor (PHASE) circuit	3	2												EC-699
Vehicle speed signal circuit		2	3		3						3			EC-765
ECM	2	2	3	3	3	3	3	3	3	3	3			EC-771 EC-773
Intake valve timing control solenoid valve circuit		3	2		1	3	2	2	3		3			EC-605
PNP switch circuit			3		3		3	3			3			EC-778
Refrigerant pressure sensor circuit		2				3			3		4			EC-865
Electrical load signal circuit							3							EC-845
Air conditioner circuit	2	2	3	3	3	3	3	3	3		3		2	HAC-9
ABS actuator and electric unit (control unit)			4											BRC-15 BRC-94

^{1 - 6:} The numbers refer to the order of inspection.

SYSTEM — ENGINE MECHANICAL & OTHER

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[FOR USA (FEDERAL) AND CANADA]

							S	/MPT	OM						
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		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty s	ymptom code	AA	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА	
Fuel	Fuel tank	5													FL-17 FL-20
	Fuel piping			5	5	5		5	5			5			FL-6
	Vapor lock		5												_
	Valve deposit														_
	Poor fuel (Heavy weight gasoline, Low octane)	5		5	5	5		5	5			5		•	_
Air	Air duct														EM-28
	Air cleaner														EM-28
	Air leakage from air duct (Mass air flow sensor — electric throttle control actuator)		5	5		5		5	5			5			EM-28
	Electric throttle control actuator	5			5		5			5					EM-31
	Air leakage from intake manifold/ Collector/Gasket														<u>EM-31</u>
Cranking	Battery	1	1	1		1		1	1					1	PG-88
	Generator circuit	'	'	'		'		'	'						CHG-18
	Starter circuit	3										1			STR-5
	Signal plate	6													EM-52
	PNP switch	4													<u>TM-53</u>
Engine	Cylinder head	5	5	5	5	5		5	5			5			EM-83
	Cylinder head gasket	J	J	J	J	J		J	J		4	J	3		<u></u>
	Cylinder block														
	Piston												4		
	Piston ring	6	6	6	6	6		6	6			6			EM-94
	Connecting rod			J											
	Bearing														
	Crankshaft														
Valve mecha-	Timing chain														<u>EM-75</u>
mecha- nism	Camshaft														<u>EM-52</u>
	Intake valve timing control	5	5	5	5	5		5	5			5			<u>EM-31</u>
	Intake valve												3		<u>EM-75</u>
	Exhaust valve														

< SYMPTOM DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

							S	MPT	ОМ						
		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty	symptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	НА	
Exhaust	Exhaust manifold/Tube/Muffler/ Gasket	5	5	5	5	5		5	5			5			EM-33 EX-4
	Three way catalyst														<u> </u>
Lubrica- tion	Oil pan/Oil strainer/Oil pump/Oil filter/Oil gallery/Oil cooler	5	5	5	5	5		5	5			5			EM-36 EM-39 LU-12 LU-8 LU-9
	Oil level (Low)/Filthy oil														<u>LU-5</u>
Cooling	Radiator/Hose/Radiator filler cap														<u>CO-20</u>
	Thermostat									5					<u>CO-26</u>
	Water pump														<u>CO-24</u>
	Water gallery	5	5	5	5	5		5	5		4	5			<u>CO-9</u>
	Cooling fan														<u>CO-22</u>
	Coolant level (Low)/Contaminated coolant									5					<u>CO-9</u>
NVIS (NIS NATS)	SSAN Vehicle Immobilizer System —	1	1												<u>SEC-15</u> <u>SEC-169</u>

^{1 - 6:} The numbers refer to the order of inspection.

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NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

[FOR USA (FEDERAL) AND CANADA]

NORMAL OPERATING CONDITION

Description INFOID:000000002989194

FUEL CUT CONTROL (AT NO LOAD AND HIGH ENGINE SPEED)

If the engine speed is above 1,800 rpm under no load (for example, the selector lever position is neutral and engine speed is over 1,800 rpm) fuel will be cut off after some time. The exact time when the fuel is cut off varies based on engine speed.

Fuel cut will be operated until the engine speed reaches 1,500 rpm, then fuel cut will be cancelled. **NOTE:**

This function is different from deceleration control listed under Multiport Fuel Injection (MFI) System, <u>EC-511</u>. "System Description".

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

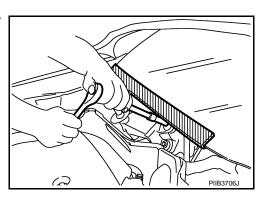
The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIRBAG" and "SEAT BELT" of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SRS AIRBAG".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

Precaution for Procedure without Cowl Top Cover

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



Precautions For Xenon Headlamp Service

WARNING:

Comply with the following warnings to prevent any serious accident.

- Disconnect the battery cable (negative terminal) or the power supply fuse before installing, removing, or touching the xenon headlamp (bulb included). The xenon headlamp contains high-voltage generated parts.
- · Never work with wet hands.
- Check the xenon headlamp ON-OFF status after assembling it to the vehicle. Never turn the xenon headlamp ON in other conditions. Connect the power supply to the vehicle-side connector. (Turning it ON outside the lamp case may cause fire or visual impairments.)
- Never touch the bulb glass immediately after turning it OFF. It is extremely hot.

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

- Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)
- Never perform HID circuit inspection with a tester.
- Never touch the xenon bulb glass with hands. Never put oil and grease on it.
- Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.
- Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).

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On Board Diagnostic (OBD) System of Engine and CVT

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INFOID:0000000002989199

The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

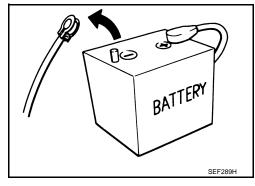
CAUTION:

- Be sure to turn the ignition switch OFF and disconnect the negative battery cable before any repair
 or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will
 cause the MIL to light up.
- Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will
 cause the MIL to light up due to the open circuit. (Be sure the connector is free from water, grease,
 dirt, bent terminals, etc.)
- Certain systems and components, especially those related to OBD, may use a new style slide-locking type harness connector. For description and how to disconnect, refer to <u>PG-78</u>, "<u>Description</u>".
- Be sure to route and secure the harnesses properly after work. The interference of the harness with a bracket, etc. may cause the MIL to light up due to the short circuit.
- Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube
 may cause the MIL to light up due to the malfunction of the EVAP system or fuel injection system,
 etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the ECM and TCM (Transmission control module) before returning the vehicle to the customer.

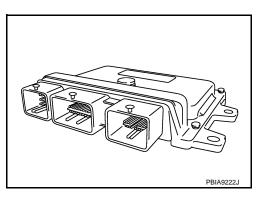
General Precautions

Always use a 12 volt battery as power source.

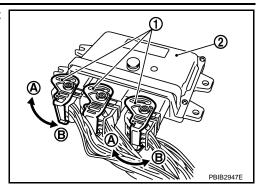
- Do not attempt to disconnect battery cables while engine is running.
- Before connecting or disconnecting the ECM harness connector, turn ignition switch OFF and disconnect negative battery cable. Failure to do so may damage the ECM because battery voltage is applied to ECM even if ignition switch is turned OFF.
- Before removing parts, turn ignition switch OFF and then disconnect battery ground cable.



- Do not disassemble ECM.
- If a battery cable is disconnected, the memory will return to the ECM value.
 - The ECM will now start to self-control at its initial value. Engine operation can vary slightly when the terminal is disconnected. However, this is not an indication of a malfunction. Do not replace parts because of a slight variation.
- If the battery is disconnected, the following emission-related diagnostic information will be lost within 24 hours.
- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- Freeze frame data
- 1st trip freeze frame data
- System readiness test (SRT) codes
- Test values



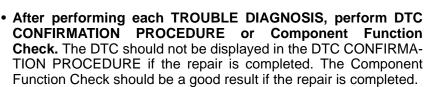
- When connecting ECM harness connector (1), fasten (B) it securely with a lever as far as it will go as shown in the figure.
 - 2. ECM
 - A. Loosen

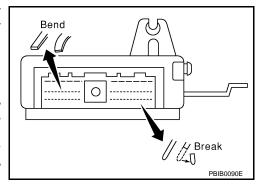


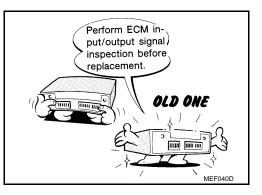
 When connecting or disconnecting pin connectors into or from ECM, take care not to damage pin terminals (bend or break).

Make sure that there are not any bends or breaks on ECM pin terminal, when connecting pin connectors.

- Securely connect ECM harness connectors.
 A poor connection can cause an extremely high (surge) voltage to develop in coil and condenser, thus resulting in damage to ICs.
- Keep engine control system harness at least 10 cm (4 in) away from adjacent harness, to prevent engine control system malfunctions due to receiving external noise, degraded operation of ICs, etc.
- Keep engine control system parts and harness dry.
- Before replacing ECM, perform ECM Terminals and Reference Value inspection and make sure ECM functions properly. Refer to EC-867, "Reference Value".
- Handle mass air flow sensor carefully to avoid damage.
- Do not clean mass air flow sensor with any type of detergent.
- Do not disassemble electric throttle control actuator.
- Even a slight leak in the air intake system can cause serious incidents.
- Do not shock or jar the camshaft position sensor (PHASE), crankshaft position sensor (POS).









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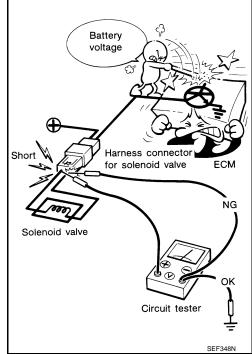
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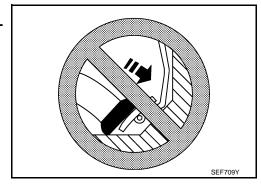
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< PRECAUTION >

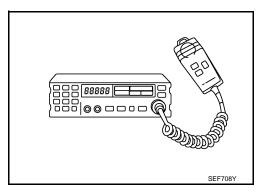
- When measuring ECM signals with a circuit tester, never allow the two tester probes to contact.
 - Accidental contact of probes will cause a short circuit and damage the ECM power transistor.
- Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.



- Do not operate fuel pump when there is no fuel in lines.
- Tighten fuel hose clamps to the specified torque.
- · Do not depress accelerator pedal when starting.
- Immediately after starting, do not rev up engine unnecessarily.
- Do not rev up engine just prior to shutdown.



- When installing C.B. ham radio or a mobile phone, be sure to observe the following as it may adversely affect electronic control systems depending on installation location.
- Keep the antenna as far as possible from the electronic control units.
- Keep the antenna feeder line more than 20 cm (8 in) away from the harness of electronic controls.
 Do not let them run parallel for a long distance.
- Adjust the antenna and feeder line so that the standing-wave ratio can be kept smaller.
- Be sure to ground the radio to vehicle body.



PREPARATION

[FOR USA (FEDERAL) AND CANADA]

PREPARATION

PREPARATION

Special Service Tools

INFOID:0000000002989203

NOTE:

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name		Description
(J-44321) Fuel pressure gauge kit	LEC642	Checking fuel pressure

Description

port

pressure

Locating the EVAP leak

Applying positive pressure

Commercial Service Tools

Tool name

(Kent-Moore No.) Leak detector

EVAP service port

i.e.: (J-41413-OBD)

Fuel filler cap adapter

i.e.: (MLR-8382)

adapter

i.e.: (J-41416)

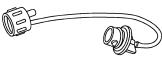
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S-NT704

S-NT703



S-NT815

Socket wrench 19 mm (0.75 in) 32 mm Removing and installing engine coolant temperature sensor

Checking fuel tank vacuum relief valve opening

EC-913 Revision: 2008 January 2008 Rogue

S-NT705

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PREPARATION

< PREPARATION >

[FOR USA (FEDERAL) AND CANADA]

Tool name (Kent-Moore No.)		Description
Oxygen sensor thread cleaner i.e.: (J-43897-18) (J-43897-12)	Mating surface shave cylinder	Reconditioning the exhaust system threads before installing a new oxygen sensor. Use with antiseize lubricant shown below. a: 18 mm diameter with pitch 1.5 mm for Zirconia Oxygen Sensor b: 12 mm diameter with pitch 1.25 mm for Titania Oxygen Sensor
Anti-seize lubricant i.e.: (Permatex TM 133AR or equivalent meeting MIL specifica- tion MIL-A-907)	S-NT779	Lubricating oxygen sensor thread cleaning tool when reconditioning exhaust system threads.

ON-VEHICLE MAINTENANCE

FUEL PRESSURE

Inspection

FUEL PRESSURE RELEASE

(P) With CONSULT-III

- 1. Turn ignition switch ON.
- Perform "FUEL PRESSURE RELEASE" in "WORK SUPPORT" mode with CONSULT-III.
- Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.

With CONSULT-III

- 1. Remove fuel pump fuse located in IPDM E/R.
- Start engine.
- 3. After engine stalls, crank it two or three times to release all fuel pressure.
- 4. Turn ignition switch OFF.
- 5. Reinstall fuel pump fuse after servicing fuel system.

FUEL PRESSURE CHECK

CAUTION:

Before disconnecting fuel line, release fuel pressure from fuel line to eliminate danger.

NOTE:

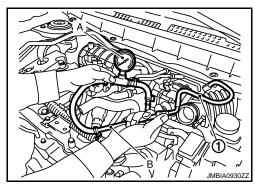
- Prepare pans or saucers under the disconnected fuel line because the fuel may spill out. The fuel
 pressure cannot be completely released because S35 models do not have fuel return system.
- Use Fuel Pressure Gauge Kit [SST (J-44321)] to check fuel pressure.
- 1. Release fuel pressure to zero.
- 2. Install fuel pressure gauge adapter [SST (J-44321-6)] (B) with fuel pressure gauge (A).
 - Fuel feed hose (1)
- 3. Turn ignition switch ON and check for fuel leakage.
- Start engine and check for fuel leakage.
- 5. Read the indication of fuel pressure gauge.

At idling : Approximately 350 kPa (3.57 kg/cm², 51 psi)

If result is unsatisfactory, check fuel hoses and fuel tubes for clogging.

If OK, Replace "fuel filter and fuel pump assembly".

If NG, Repair or replace.



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EVAP LEAK CHECK

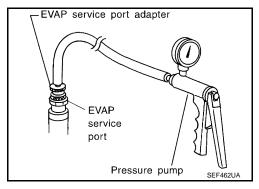
Inspection INFOID:000000002989206

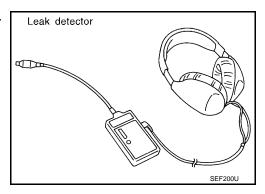
CAUTION:

- Do not use compressed air or a high pressure pump.
- Do not exceed 4.12 kPa (0.042 kg/cm², 0.6 psi) of pressure in EVAP system.
- Do not start engine.
- Improper installation of EVAP service port adapter (commercial service tool) to the EVAP service port may cause a leak.

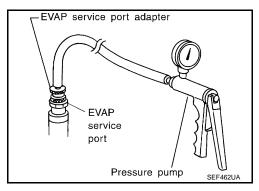
(P) WITH CONSULT-III

- 1. To locate the EVAP leak, install EVAP service port adapter (commercial service tool) and pressure pump to EVAP service port.
- 2. Turn ignition switch ON.
- Select the "EVAP SYSTEM CLOSE" of "WORK SUPPORT" mode with CONSULT-III.
- 4. Touch "START". A bar graph (Pressure indicating display) will appear on the screen.
- 5. Apply positive pressure to the EVAP system until the pressure indicator reaches the middle of the bar graph.
- 6. Remove EVAP service port adapter (commercial service tool) and hose with pressure pump.
- Locate the leak using a leak detector (commercial service tool).
 Refer to <u>EC-545</u>. "System Diagram".





- To locate the EVAP leak, install EVAP service port adapter (commercial service tool) and pressure pump to EVAP service port.
- 2. Apply battery voltage between the terminals of EVAP canister vent control valve to make a closed EVAP system.
- To locate the leak, deliver positive pressure to the EVAP system until pressure gauge points reach 1.38 to 2.76 kPa (0.014 to 0.028 kg/cm², 0.2 to 0.4 psi).
- 4. Remove EVAP service port adapter (commercial service tool) and hose with pressure pump.

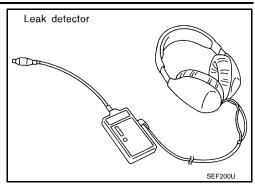


EVAP LEAK CHECK

< ON-VEHICLE MAINTENANCE >

[FOR USA (FEDERAL) AND CANADA]

5. Locate the leak using a leak detector (commercial service tool). Refer to <u>EC-545</u>, "System Diagram".



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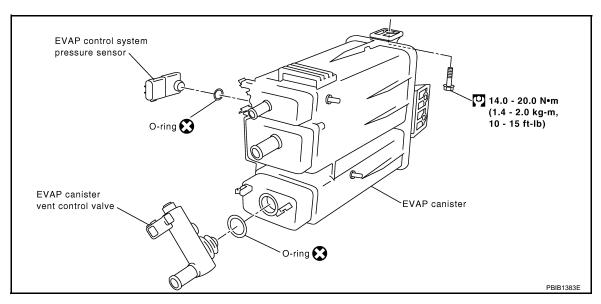
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ON-VEHICLE REPAIR

EVAP CANISTER

Exploded View



Removal and Installation

INFOID:0000000002989208

REMOVAL

- 1. Lift up the vehicle.
- 2. Remove EVAP canister fixing bolt.
- Remove EVAP canister.

NOTE:

The EVAP canister vent control valve and EVAP canister system pressure sensor can be removed without removing the EVAP canister.

INSTALLATION

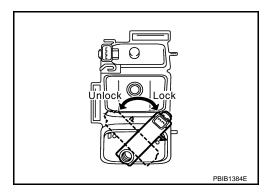
Install in the reverse order of removal.

NOTE:

Tighten EVAP canister fixing bolt to the specified torque.

DISASSEMBLY

- Turn EVAP canister vent control valve counterclockwise.
- 2. Remove the EVAP canister vent control valve.



ASSEMBLY

Assemble in the reverse order of disassembly.

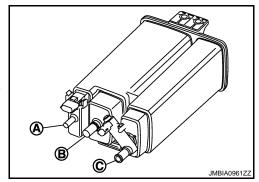
CAUTION:

Always replace O-ring with a new one.

Inspection INFOID:000000002989209

Check EVAP canister as follows:

- 1. Block port (B).
- 2. Blow air into port (A) and check that it flows freely out of port (C).
- 3. Release blocked port (B).
- 4. Apply vacuum pressure to port (B) and check that vacuum pressure exists at the ports (A) and (C).
- 5. Block port (A) and (B).
- 6. Apply pressure to port (C) and check that there is no leakage.



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SERVICE DATA AND SPECIFICATIONS (SDS)

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[FOR USA (FEDERAL) AND CANADA]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Idle Speed

Transmission	Condition	Specification
CVT	No load* (in P or N position)	$700 \pm 50 \text{ rpm}$

^{*:} Under the following conditions

- Electric load: OFF (Lights, heater fan & rear window defogger)
- Steering wheel: Kept in straight-ahead position

Ignition Timing

INFOID:0000000002989531

Transmission	Condition	Specification
CVT	No load* (in P or N position)	15 ± 5° BTDC

^{*:} Under the following conditions

- · A/C switch: OFF
- · Electric load: OFF (Lights, heater fan & rear window defogger)
- · Steering wheel: Kept in straight-ahead position

[•] A/C switch: OFF

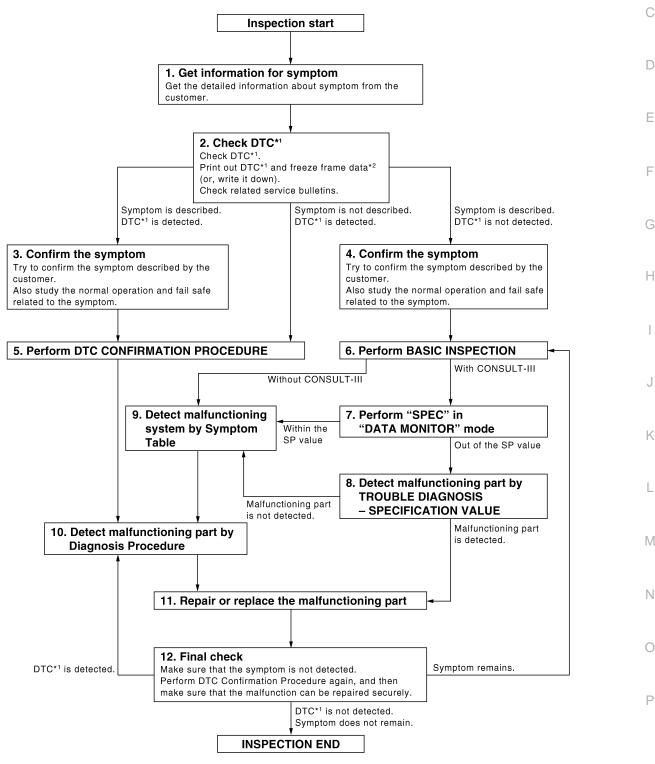
< BASIC INSPECTION > [FOR MEXICO]

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

OVERALL SEQUENCE



^{*1:} Include 1st trip DTC.

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^{*2:} Include 1st trip freeze frame data.

< BASIC INSPECTION > [FOR MEXICO]

1.GET INFORMATION FOR SYMPTOM

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the "Diagnostic Work Sheet". (Refer to EC-923, "Diagnostic Work Sheet".)

>> GO TO 2.

2.CHECK DTC

- 1. Check DTC.
- 2. Perform the following procedure if DTC is displayed.
- Record DTC and freeze frame data. (Print them out with CONSULT-III or GST.)
- Erase DTC. (Refer to <u>EC-983</u>, "<u>Diagnosis Description</u>".)
- Study the relationship between the cause detected by DTC and the symptom described by the customer. (Symptom Table is useful. Refer to EC-1261, "Symptom Table".)
- 3. Check related service bulletins for information.

Is any symptom described and is any DTC detected?

Symptom is described. DTC is detected>>GO TO 3.

Symptom is described, DTC is not detected>>GO TO 4.

Symptom is not described, DTC is detected>>GO TO 5.

3.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer (except MIL ON).

Also study the normal operation and fail safe related to the symptom. Refer to <u>EC-1265, "Description"</u> and <u>EC-1247, "Fail Safe"</u>.

Diagnosis Work Sheet is useful to verify the incident.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

4. CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

Also study the normal operation and fail safe related to the symptom. Refer to <u>EC-1265</u>, "<u>Description</u>" and <u>EC-1247</u>, "<u>Fail Safe</u>".

Diagnosis Work Sheet is useful to verify the incident.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 6.

5. PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC CONFIRMATION PROCEDURE for the displayed DTC, and then make sure that DTC is detected again.

If two or more DTCs are detected, refer to <u>EC-1249, "DTC Inspection Priority Chart"</u> and determine trouble diagnosis order.

NOTE:

- Freeze frame data is useful if the DTC is not detected.
- Perform Component Function Check if DTC CONFIRMATION PROCEDURE is not included on Service Manual. This simplified check procedure is an effective alternative though DTC cannot be detected during this check.

If the result of Component Function Check is NG, it is the same as the detection of DTC by DTC CONFIR-MATION PROCEDURE.

Is DTC detected?

YES >> GO TO 10.

NO >> Check according to GI-41, "Intermittent Incident".

6.PERFORM BASIC INSPECTION

Perform EC-925, "BASIC INSPECTION: Special Repair Requirement".

Do you have CONSULT-III?

DIAGNOSIS AND REPAIR WORKFLOW

IFOR MEXICO1 < BASIC INSPECTION > YES >> GO TO 7. NO >> GO TO 9. Α 7.PERFORM SPEC IN DATA MONITOR MODE (P)With CONSULT-III EC Make sure that "MAS A/F SE-B1", "B/FUEL SCHDL" and "A/F ALPHA-B1" are within the SP value using CON-SULT-III in "SPEC" of "DATA MONITOR" mode. Refer to EC-1005, "Component Function Check". Is the measurement value within the SP value? YES >> GO TO 9. NO >> GO TO 8. $oldsymbol{8}$.DETECT MALFUNCTIONING PART BY TROUBLE DIAGNOSIS - SPECIFICATION VALUE D Detect malfunctioning part according to EC-1006, "Diagnosis Procedure". Is malfunctioning part detected? Е YES >> GO TO 11. NO >> GO TO 9. $oldsymbol{9}.$ DETECT MALFUNCTIONING SYSTEM BY SYMPTOM TABLE Detect malfunctioning system according to EC-1261, "Symptom Table" based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptom. >> GO TO 10. 10.DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE Inspect according to Diagnosis Procedure of the system. NOTE: The Diagnosis Procedure in EC section described based on open circuit inspection. A short circuit inspection is also required for the circuit check in the Diagnosis Procedure. For details, refer to Circuit Inspection in GI-44, "Circuit Inspection". Is malfunctioning part detected? YES >> GO TO 11. NO >> Monitor input data from related sensors or check the voltage of related ECM terminals using CON-SULT-III. Refer to EC-1224, "Reference Value". 11. REPAIR OR REPLACE THE MALFUNCTIONING PART K 1. Repair or replace the malfunctioning part. Reconnect parts or connectors disconnected during Diagnosis Procedure again after repair and replace-2. ment. Check DTC. If DTC is displayed, erase it. Refer to EC-983, "Diagnosis Description". M >> GO TO 12. 12. FINAL CHECK When DTC was detected in step 2, perform DTC CONFIRMATION PROCEDURE or Component Function Check again, and then make sure that the malfunction have been repaired securely. When symptom was described from the customer, refer to confirmed symptom in step 3 or 4, and make sure that the symptom is not detected. Is DTC detected and does symptom remain? YES-1 >> DTC is detected: GO TO 10. YES-2 >> Symptom remains: GO TO 6. NO >> Before returning the vehicle to the customer, make sure to erase unnecessary DTC in ECM and TCM (Transmission Control Module). (Refer to EC-983, "Diagnosis Description".) If the completion of SRT is needed, drive vehicle under the specific DRIVING PATTERN in EC-1253, "How to Set SRT Code". Diagnostic Work Sheet INFOID:00000000002994325

Revision: 2008 January EC-923 2008 Rogue

DESCRIPTION

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION > [FOR MEXICO]

There are many operating conditions that lead to the malfunction of engine components. A good grasp of such conditions can make troubleshooting faster and more accurate.

In general, each customer feels differently about an incident. It is important to fully understand the symptoms or conditions for a customer complaint.

Utilize a diagnostic worksheet like the one on the next page in order to organize all the information for troubleshooting.

Some conditions may cause the MIL to come on steady or blink and DTC to be detected. Examples:

• Vehicle ran out of fuel, which caused the engine to misfire.

KEY POINTS

WHAT Vehicle & engine model
WHEN Date, Frequencies
WHERE..... Road conditions
HOW Operating conditions,
Weather conditions,
Symptoms

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WORKSHEET SAMPLE

Customer name MR/MS		Model & Year	VIN	
Engine #		Trans.	Mileage	
Incident Date		Manuf. Date	In Service Date	
Fuel and fuel filler cap		☐ Vehicle ran out of fuel causing misfire ☐ Fuel filler cap was left off or incorrectly screwed on.		
Symptoms	☐ Startability	☐ Impossible to start ☐ No combustion ☐ Partial combustion ☐ Partial combustion affected by throttle position ☐ Partial combustion NOT affected by throttle position ☐ Possible but hard to start ☐ Others []		
	□ Idling	☐ No fast idle ☐ Unstable ☐ H☐ Others [ligh idle ☐ Low idle	
	☐ Driveability	☐ Stumble ☐ Surge ☐ Knock ☐ Lack of power ☐ Intake backfire ☐ Exhaust backfire ☐ Others []		
	☐ Engine stall	☐ At the time of start☐ While accelerating☐ Just after stopping☐ While loadi	lerating	
Incident occur	cident occurrence ☐ Just after delivery ☐ Recently ☐ In the morning ☐ At night ☐ In the daytime		☐ In the daytime	
Frequency		☐ All the time ☐ Under certain conditions ☐ Sometimes		
Weather conditions		☐ Not affected		
	Weather	☐ Fine ☐ Raining ☐ Snowing	Others [
	Temperature	☐ Hot ☐ Warm ☐ Cool ☐	Cold ☐ Humid °F	
		☐ Cold ☐ During warm-up ☐ /	After warm-up	
Engine conditions		Engine speed 0 2,000	4,000 6,000 8,000 rpm	
Road conditions		☐ In town ☐ In suburbs ☐ Hig	hway	
Driving conditions		Not affected At starting		
		Vehicle speed	30 40 50 60 MPH	
Malfunction indicator lamp ☐ Turned on ☐ Not turned on				

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< BASIC INSPECTION > [FOR MEXICO]

INSPECTION AND ADJUSTMENT BASIC INSPECTION

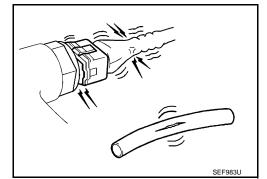
BASIC INSPECTION: Special Repair Requirement

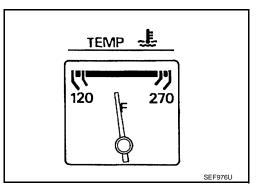
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1.INSPECTION START

- 1. Check service records for any recent repairs that may indicate a related malfunction, or a current need for scheduled maintenance.
- Open engine hood and check the following:
- Harness connectors for improper connections
- Wiring harness for improper connections, pinches and cut
- Vacuum hoses for splits, kinks and improper connections
- Hoses and ducts for leaks
- Air cleaner clogging
- Gasket
- 3. Confirm that electrical or mechanical loads are not applied.
- Headlamp switch is OFF.
- Air conditioner switch is OFF.
- Rear window defogger switch is OFF.
- Steering wheel is in the straight-ahead position, etc.
- Start engine and warm it up until engine coolant temperature indicator points the middle of gauge. Ensure engine stays below 1,000 rpm.

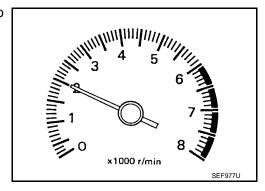




- 5. Run engine at about 2,000 rpm for about 2 minutes under no load.
- 6. Make sure that no DTC is displayed with CONSULT-III or GST.

Is any DTC detected?

YES >> GO TO 2. NO >> GO TO 3.



2. REPAIR OR REPLACE

Repair or replace components as necessary according to corresponding Diagnosis Procedure.

>> GO TO 3

3. CHECK TARGET IDLE SPEED

1. Run engine at about 2,000 rpm for about 2 minutes under no load.

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Revision: 2008 January EC-925 2008 Rogue

< BASIC INSPECTION > [FOR MEXICO]

2. Rev engine (2,000 to 3,000 rpm) two or three times under no load, then run engine at idle speed for about 1 minute.

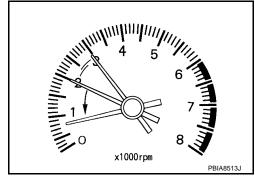
Check idle speed.

For procedure, refer to <u>EC-928</u>, "IDLE <u>SPEED</u>: <u>Special Repair</u> Requirement".

For specification, refer to EC-1274, "Idle Speed".

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 4.



4. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

- 1. Stop engine.
- 2. Perform <u>EC-929</u>, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 5.

5. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 6.

6. PERFORM IDLE AIR VOLUME LEARNING

Perform EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 7.

NO >> Follow the instruction of Idle Air Volume Learning. Then GO TO 4.

7. CHECK TARGET IDLE SPEED AGAIN

- Start engine and warm it up to normal operating temperature.
- 2. Check idle speed.

For procedure, refer to EC-928, "IDLE SPEED: Special Repair Requirement".

For specification, refer to EC-1274, "Idle Speed".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 8.

8. DETECT MALFUNCTIONING PART

Check the Following.

- Check camshaft position sensor (PHASE) and circuit. Refer to <u>EC-1116, "DTC Logic"</u>.
- Check crankshaft position sensor (POS) and circuit. Refer to EC-1112, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace. Then GO TO 4.

9. CHECK ECM FUNCTION

- 1. Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)
- 2. Perform initialization of NATS system and registration of all NATS ignition key IDs. Refer to EC-928, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> GO TO 4.

10. CHECK IGNITION TIMING

- Run engine at idle.
- 2. Check ignition timing with a timing light.

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[FOR MEXICO] < BASIC INSPECTION > For procedure, refer to EC-929, "IGNITION TIMING: Special Repair Requirement". For specification, refer to EC-1274, "Ignition Timing". Α Is the inspection result normal? YES >> GO TO 19. NO >> GO TO 11. EC 11. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING Stop engine. Perform EC-929, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement". D >> GO TO 12. 12.perform throttle valve closed position learning Perform EC-930. "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement". >> GO TO 13. 13.PERFORM IDLE AIR VOLUME LEARNING Perform EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement". Is Idle Air Volume Learning carried out successfully? YES >> GO TO 14. NO >> Follow the instruction of Idle Air Volume Learning. Then GO TO 4. 14. CHECK TARGET IDLE SPEED AGAIN Н Start engine and warm it up to normal operating temperature. Check idle speed. For procedure, refer to EC-928, "IDLE SPEED: Special Repair Requirement". For specification, refer to EC-1274, "Idle Speed". Is the inspection result normal? YES >> GO TO 15. NO >> GO TO 17. 15. CHECK IGNITION TIMING AGAIN Run engine at idle. 2. Check ignition timing with a timing light. For procedure, refer to EC-929, "IGNITION TIMING: Special Repair Requirement". For specification, refer to EC-1274, "Ignition Timing". Is the inspection result normal? YES >> GO TO 19. M NO >> GO TO 16. 16.check timing chain installation Check timing chain installation. Refer to EM-69, "Removal and Installation". Is the inspection result normal? YFS >> GO TO 17. NO >> Repair the timing chain installation. Then GO TO 4. 17. DETECT MALFUNCTIONING PART Check the following. Check camshaft position sensor (PHASE) and circuit. Refer to <u>EC-1116, "DTC Logic"</u>. • Check crankshaft position sensor (POS) and circuit. Refer to EC-1112, "DTC Logic". Is the inspection result normal? YES >> GO TO 18. NO >> Repair or replace. Then GO TO 4. 18,check ecm function

< BASIC INSPECTION > [FOR MEXICO]

1. Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)

 Perform initialization of NATS system and registration of all NATS ignition key IDs. Refer to <u>EC-928</u>, <u>"ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement"</u>.

>> GO TO 4.

19. INSPECTION END

If ECM is replaced during this BASIC INSPECTION procedure, go to <u>EC-928</u>, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> INSPECTION END

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Description

INFOID:0000000002994327

When replacing ECM, this procedure must be performed.

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement

1. PERFORM INITIALIZATION OF NATS SYSTEM AND REGISTRATION OF ALL NATS IGNITION KEY IDS

Refer to <u>SEC-9</u>, "<u>ECM RE-COMMUNICATING FUNCTION</u>: <u>Special Repair Requirement</u>" (With Intelligent key system), <u>SEC-168</u>, "<u>ECM RE-COMMUNICATING FUNCTION</u>: <u>Special Repair Requirement</u>" (Without Intelligent key system).

>> GO TO 2.

2. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-929, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 4.

4. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END

IDLE SPEED

IDLE SPEED : Description

INFOID:0000000002994329

This describes how to check the idle speed. For the actual procedure, follow the instructions in "BASIC INSPECTION".

IDLE SPEED: Special Repair Requirement

INFOID:0000000002994330

1. CHECK IDLE SPEED

(P)With CONSULT-III

Check idle speed in "DATA MONITOR" mode with CONSULT-III.

With GST

[FOR MEXICO] < BASIC INSPECTION >

Check idle speed with Service \$01 of GST.

>> INSPECTION END

IGNITION TIMING

IGNITION TIMING: Description

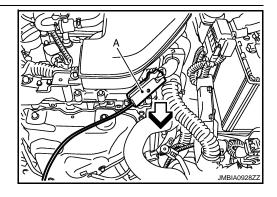
This describes how to check the ignition timing. For the actual procedure, follow the instructions in "BASIC INSPECTION".

IGNITION TIMING: Special Repair Requirement

INFOID:00000000002994332

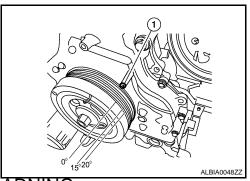
1. CHECK IGNITION TIMING

- Attach timing light (A) to No. 1 ignition coil wire as shown.
- : Vehicle front



- Check ignition timing.
- Timing indicator (1)

>> INSPECTION END



ACCELERATOR PEDAL RELEASED POSITION LEARNING

ACCELERATOR PEDAL RELEASED POSITION LEARNING: Description INFOID-00000002994335

Accelerator Pedal Released Position Learning is a function of ECM to learn the fully released position of the accelerator pedal by monitoring the accelerator pedal position sensor output signal. It must be performed each time harness connector of accelerator pedal position sensor or ECM is disconnected.

ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement INFOID:0000000002994336

1.START

- Make sure that accelerator pedal is fully released.
- Turn ignition switch ON and wait at least 2 seconds. 2.
- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON and wait at least 2 seconds.
- Turn ignition switch OFF and wait at least 10 seconds.

>> END

THROTTLE VALVE CLOSED POSITION LEARNING

EC-929 Revision: 2008 January

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THROTTLE VALVE CLOSED POSITION LEARNING: Description

INFOID:0000000002994337

Throttle Valve Closed Position Learning is a function of ECM to learn the fully closed position of the throttle valve by monitoring the throttle position sensor output signal. It must be performed each time harness connector of electric throttle control actuator or ECM is disconnected.

THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement

INFOID:0000000002994338

1.START

- 1. Make sure that accelerator pedal is fully released.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.Make sure that throttle valve moves during above 10 seconds by confirming the operating sound.

>> END

IDLE AIR VOLUME LEARNING

IDLE AIR VOLUME LEARNING: Description

INFOID:0000000002994339

Idle Air Volume Learning is a function of ECM to learn the idle air volume that keeps each engine idle speed within the specific range. It must be performed under any of the following conditions:

- Each time electric throttle control actuator or ECM is replaced.
- · Idle speed or ignition timing is out of specification.

IDLE AIR VOLUME LEARNING: Special Repair Requirement

INFOID:0000000002994340

1.PRECONDITIONING

Make sure that all of the following conditions are satisfied.

Learning will be cancelled if any of the following conditions are missed for even a moment.

- Battery voltage: More than 12.9V (At idle)
- Engine coolant temperature: 70 100°C (158 212°F)
- PNP switch: ON
- · Electric load switch: OFF

(Air conditioner, headlamp, rear window defogger)

On vehicles equipped with daytime light systems, if the parking brake is applied before the engine is started the headlamp will not be illuminated.

- Steering wheel: Neutral (Straight-ahead position)
- Vehicle speed: Stopped
- Transmission: Warmed-up
- With CONSULT-III: Drive vehicle until "ATF TENP SEN" in "DATA MONITOR" mode of "CVT" system indicates less than 0.9V.
- Without CONSULT-III: Drive vehicle for 10 minutes.

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 3.

2. IDLE AIR VOLUME LEARNING

(I) With CONSULT-III

- Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-929</u>, "ACCELERATOR PEDAL <u>RELEASED POSITION LEARNING</u>: <u>Special Repair Requirement"</u>.
- Perform Throttle Valve Closed Position Learning. Refer to <u>EC-930</u>, "THROTTLE VALVE CLOSED POSI-TION LEARNING: Special Repair Requirement".
- 3. Start engine and warm it up to normal operating temperature.
- 4. Select "IDLE AIR VOL LEARN" in "WORK SUPPORT" mode.
- 5. Touch "START" and wait 20 seconds.

Is "CMPLT" displayed on CONSULT-III screen?

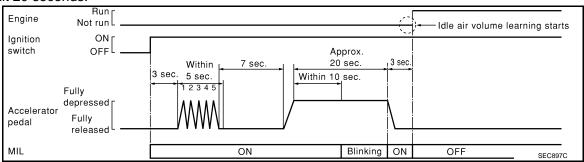
YES >> GO TO 4. NO >> GO TO 5.

< BASIC INSPECTION > [FOR MEXICO]

3.idle air volume learning

NOTE:

- It is better to count the time accurately with a clock.
- It is impossible to switch the diagnostic mode when an accelerator pedal position sensor circuit has a malfunction.
- Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-929</u>, "ACCELERATOR <u>PEDAL RELEASED POSITION LEARNING</u>: Special Repair Requirement".
- 2. Perform Throttle Valve Closed Position Learning. Refer to <u>EC-930</u>, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 3. Start engine and warm it up to normal operating temperature.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 6. Repeat the following procedure quickly five times within 5 seconds.
- Fully depress the accelerator pedal.
- Fully release the accelerator pedal.
- 7. Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 20 seconds until the MIL stops blinking and turned ON.
- 8. Fully release the accelerator pedal within 3 seconds after the MIL turned ON.
- 9. Start engine and let it idle.
- 10. Wait 20 seconds.



>> GO TO 4.

4. CHECK IDLE SPEED AND IGNITION TIMING

Rev up the engine two or three times and make sure that idle speed and ignition timing are within the specifications.

ITEM	SPECIFICATION	
Idle speed	700 ± 50 rpm (in P or N position)	
Ignition timing	gnition timing $15 \pm 5^{\circ}$ (in P or N position)	

Is the inspection result normal?

YES >> INSPECTION END

DETECT MALFUNCTIONING PART

Check the following

- Check that throttle valve is fully closed.
- Check PCV valve operation.
- Check that downstream of throttle valve is free from air leakage.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning part.

6. DETECT MALFUNCTIONING PART

Engine component parts and their installation condition are questionable. Check and eliminate the cause of the incident.

It is useful to perform "TROUBLE DIAGNOSIS - SPECIFICATION VALUE". Refer to EC-1005, "Description".

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If any of the following conditions occur after the engine has started, eliminate the cause of the incident and perform Idle Air Volume Learning all over again:

- Engine stalls.
- · Erroneous idle.

>> INSPECTION END

MIXTURE RATIO SELF-LEARNING VALUE CLEAR

MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Description

This describes how to erase the mixture ratio self-learning value. For the actual procedure, follow the instructions in "Diagnosis Procedure".

MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement

INFOID:0000000002994342

1.START

(P)With CONSULT-III

- Start engine and warm it up to normal operating temperature.
- Select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CONSULT-III.
- 3. Clear mixture ratio self-learning value by touching "CLEAR".

With GST

- Start engine and warm it up to normal operating temperature.
 Turn ignition switch OFF.
- 3. Disconnect mass air flow sensor harness connector.
- Restart engine and let it idle for at least 5 seconds.
- Stop engine and reconnect mass air flow sensor harness connector.
- Select Service \$03 with GST. Make sure DTC P0102 is detected.
- Select Service \$04 with GST to erase the DTC P0102.

>> END

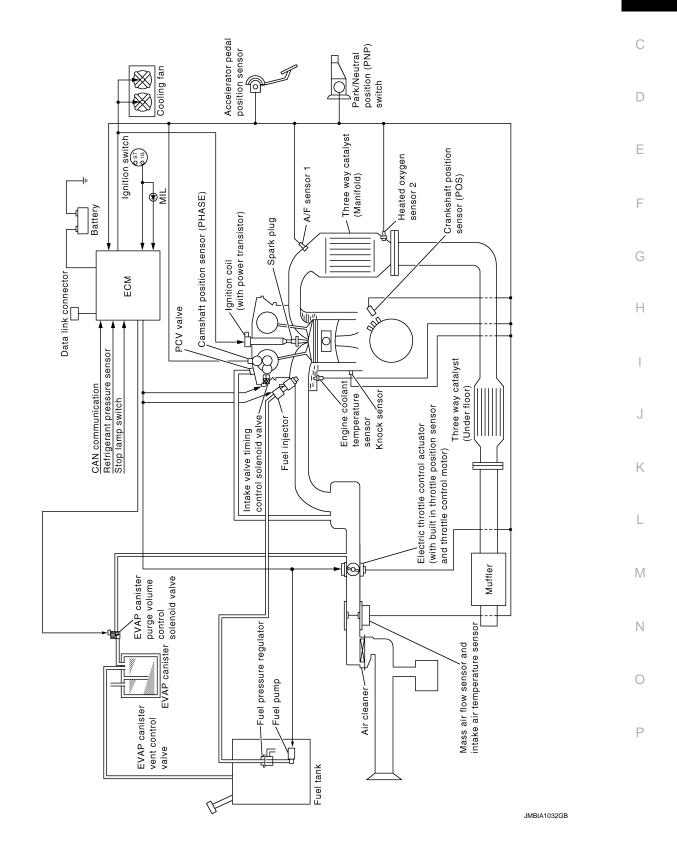
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FUNCTION DIAGNOSIS

ENGINE CONTROL SYSTEM

System Diagram



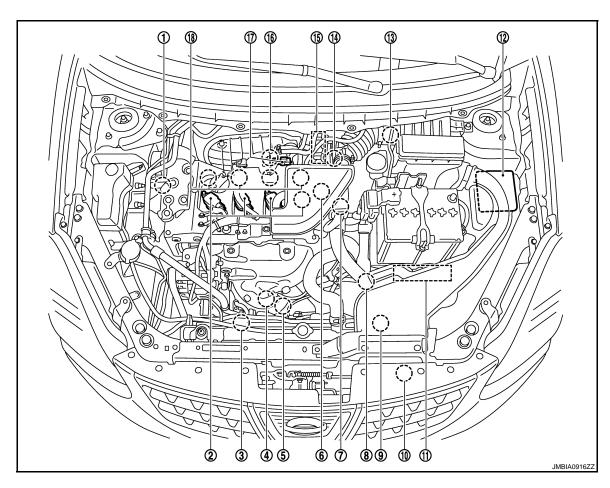
System Description

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ECM performs various controls such as fuel injection control and ignition timing control.

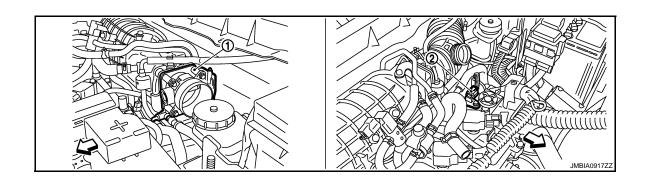
Component Parts Location

INFOID:0000000002994345



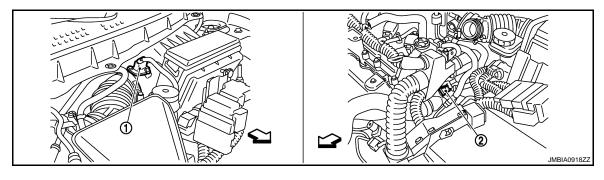
- Intake valve timing control solenoid valve
- 4. Air fuel ratio (A/F) sensor 1
- 7. Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air temperature sensor)
- 16. Knock sensor

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- 8. Park/neutral position (PNP) switch
- 11. ECM
- Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS)
- 3. Cooling fan motor-2
- 6. Camshaft position sensor (PHASE)
- 9. Cooling fan motor-1
- 12. IPDM E/R
- Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- EVAP canister purge volume control 18. Fuel injector solenoid valve

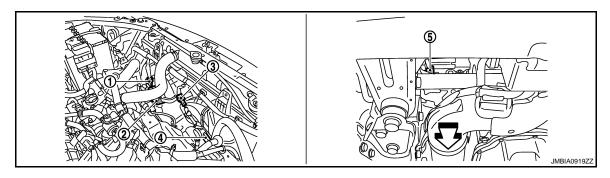


- 1. Electric throttle control actuator
- 2. Camshaft position sensor (PHASE)

✓ Vehicle front

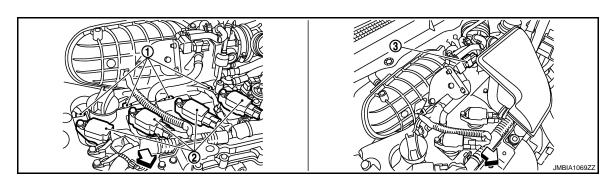


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



Fuel injector

- 2. Ignition coil (with power transistor) and spark plug
- B. EVAP canister purge volume control solenoid valve

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⇒ Vehicle front

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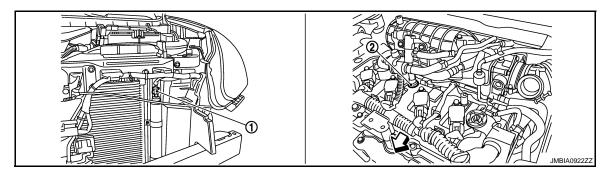
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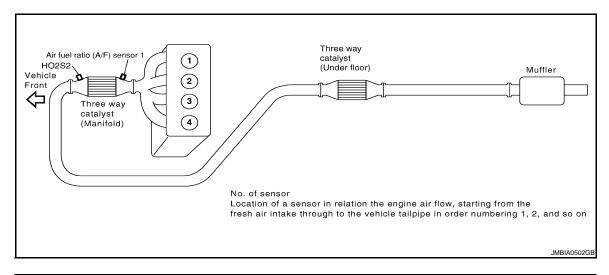
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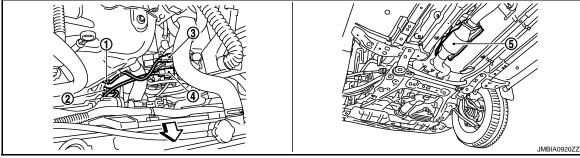
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- 1. Refrigerant pressure sensor
- 2. PCV valve

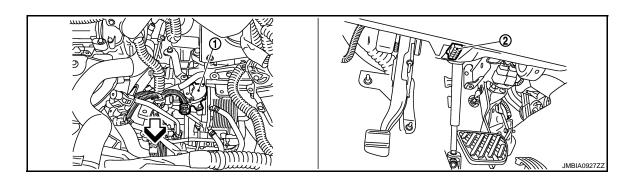




- 1. Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- Air fuel ratio (A/F) sensor 1 harness connector

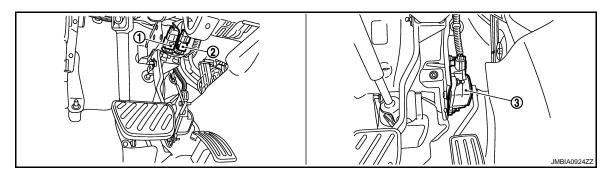
- 4. Heated oxygen sensor 2 harness connector

5. Three way catalyst (Under floor)

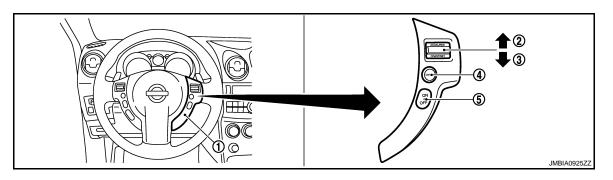


- Park/neutral position (PNP) switch
- Data link connector

Vehicle front

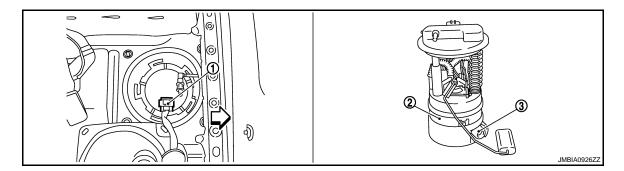


- Stop lamp switch
- 2. ASCD brake switch
- Accelerator pedal position sensor



- ASCD steering switch
- CANSEL switch
- RESUME/ACCERELATE switch

- SET/COAST switch
- MAIN switch



- Fuel level sensor unit and fuel pump 2. harness connector
- Fuel level sensor unit and fuel pump 3.
- Fuel pressure regulator

Component Description

Component	Reference
A/F sensor 1	EC-1059, "Description"
A/F sensor 1 heater	EC-1022, "Description"
Accelerator pedal position sensor	EC-1179, "Description"
ASCD brake switch	EC-1158, "Description"
ASCD steering switch	EC-1155, "Description"
ASCD vehicle speed sensor	EC-1163, "Description"

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INFOID:0000000002994346

ENGINE CONTROL SYSTEM

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

Component	Reference
Camshaft position sensor (PHASE)	EC-1116, "Description"
Crankshaft position sensor (POS)	EC-1112, "Description"
Cooling fan motor	EC-965. "System Description"
Electric throttle control actuator	EC-1177, "Description"
Engine coolant temperature sensor	EC-1046, "Description"
EVAP canister purge volume control solenoid valve	EC-1125, "Description"
Fuel injector	EC-1209, "Description"
Fuel pump	EC-1212, "Description"
Heated oxygen sensor 2	EC-1074, "Description"
Heated oxygen sensor 2 heater	EC-1025, "Description"
Ignition signal	EC-1215, "Description"
Intake air temperature sensor	EC-1043, "Description"
Intake valve timing control solenoid valve	EC-978. "System Description"
Knock sensor	EC-1110, "Description"
Mass air flow sensor	EC-1031, "Description"
Park/neutral position switch	EC-1141, "Description"
PCV valve	EC-1221, "Description"
Refrigerant pressure sensor	EC-1222, "Description"
Stop lamp switch	EC-1167, "Description"
Throttle control motor	EC-1175, "Description"
Throttle control motor relay	EC-1169, "Description"
Throttle position sensor	EC-1049, "Description"
Vehicle speed sensor	EC-1128, "Description"

[FOR MEXICO]

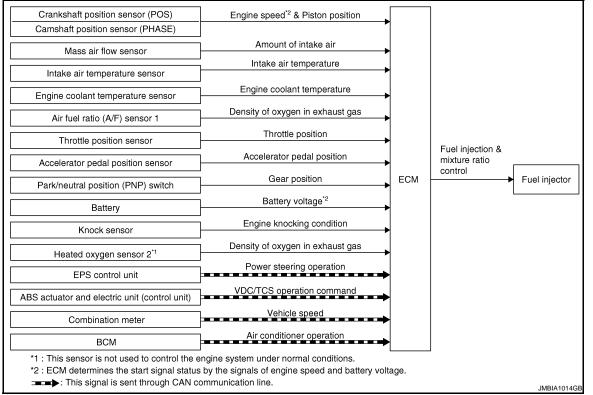
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MULTIPORT FUEL INJECTION SYSTEM

System Diagram



System Description

INFOID:0000000002994348

INPUT/OUTPUT SIGNAL CHART

Sensor	Input Signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS)	Engine speed*3			
Camshaft position sensor (PHASE)	Piston position			
Mass air flow sensor	Amount of intake air			
Intake air temperature sensor	Intake air temperature			
Engine coolant temperature sensor	Engine coolant temperature			
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas			
Throttle position sensor	Throttle position	Fuel injection & mixture ratio	=	
Accelerator pedal position sensor	Accelerator pedal position			
Park/neutral position (PNP) switch	Gear position & mixture ratio Fuel injector control		Fuel injector	
Battery	Battery voltage*3			
Knock sensor	Engine knocking condition	y of oxygen in exhaust gas steering operation*2		
Heated oxygen sensor 2*1	Density of oxygen in exhaust gas			
EPS control unit	Power steering operation*2			
ABS actuator and electric unit (control unit)	ABS operation command*2			
Combination meter	Vehicle speed*2			
всм	Air conditioner operation*2			

^{*1:} This sensor is not used to control the engine system under normal conditions.

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^{*2:} This signal is sent to the ECM through CAN communication line.

*3: ECM determines the start signal status by the signals of engine speed and battery voltage.

SYSTEM DESCRIPTION

The amount of fuel injected from the fuel injector is determined by the ECM. The ECM controls the length of time the valve remains open (injection pulse duration). The amount of fuel injected is a program value in the ECM memory. The program value is preset by engine operating conditions. These conditions are determined by input signals (for engine speed and intake air) from the crankshaft position sensor (POS), camshaft position sensor (PHASE) and the mass air flow sensor.

VARIOUS FUEL INJECTION INCREASE/DECREASE COMPENSATION

In addition, the amount of fuel injected is compensated to improve engine performance under various operating conditions as listed below.

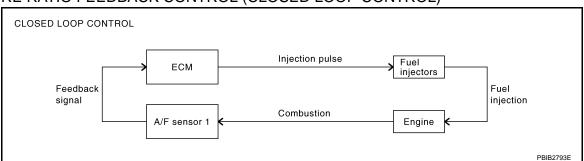
<Fuel increase>

- During warm-up
- When starting the engine
- During acceleration
- Hot-engine operation
- When selector lever is changed from N to D
- · High-load, high-speed operation

<Fuel decrease>

- During deceleration
- · During high engine speed operation

MIXTURE RATIO FEEDBACK CONTROL (CLOSED LOOP CONTROL)



The mixture ratio feedback system provides the best air-fuel mixture ratio for driveability and emission control. The three way catalyst (manifold) can then better reduce CO, HC and NOx emissions. This system uses A/F sensor 1 in the exhaust manifold to monitor whether the engine operation is rich or lean. The ECM adjusts the injection pulse width according to the sensor voltage signal. For more information about A/F sensor 1, refer to EC-1059, "DTC Logic". This maintains the mixture ratio within the range of stoichiometric (ideal air-fuel mixture).

This stage is referred to as the closed loop control condition.

Heated oxygen sensor 2 is located downstream of the three way catalyst (manifold). Even if the switching characteristics of A/F sensor 1 shift, the air-fuel ratio is controlled to stoichiometric by the signal from heated oxygen sensor 2.

Open Loop Control

The open loop system condition refers to when the ECM detects any of the following conditions. Feedback control stops in order to maintain stabilized fuel combustion.

- Deceleration and acceleration
- High-load, high-speed operation
- Malfunction of A/F sensor 1 or its circuit
- Insufficient activation of A/F sensor 1 at low engine coolant temperature
- High engine coolant temperature
- During warm-up
- After shifting from N to D
- When starting the engine

MIXTURE RATIO SELF-LEARNING CONTROL

The mixture ratio feedback control system monitors the mixture ratio signal transmitted from A/F sensor 1. This feedback signal is then sent to the ECM. The ECM controls the basic mixture ratio as close to the theoretical mixture ratio as possible. However, the basic mixture ratio is not necessarily controlled as originally

MULTIPORT FUEL INJECTION SYSTEM

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

designed. Both manufacturing differences (i.e., mass air flow sensor hot wire) and characteristic changes during operation (i.e., fuel injector clogging) directly affect mixture ratio.

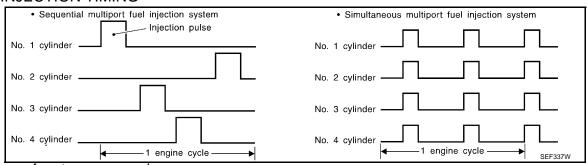
Accordingly, the difference between the basic and theoretical mixture ratios is monitored in this system. This is then computed in terms of "injection pulse duration" to automatically compensate for the difference between the two ratios.

"Fuel trim" refers to the feedback compensation value compared against the basic injection duration. Fuel trim includes short term fuel trim and long term fuel trim.

"Short term fuel trim" is the short-term fuel compensation used to maintain the mixture ratio at its theoretical value. The signal from A/F sensor 1 indicates whether the mixture ratio is RICH or LEAN compared to the theoretical value. The signal then triggers a reduction in fuel volume if the mixture ratio is rich, and an increase in fuel volume if it is lean.

"Long term fuel trim" is overall fuel compensation carried out long-term to compensate for continual deviation of the short term fuel trim from the central value. Such deviation will occur due to individual engine differences, wear over time and changes in the usage environment.

FUEL INJECTION TIMING



Two types of systems are used.

- Sequential Multiport Fuel Injection System
 - Fuel is injected into each cylinder during each engine cycle according to the firing order. This system is used when the engine is running.
- Simultaneous Multiport Fuel Injection System
 - Fuel is injected simultaneously into all four cylinders twice each engine cycle. In other words, pulse signals of the same width are simultaneously transmitted from the ECM.
 - The four injectors will then receive the signals two times for each engine cycle.
 - This system is used when the engine is being started and/or if the fail-safe system (CPU) is operating.

FUEL SHUT-OFF

Fuel to each cylinder is cut off during deceleration, operation of the engine at excessively high speeds or operation of the vehicle at excessively high speeds.

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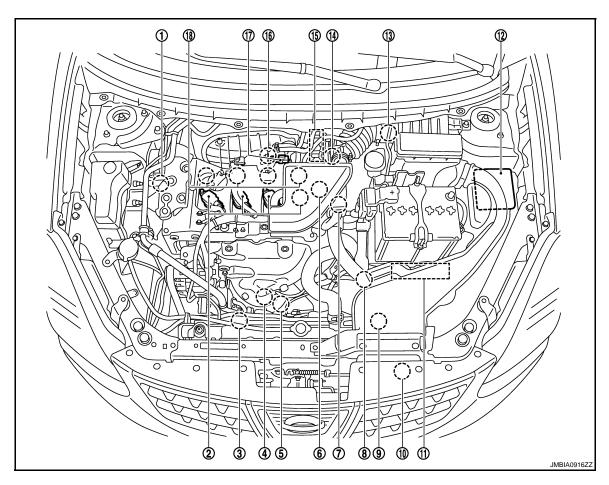
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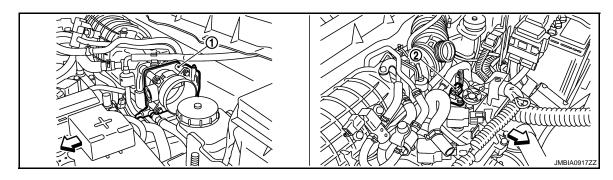
Component Parts Location

INFOID:0000000002994989



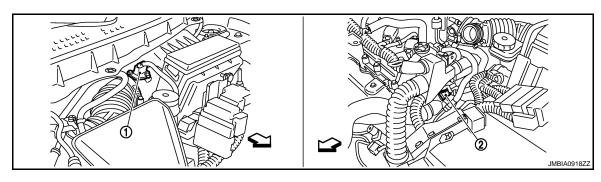
- Intake valve timing control solenoid valve
- 4. Air fuel ratio (A/F) sensor 1
- 7. Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air temperature sensor)
- 16. Knock sensor

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- 8. Park/neutral position (PNP) switch
- 11. ECM
- Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS)
- 3. Cooling fan motor-2
- 6. Camshaft position sensor (PHASE)
- 9. Cooling fan motor-1
- 12. IPDM E/R
- Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- EVAP canister purge volume control 18. Fuel injector solenoid valve

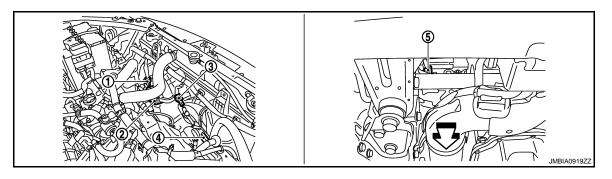


- 1. Electric throttle control actuator
- ⟨
 ⇒ Vehicle front

2. Camshaft position sensor (PHASE)

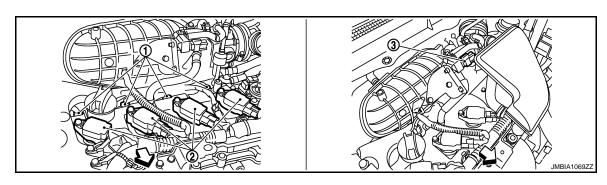


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



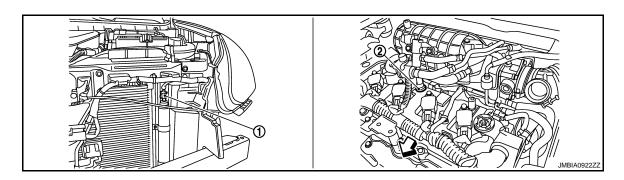
- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- ✓ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- 3. Cooling fan motor-2 harness connector



1. Fuel injector

- 2. Ignition coil (with power transistor) and spark plug
- 3. EVAP canister purge volume control solenoid valve



Revision: 2008 January EC-943 2008 Rogue

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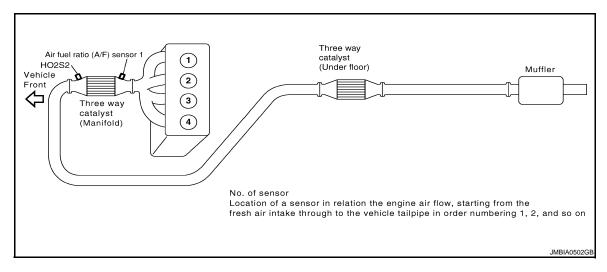
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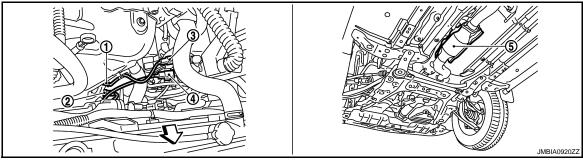
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- 1. Refrigerant pressure sensor
- 2. PCV valve

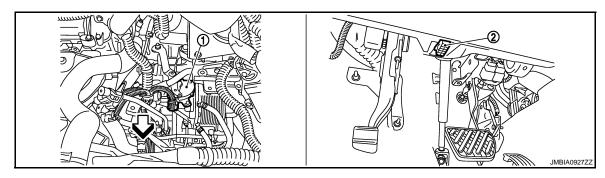




- Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- 3. Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector
- 5. Three way catalyst (Under floor)

< > ∨ehicle front



- 1. Park/neutral position (PNP) switch
- 2. Data link connector

⟨□ Vehicle front

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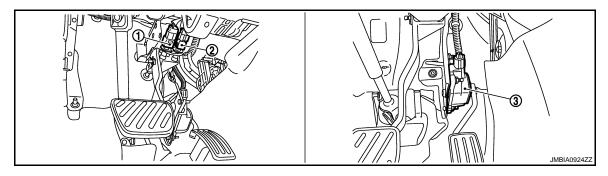
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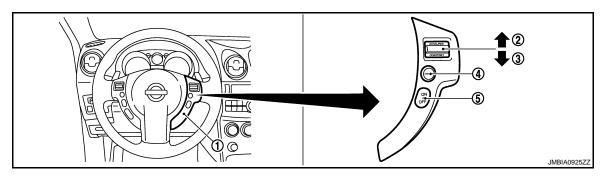
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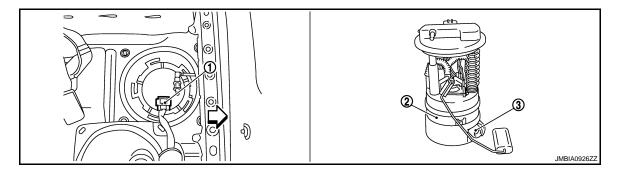


- Stop lamp switch
- 2. ASCD brake switch
- 3. Accelerator pedal position sensor



- ASCD steering switch 1.
- CANSEL switch 2.
- RESUME/ACCERELATE switch

- SET/COAST switch
- MAIN switch



- harness connector
- Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator

Component Description

INFOID:0000000002994350

Component	Reference
A/F sensor 1	EC-1059, "Description"
Accelerator pedal position sensor	EC-1179, "Description"
Camshaft position sensor (PHASE)	EC-1116, "Description"
Crankshaft position sensor (POS)	EC-1112, "Description"
Engine coolant temperature sensor	EC-1046, "Description"
Fuel injector	EC-1209, "Description"
Heated oxygen sensor 2	EC-1025, "Description"
Intake air temperature sensor	EC-1043, "Description"

MULTIPORT FUEL INJECTION SYSTEM

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

Component	Reference
Knock sensor	EC-1110, "Description"
Mass air flow sensor	EC-1031, "Description"
Park/neutral position switch	EC-1141, "Description"
Throttle position sensor	EC-1049, "Description"
Vehicle speed sensor	EC-1128, "Description"

ELECTRIC IGNITION SYSTEM

System Diagram

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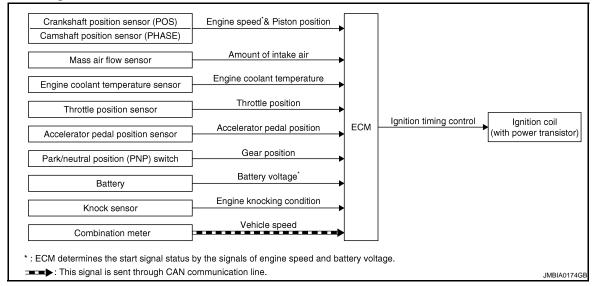
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System Description

INFOID:0000000002994352

INPUT/OUTPUT SIGNAL CHART

Sensor	Input Signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed*2		Ignition coil (with power transistor)
Camshaft position sensor (PHASE)	Piston position		
Mass air flow sensor	Amount of intake air		
Engine coolant temperature sensor	Engine coolant temperature		
Throttle position sensor	Throttle position	Ignition timing	
Accelerator pedal position sensor	Accelerator pedal position	control	
Battery	Battery voltage*2		
Knock sensor	Engine knocking		
Park/neutral position (PNP) switch	Gear position		
Combination meter	Vehicle speed*1		

^{*1:} This signal is sent to the ECM through CAN communication line.

SYSTEM DESCRIPTION

Firing order: 1 - 3 - 4 - 2

The ignition timing is controlled by the ECM to maintain the best air-fuel ratio for every running condition of the engine. The ignition timing data is stored in the ECM.

The ECM receives information such as the injection pulse width and camshaft position sensor (PHASE) signal. Computing this information, ignition signals are transmitted to the power transistor.

During the following conditions, the ignition timing is revised by the ECM according to the other data stored in the ECM.

- At starting
- During warm-up
- At idle
- At low battery voltage
- During acceleration

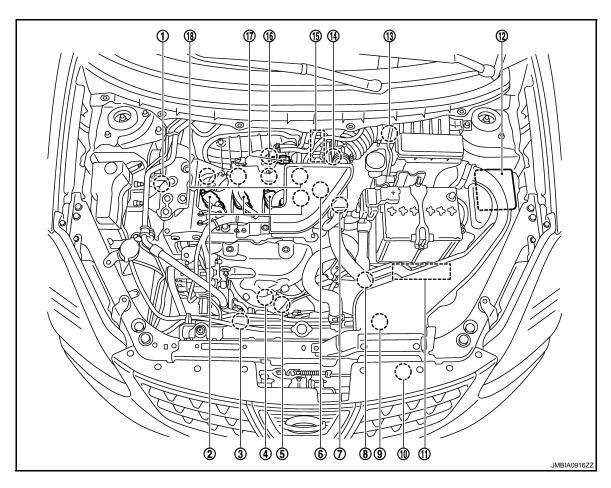
The knock sensor retard system is designed only for emergencies. The basic ignition timing is programmed within the anti-knocking zone, if recommended fuel is used under dry conditions. The retard system does not

^{*2:} ECM determines the start signal status by the signals of engine speed and battery voltage.

operate under normal driving conditions. If engine knocking occurs, the knock sensor monitors the condition. The signal is transmitted to the ECM. The ECM retards the ignition timing to eliminate the knocking condition.

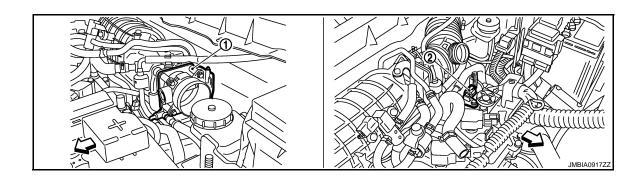
Component Parts Location

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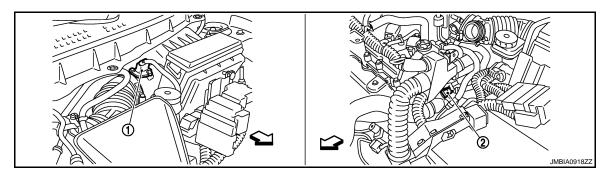
- Intake valve timing control solenoid valve
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- temperature sensor)
- 16. Knock sensor

- Ignition coil (with power transistor) 2. and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.
- 11. **ECM**
- 13. Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS)
- 3. Cooling fan motor-2
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- IPDM E/R
- 15. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 17. EVAP canister purge volume control 18. Fuel injector solenoid valve

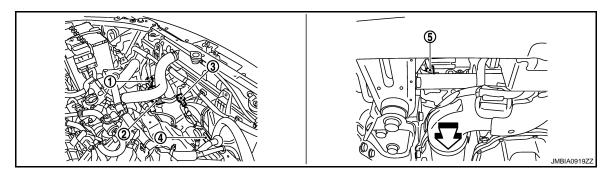


- Electric throttle control actuator
- Vehicle front

2. Camshaft position sensor (PHASE)

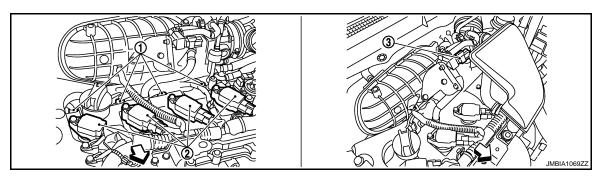


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



- Cooling fan motor-1 harness connector
- Cooling fan motor-2
- Vehicle front

- 2. Cooling fan motor-1
- Crankshaft position sensor (POS) 5.
- Cooling fan motor-2 harness con-



- Fuel injector
- ⟨
 ⇒ Vehicle front

- 2. Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve

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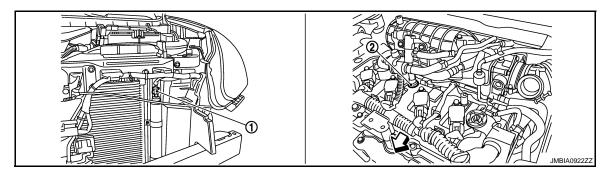
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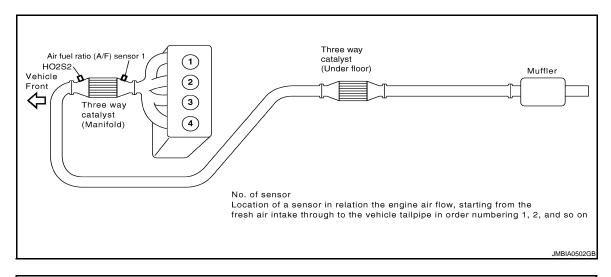
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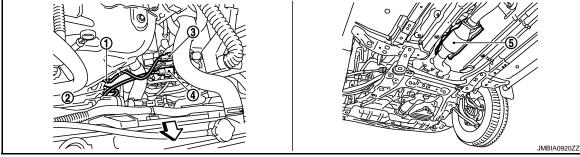
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- 1. Refrigerant pressure sensor
- 2. PCV valve

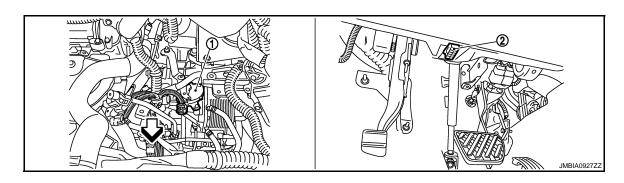




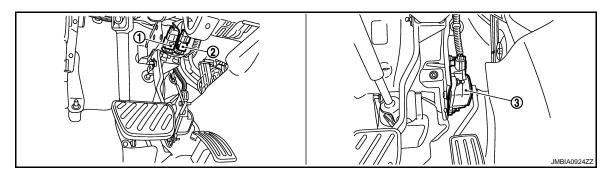
- 1. Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- 3. Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector

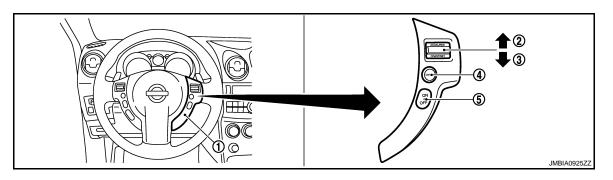
5. Three way catalyst (Under floor)



- 1. Park/neutral position (PNP) switch 2.
- itch 2. Data link connector
- √ Vehicle front

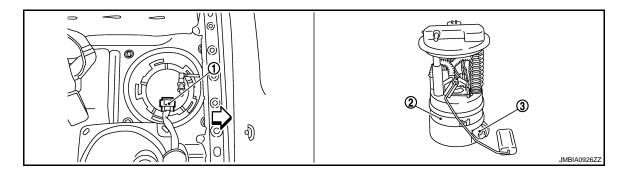


- 1. Stop lamp switch
- 2. ASCD brake switch
- 3. Accelerator pedal position sensor



- 1. ASCD steering switch
- CANSEL switch
- RESUME/ACCERELATE switch

- 4. SET/COAST switch
- 5. MAIN switch



- Fuel level sensor unit and fuel pump 2. harness connector
- Fuel level sensor unit and fuel pump 3.
- Fuel pressure regulator

⟨
⇒ Vehicle front

Component Description

Component Reference

Accelerator pedal position sensor

Camshaft position sensor (PHASE)

Crankshaft position sensor (POS)

EC-1112, "Description"

Engine coolant temperature sensor

Ignition signal

EC-1215, "Description"

EC-1110, "Description"

EC-1215, "Description"

Revision: 2008 January EC-951 2008 Rogue

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INFOID:0000000002994354

ELECTRIC IGNITION SYSTEM

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

Component	Reference
Mass air flow sensor	EC-1031, "Description"
Park/neutral position switch	EC-1141, "Description"
Throttle position sensor	EC-1049, "Description"
Vehicle speed sensor	EC-1128, "Description"

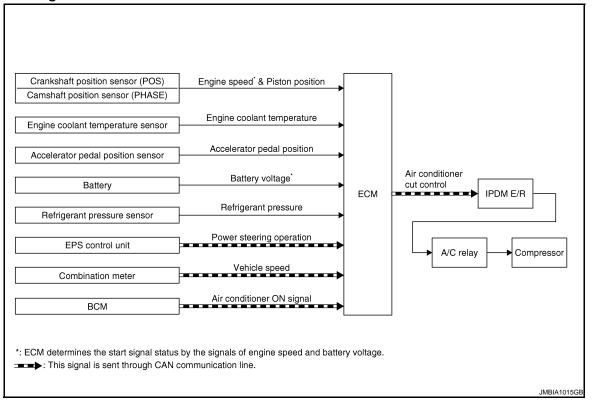
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AIR CONDITIONING CUT CONTROL

System Diagram



System Description

INPUT/OUTPUT SIGNAL CHART

Sensor	Input Signal to ECM	ECM function	Actuator	
Accelerator pedal position sensor	Accelerator pedal position			
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*2		IPDM E/R ↓ Air conditioner relay ↓ Compressor	
Engine coolant temperature sensor	Engine coolant temperature			
Battery	Battery voltage*2	Air conditioner		
Refrigerant pressure sensor	Refrigerant pressure	cut control		
EPS control unit	Power steering operation*1			
Combination meter	Vehicle speed*1			
ВСМ	Air conditioner ON signal*1			

^{*1:} This signal is sent to the ECM through CAN communication line.

SYSTEM DESCRIPTION

This system improves engine operation when the air conditioner is used. Under the following conditions, the air conditioner is turned off.

- When the accelerator pedal is fully depressed.
- When cranking the engine.
- · At high engine speeds.
- When the engine coolant temperature becomes excessively high.
- When operating power steering during low engine speed or low vehicle speed.
- When engine speed is excessively low.

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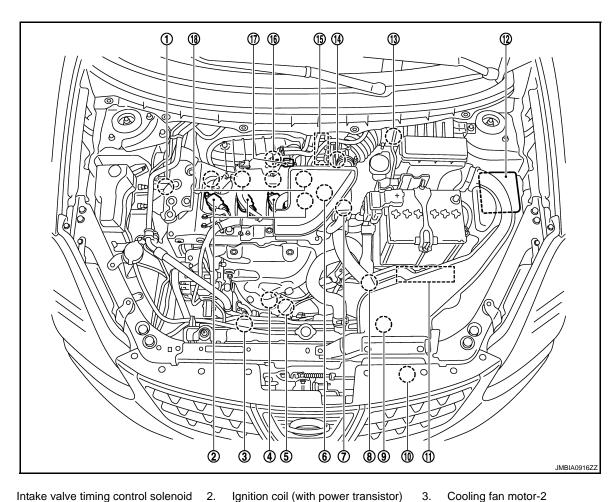
Revision: 2008 January EC-953 2008 Rogue

^{*2:} ECM determines the start signal status by the signals of engine speed and battery voltage.

• When refrigerant pressure is excessively low or high.

Component Parts Location

INFOID:0000000002994991



- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor 7.
- 10. Refrigerant pressure sensor
- temperature sensor)
- 16. Knock sensor

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- 8. Park/neutral position (PNP) switch
- 11. ECM
- 13. Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS)
- 12. IPDM E/R

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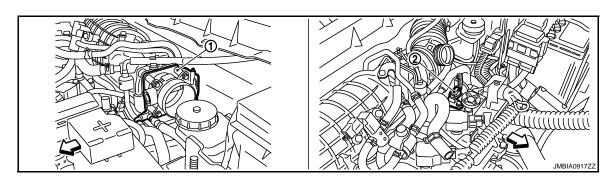
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15. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)

Cooling fan motor-1

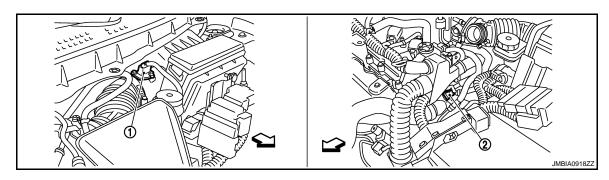
Camshaft position sensor (PHASE)

- 17. EVAP canister purge volume control 18. Fuel injector solenoid valve

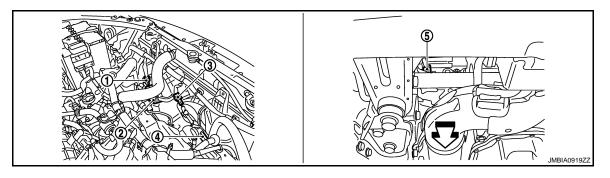


- Electric throttle control actuator

Camshaft position sensor (PHASE)

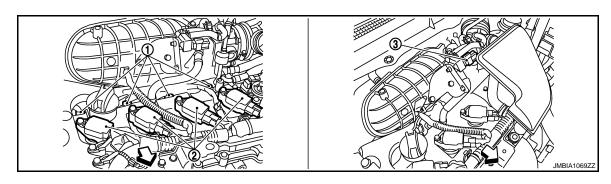


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



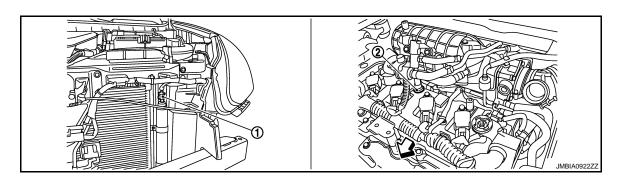
- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- 3. Cooling fan motor-2 harness connector



1. Fuel injector

- 2. Ignition coil (with power transistor) and spark plug
- B. EVAP canister purge volume control solenoid valve



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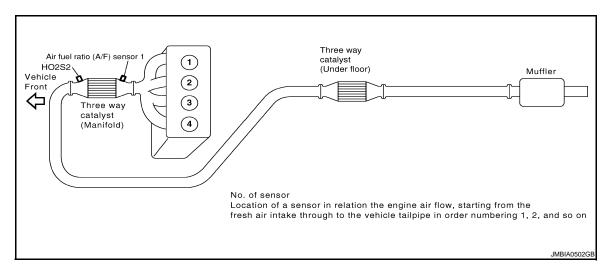
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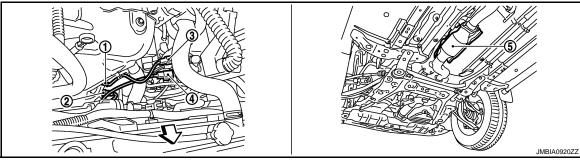
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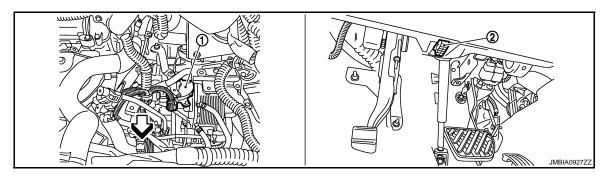
- 1. Refrigerant pressure sensor
- 2. PCV valve





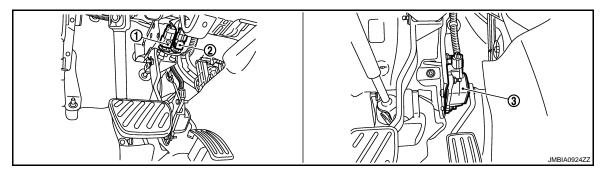
- Air fuel ratio (A/F) sensor 1
- Heated oxygen sensor 2
- 3. Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector
- harness 5. Three way catalyst (Under floor)

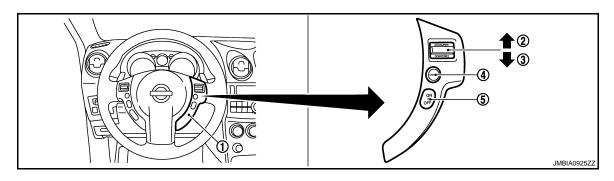


- 1. Park/neutral position (PNP) switch
- 2. Data link connector

⟨□ Vehicle front

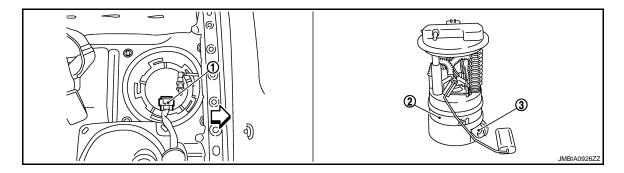


- Stop lamp switch
- 2. ASCD brake switch
- 3. Accelerator pedal position sensor



- ASCD steering switch 1.
- CANSEL switch 2.
- RESUME/ACCERELATE switch

- SET/COAST switch
- MAIN switch



- harness connector
- Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator

Component Description

INFOID:0000000002994358

Component	Reference
Accelerator pedal position sensor	EC-1179, "Description"
Camshaft position sensor (PHASE)	EC-1116, "Description"
Crankshaft position sensor (POS)	EC-1112, "Description"
Engine coolant temperature sensor	EC-1046, "Description"
Refrigerant pressure sensor	EC-1222, "Description"
Vehicle speed sensor	EC-1128, "Description"

EC-957 Revision: 2008 January 2008 Rogue

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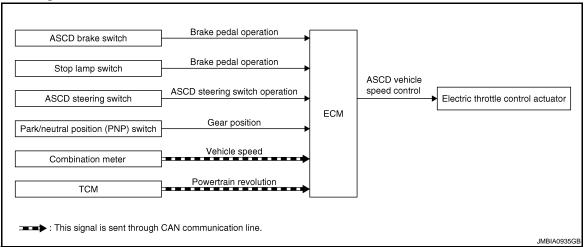
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[FOR MEXICO]

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

System Diagram

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System Description

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INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator
ASCD brake switch	Brake pedal operation	ake pedal operation CCD steering switch operation ear position hicle speed* ASCD vehicle speed control	Electric throttle control actuator
Stop lamp switch	Brake pedal operation		
ASCD steering switch	ASCD steering switch operation		
Park/neutral position (PNP) switch	Gear position		
Combination meter	Vehicle speed*		
TCM	Powertrain revolution*		

^{*:} This signal is sent to the ECM through CAN communication line

BASIC ASCD SYSTEM

Refer to Owner's Manual for ASCD operating instructions.

Automatic Speed Control Device (ASCD) allows a driver to keep vehicle at predetermined constant speed without depressing accelerator pedal. Driver can set vehicle speed in advance between approximately 40 km/h (25 MPH) and 144 km/h (89 MPH).

ECM controls throttle angle of electric throttle control actuator to regulate engine speed.

Operation status of ASCD is indicated by CRUISE lamp and SET lamp in combination meter. If any malfunction occurs in ASCD system, it automatically deactivates control.

NOTE:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

SET OPERATION

Press MAIN switch. (The CRUISE lamp in combination meter illuminates.)

When vehicle speed reaches a desired speed between approximately 40 km/h (25 MPH) and 144 km/h (89 MPH), press SET/COAST switch. (Then SET lamp in combination meter illuminates.)

ACCELERATE OPERATION

If the RESUME/ACCELERATE switch is pressed during cruise control driving, increase the vehicle speed until the switch is released or vehicle speed reaches maximum speed controlled by the system. And then ASCD will keep the new set speed.

CANCEL OPERATION

When any of following conditions exist, cruise operation will be canceled.

- CANCEL switch is pressed
- More than 2 switches at ASCD steering switch are pressed at the same time (Set speed will be cleared)
- · Brake pedal is depressed

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

< FUNCTION DIAGNOSIS >

- Selector lever is changed to N, P, R position Vehicle speed decreased to 13 km/h (8 MPH) lower than the set speed
- TCS system is operated

When the ECM detects any of the following conditions, the ECM will cancel the cruise operation and inform the driver by blinking indicator lamp.

 Engine coolant temperature is slightly higher than the normal operating temperature. CRUISE lamp may blink slowly.

When the engine coolant temperature decreases to the normal operating temperature, CRUISE lamp will stop blinking and the cruise operation will be able to work by pressing SET/COAST switch or RESUME/ ACCELERATE switch.

Malfunction for some self-diagnoses regarding ASCD control: SET lamp will blink quickly.

If MAIN switch is turned to OFF during ASCD is activated, all of ASCD operations will be canceled and vehicle speed memory will be erased.

COAST OPERATION

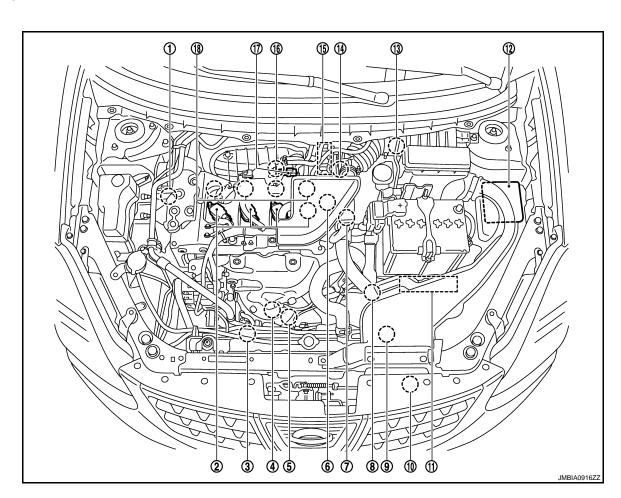
When the SET/COAST switch is pressed during cruise control driving, decrease vehicle set speed until the switch is released. And then ASCD will keep the new set speed.

RESUME OPERATION

When the RESUME/ACCELERATE switch is pressed after cancel operation other than pressing MAIN switch is performed, vehicle speed will return to last set speed. To resume vehicle set speed, vehicle condition must meet following conditions.

- Brake pedal is released
- Selector lever is in other than P and N positions
- Vehicle speed is greater than 40 km/h (25 MPH) and less than 144 km/h (89 MPH)

Component Parts Location



- Intake valve timing control solenoid
- Air fuel ratio (A/F) sensor 1
- Ignition coil (with power transistor) and spark plug
- Heated oxygen sensor 2
- Cooling fan motor-2
- Camshaft position sensor (PHASE)

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EC-959 Revision: 2008 January 2008 Rogue

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

[FOR MEXICO] < FUNCTION DIAGNOSIS >

- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- 13. Mass air flow sensor (with intake air 14. Crankshaft position sensor (POS)
- temperature sensor)
- Park/neutral position (PNP) switch 8.
- 11. **ECM**
- Cooling fan motor-1 9.
- 12. IPDM E/R
- 15. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)

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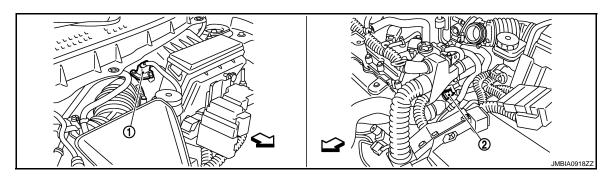
16. Knock sensor

- 17. EVAP canister purge volume control 18. Fuel injector solenoid valve

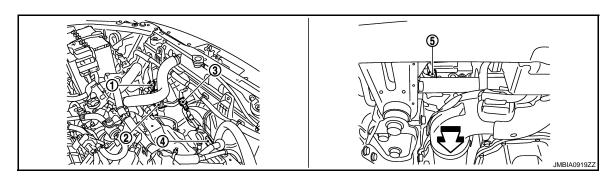
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- Electric throttle control actuator
- Camshaft position sensor (PHASE)

⟨□ Vehicle front

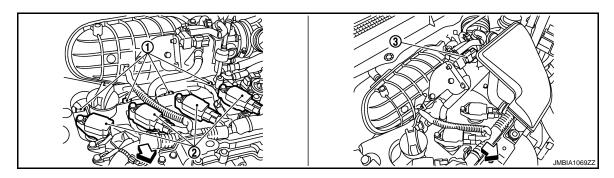


- temperature sensor)
- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor



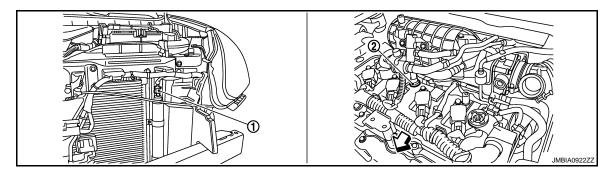
- Cooling fan motor-1 harness connector
- Cooling fan motor-2
- ⟨□ Vehicle front

- Cooling fan motor-1
- Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



1. Fuel injector

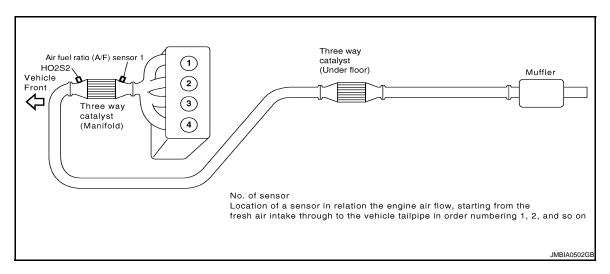
- Ignition coil (with power transistor) and spark plug
- 3. EVAP canister purge volume control solenoid valve

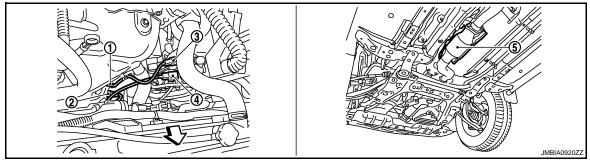


1. Refrigerant pressure sensor

Revision: 2008 January

2. PCV valve





EC-961 2008 Rogue

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Three way catalyst (Under floor)

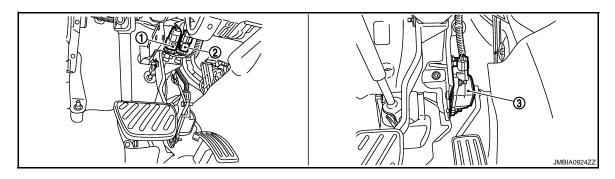
- Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2

5.

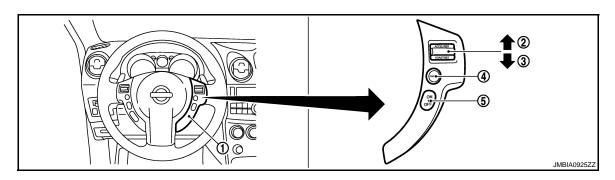
Air fuel ratio (A/F) sensor 1 harness connector

- Heated oxygen sensor 2 harness
- connector
- Park/neutral position (PNP) switch
- Data link connector 2.

Vehicle front



- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor



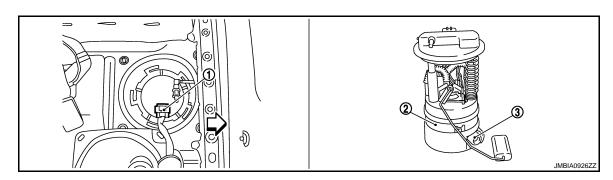
- ASCD steering switch SET/COAST switch
- CANSEL switch
- MAIN switch

RESUME/ACCERELATE switch

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

< FUNCTION DIAGNOSIS >

[FOR MEXICO]



- Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

Component Description

INFOID:0000000002994362

Component	Reference
ASCD steering switch	EC-1155, "Description"
ASCD clutch switch	EC-1158, "Description"
ASCD brake switch	EC-1158, "Description"
Stop lamp switch	EC-1167, "Description"
Electric throttle control actuator	EC-1177, "Description"
ASCD indicator	EC-1199, "Description"

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CAN COMMUNICATION

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

CAN COMMUNICATION

System Description

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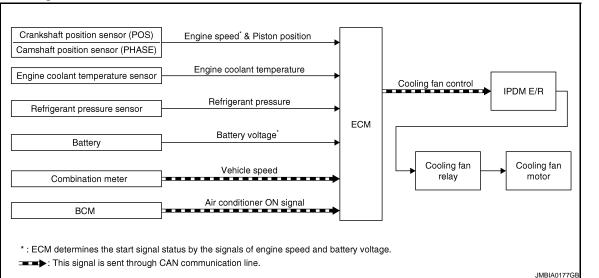
CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

Refer to LAN-23, "CAN Communication Signal Chart", about CAN communication for detail...

INFOID:0000000002994364

COOLING FAN CONTROL

System Diagram



System Description

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*1		IPDM E/R ↓ Cooling fan relay ↓ Cooling fan motor
Engine coolant temperature sensor	Engine coolant temperature		
Refrigerant pressure sensor	Refrigerant pressure	Cooling fan	
Battery	Battery voltage*1	control	
Combination meter	Vehicle speed* ²		
BCM	Air conditioner ON signal*2		

^{*1:} The ECM determines the start signal status by the signals of engine speed and battery voltage.

SYSTEM DESCRIPTION

ECM controls cooling fan speed corresponding to vehicle speed, engine coolant temperature, refrigerant pressure, air conditioner ON signal. Then control system has 3-step control [HIGH/LOW/OFF].

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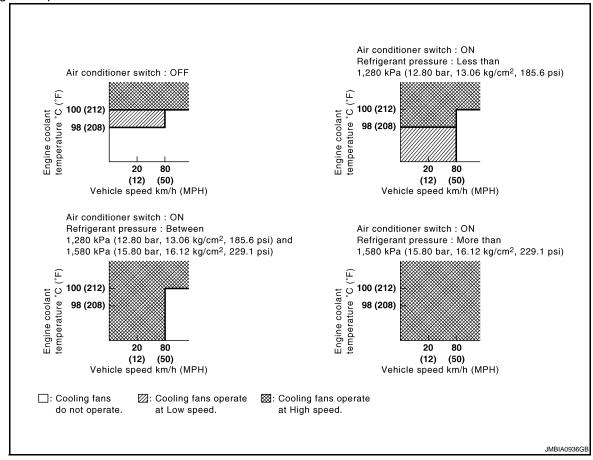
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^{*2:} This signal is sent to ECM through CAN communication line.

Cooling Fan Operation



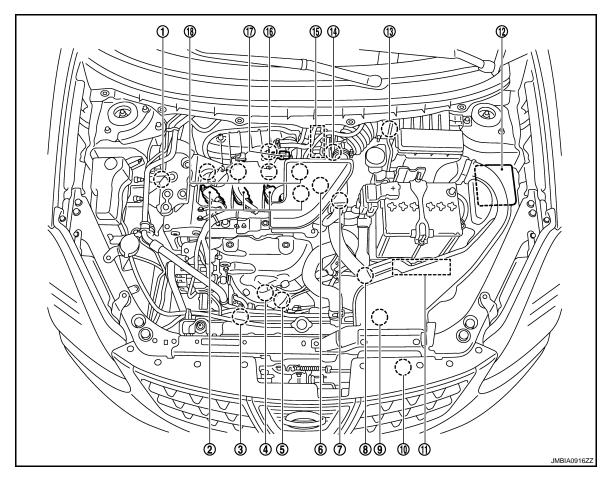
Cooling Fan Relay Operation

The ECM controls cooling fan relays through CAN communication line.

Cooling fan speed	Cooling fan relay				
	1	2	3	4	5
Stop (OFF)	OFF	OFF	OFF	OFF	OFF
Low (LOW)	OFF	OFF	OFF	ON	OFF
High (HI)	ON	ON	ON	OFF	ON

Component Parts Location

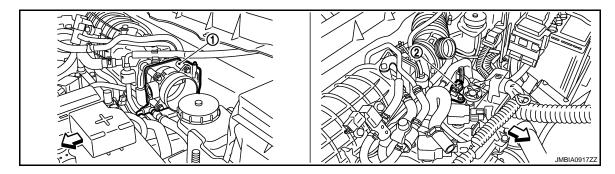
INFOID:0000000002994997



- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. temperature sensor)
- 16. Knock sensor

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.
- Crankshaft position sensor (POS)
- 17. EVAP canister purge volume control 18. Fuel injector solenoid valve

- Cooling fan motor-2 3.
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- IPDM E/R 12.
- Electric throttle control actuator (with built in throttle position sensor and throttle control motor)



- Electric throttle control actuator
- Vehicle front

Camshaft position sensor (PHASE)

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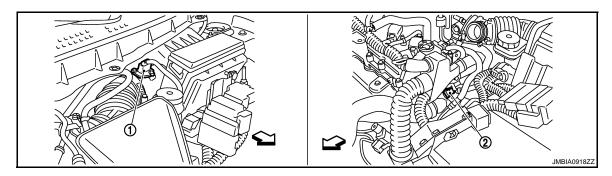
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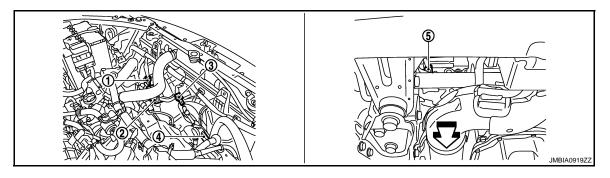
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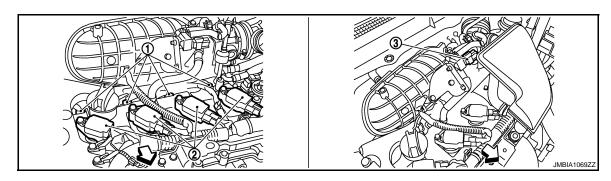


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



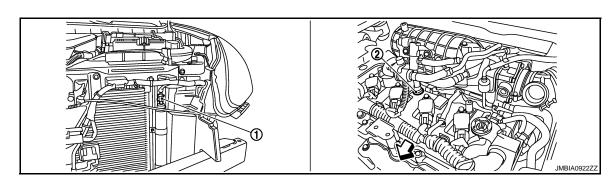
- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- ✓ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector

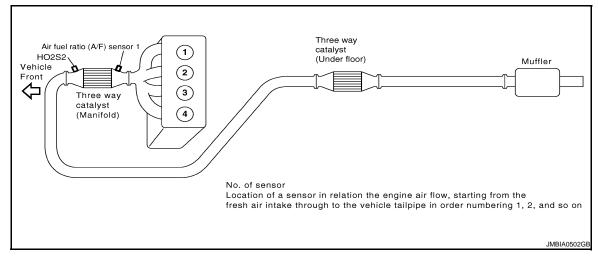


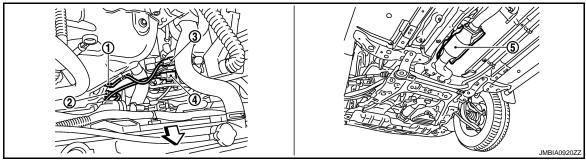
1. Fuel injector

- 2. Ignition coil (with power transistor) and spark plug
- 3. EVAP canister purge volume control solenoid valve



- 1. Refrigerant pressure sensor
- 2. PCV valve

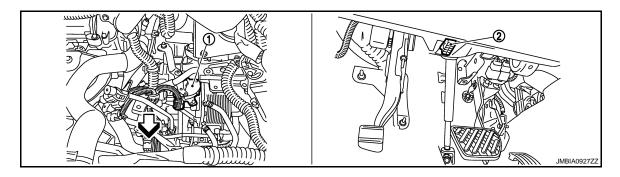




- Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector
- 5. Three way catalyst (Under floor)

√ Vehicle front



- 1. Park/neutral position (PNP) switch
- 2. Data link connector

⟨□ Vehicle front

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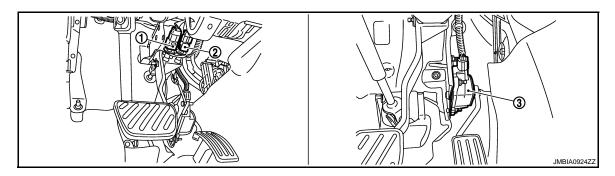
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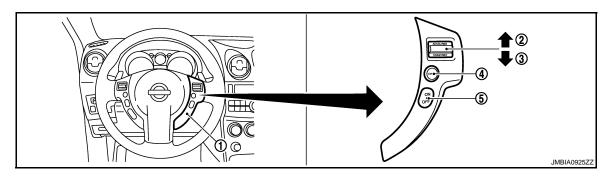
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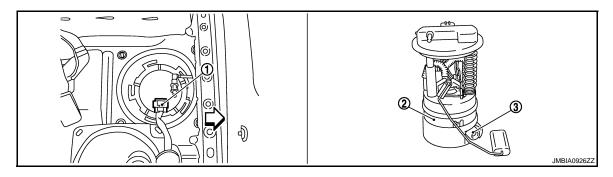
- Stop lamp switch
- ASCD brake switch
- 3. Accelerator pedal position sensor



- ASCD steering switch 1.
- CANSEL switch

RESUME/ACCERELATE switch

- SET/COAST switch
- MAIN switch



- harness connector
- Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator

∨ Vehicle front

Component Description

INFOID:0000000002994367

Component	Reference	
Camshaft position sensor (PHASE)	EC-1116, "Description"	
Crankshaft position sensor (POS)	EC-1112, "Description"	
Cooling fan motor	EC-965, "System Description"	
Engine coolant temperature sensor	EC-1046, "Description"	
Refrigerant pressure sensor	EC-1222, "Description"	
Vehicle speed sensor	EC-1128, "Description"	

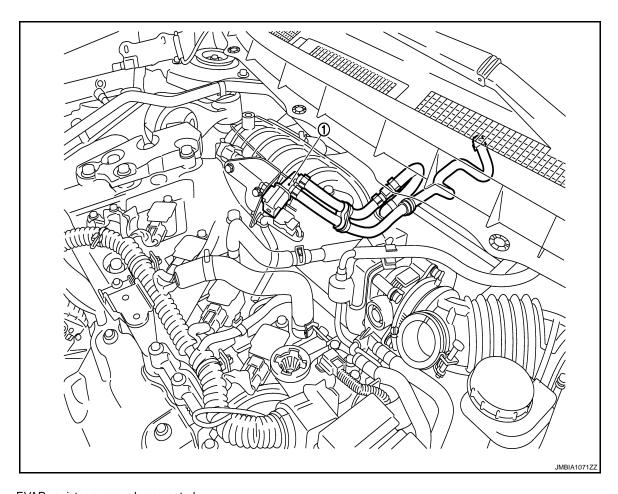
[FOR MEXICO]

EVAPORATIVE EMISSION SYSTEM

System Diagram

INFOID:0000000002994368 Intake manifold Electric throttle control actuator Purge line Fuel filler cap with pressure relief valve and vacuum relief EVAP canister valve purge volume control solenoid valve Refueling EVAP Relief of vapor cut valve vacuum EVAP ່⊒ : Air canister : Fuel vapor JMBIA1070ZZ

EVAPORATIVE EMISSION LINE DRAWING



- EVAP canister purge volume control solenoid valve
- A. From fuel tank

NOTE:

Do not use soapy water or any type of solvent while installing vacuum hose or purge hoses.

Revision: 2008 January EC-971 2008 Rogue

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EVAPORATIVE EMISSION SYSTEM

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

System Description

INFOID:0000000002994369

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*1		
Mass air flow sensor	Amount of intake air		
Engine coolant temperature sensor	Engine coolant temperature	ngine coolant temperature	
Battery	Battery voltage*1	EVAP canister	EVAP canister purge vol- ume control solenoid valve
Throttle position sensor	Throttle position	purge flow control	
Accelerator pedal position sensor	Accelerator pedal position		
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)		
Combination meter	Vehicle speed*2		

^{*1:} ECM determines the start signal status by the signals of engine speed and battery voltage.

SYSTEM DESCRIPTION

The evaporative emission system is used to reduce hydrocarbons emitted into the atmosphere from the fuel system. This reduction of hydrocarbons is accomplished by activated charcoals in the EVAP canister.

The fuel vapor in the sealed fuel tank is led into the EVAP canister which contains activated carbon and the vapor is stored there when the engine is not operating or when refueling to the fuel tank.

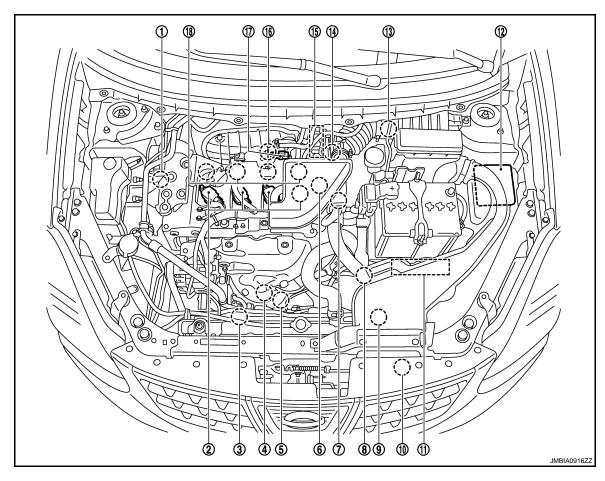
The vapor in the EVAP canister is purged by the air through the purge line to the intake manifold when the engine is operating. EVAP canister purge volume control solenoid valve is controlled by ECM. When the engine operates, the flow rate of vapor controlled by EVAP canister purge volume control solenoid valve is proportionally regulated as the air flow increases.

EVAP canister purge volume control solenoid valve also shuts off the vapor purge line during decelerating.

^{*2:} This signal is sent to the ECM through CAN communication line.

Component Parts Location

INFOID:0000000002994998

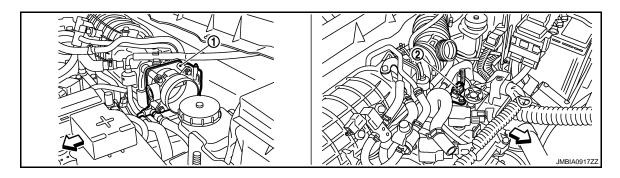


- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. temperature sensor)
- 16. Knock sensor

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2

solenoid valve

- Park/neutral position (PNP) switch 8.
- Crankshaft position sensor (POS)
- Cooling fan motor-2 3.
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- IPDM E/R 12.
- Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 17. EVAP canister purge volume control 18. Fuel injector



- Electric throttle control actuator
- Vehicle front

Camshaft position sensor (PHASE)

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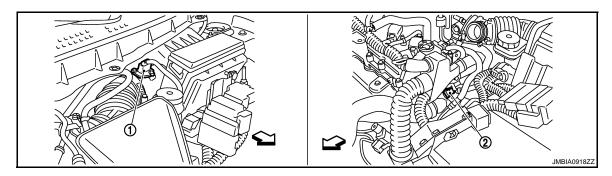
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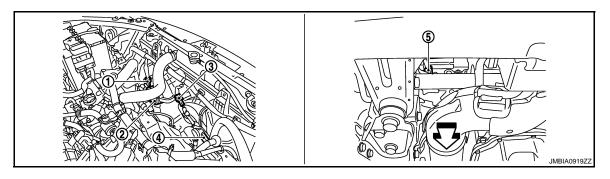
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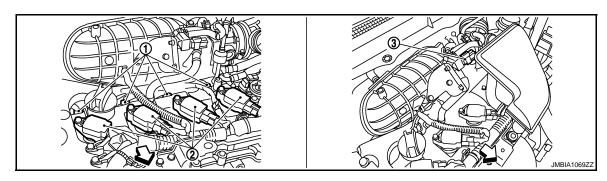


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



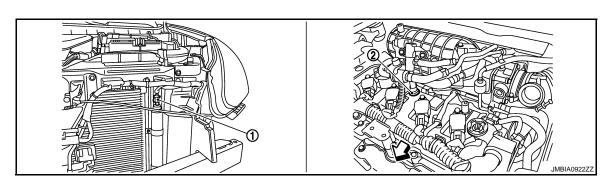
- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- ✓ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector



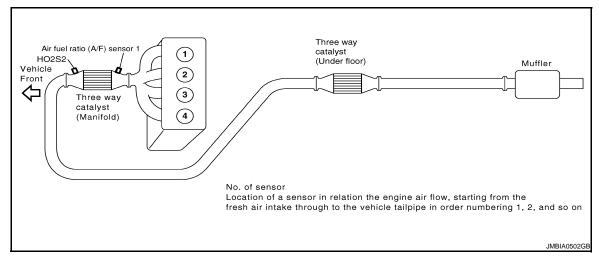
1. Fuel injector

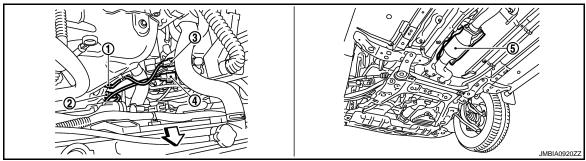
- 2. Ignition coil (with power transistor) and spark plug
- EVAP canister purge volume control solenoid valve



1. Refrigerant pressure sensor

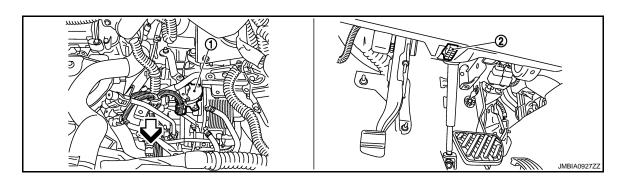
2. PCV valve





- Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector
- 5. Three way catalyst (Under floor)



- 1. Park/neutral position (PNP) switch
- 2. Data link connector

⟨□ Vehicle front

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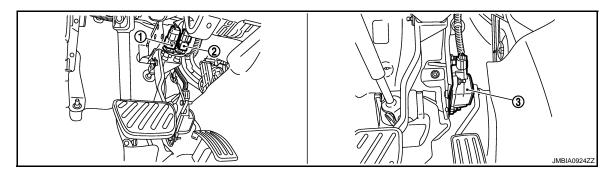
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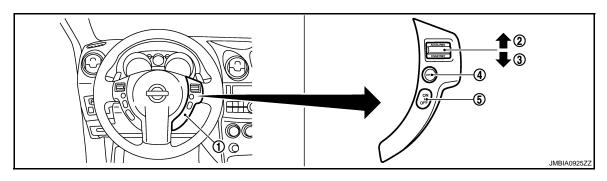
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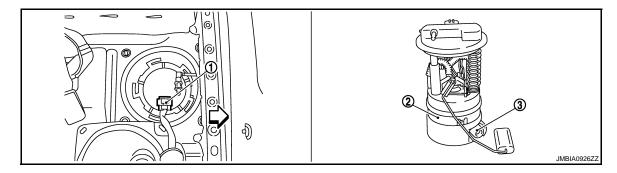
- Stop lamp switch
- ASCD brake switch
- Accelerator pedal position sensor



- ASCD steering switch 1.
- CANSEL switch

RESUME/ACCERELATE switch

- SET/COAST switch
- MAIN switch



- Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator harness connector

∨ Vehicle front

Component Description

INFOID:0000000002994371

Component	Reference
A/F sensor 1	EC-1059, "Description"
Accelerator pedal position sensor	EC-1179, "Description"
Camshaft position sensor (PHASE)	EC-1116, "Description"
Crankshaft position sensor (POS)	EC-1112, "Description"
Engine coolant temperature sensor	EC-1046, "Description"
EVAP canister purge volume control solenoid valve	EC-1125, "Description"
Mass air flow sensor	EC-1031, "Description"

EVAPORATIVE EMISSION SYSTEM

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

Component	Reference	
Throttle position sensor	EC-1049, "Description"	
Vehicle speed sensor	EC-1128, "Description"	

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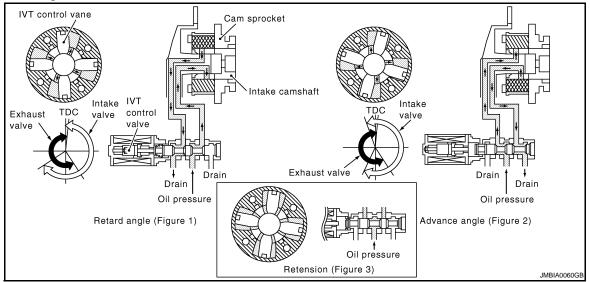
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INTAKE VALVE TIMING CONTROL

System Diagram

INFOID:0000000002994372



System Description

INFOID:0000000002994373

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS)	Engine speed and piston position			
Camshaft position sensor (PHASE)	Engine speed and piston position	Intake valve timing control	Intake valve timing control	
Engine coolant temperature sensor	Engine coolant temperature		solenoid valve	
Combination meter	Vehicle speed*			

^{*:} This signal is sent to the ECM through CAN communication line

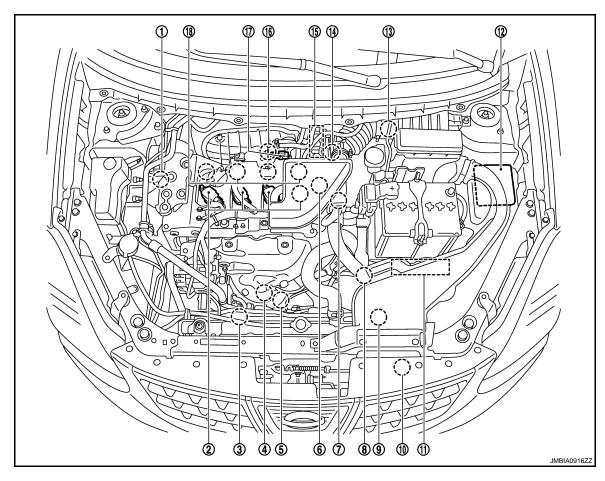
SYSTEM DESCRIPTION

This mechanism hydraulically controls cam phases continuously with the fixed operating angle of the intake valve.

The ECM receives signals such as crankshaft position, camshaft position, engine speed, and engine coolant temperature. Then, the ECM sends ON/OFF pulse duty signals to the intake valve timing (IVT) control solenoid valve depending on driving status. This makes it possible to control the shut/open timing of the intake valve to increase engine torque in low/mid speed range and output in high-speed range.

Component Parts Location

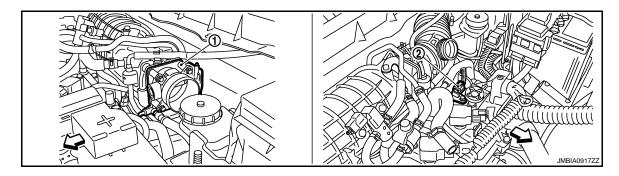
INFOID:0000000002994999



- Intake valve timing control solenoid
- 4. Air fuel ratio (A/F) sensor 1
- Engine coolant temperature sensor
- 10. Refrigerant pressure sensor
- Mass air flow sensor (with intake air 14. temperature sensor)
- 16. Knock sensor

- Ignition coil (with power transistor) and spark plug
- 5. Heated oxygen sensor 2
- Park/neutral position (PNP) switch 8.
- Crankshaft position sensor (POS)
- 17. EVAP canister purge volume control 18. Fuel injector solenoid valve

- Cooling fan motor-2 3.
- 6. Camshaft position sensor (PHASE)
- Cooling fan motor-1 9.
- IPDM E/R 12.
- Electric throttle control actuator (with built in throttle position sensor and throttle control motor)



- Electric throttle control actuator
- Vehicle front

Camshaft position sensor (PHASE)

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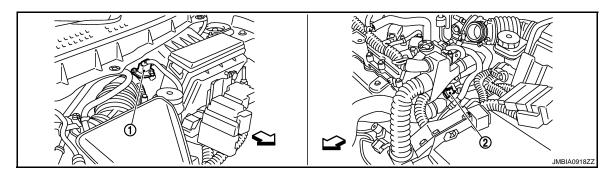
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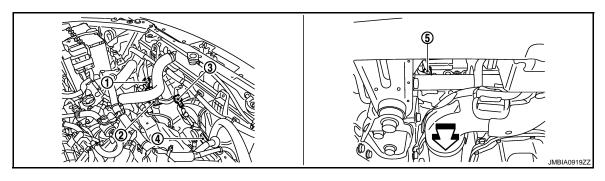
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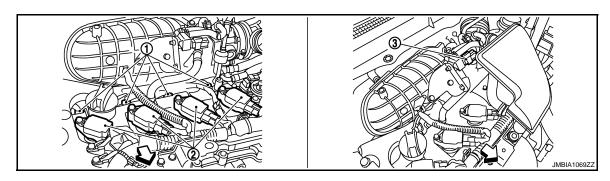


- Mass air flow sensor (with intake air 2. Engine coolant temperature sensor temperature sensor)



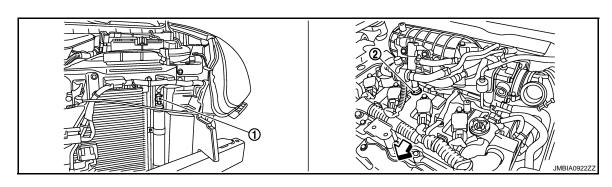
- Cooling fan motor-1 harness connector
- 4. Cooling fan motor-2
- ✓ Vehicle front

- 2. Cooling fan motor-1
- 5. Crankshaft position sensor (POS)
- Cooling fan motor-2 harness connector

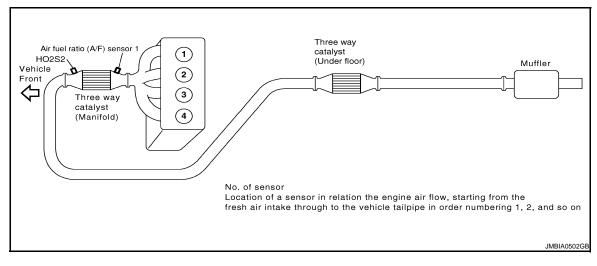


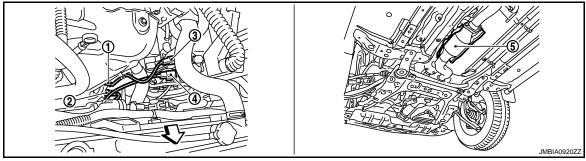
Fuel injector

- 2. Ignition coil (with power transistor) and spark plug
- 3. EVAP canister purge volume control solenoid valve



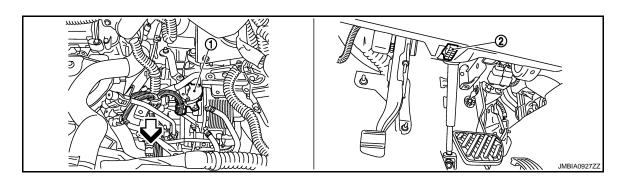
- 1. Refrigerant pressure sensor
- 2. PCV valve





- Air fuel ratio (A/F) sensor 1
- 2. Heated oxygen sensor 2
- Air fuel ratio (A/F) sensor 1 harness connector

- 4. Heated oxygen sensor 2 harness connector
- 5. Three way catalyst (Under floor)



- 1. Park/neutral position (PNP) switch
- 2. Data link connector

⟨□ Vehicle front

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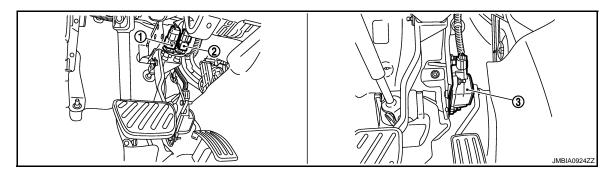
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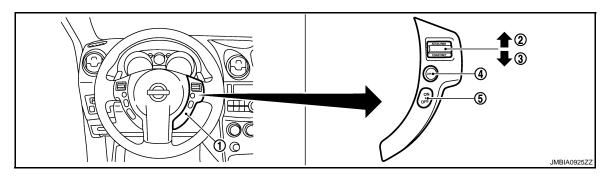
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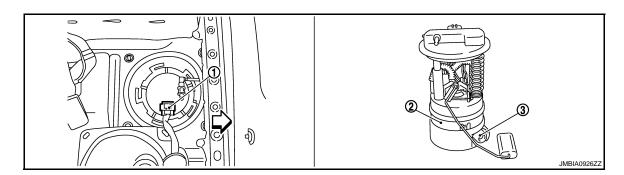
- Stop lamp switch
- 2. ASCD brake switch
- 3. Accelerator pedal position sensor



- 1. ASCD steering switch
- 2. CANSEL switch

3. RESUME/ACCERELATE switch

- 4. SET/COAST switch
- 5. MAIN switch



- Fuel level sensor unit and fuel pump harness connector
- Fuel level sensor unit and fuel pump 2. Fuel level sensor unit and fuel pump 3. Fuel pressure regulator
- √ Vehicle front

Component Description

INFOID:0000000002994375

Component	Reference
Camshaft position sensor (PHASE)	EC-1116, "Description"
Crankshaft position sensor (POS)	EC-1112, "Description"
Engine coolant temperature sensor	EC-1046, "Description"
Intake valve timing control solenoid valve	EC-978, "System Description"
Vehicle speed sensor	EC-1128, "Description"

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

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INTRODUCTION

The ECM has an on board diagnostic system, which detects malfunctions related to engine sensors or actuators. The ECM also records various emission-related diagnostic information including:

Emission-related diagnostic information	Diagnostic service	
Diagnostic Trouble Code (DTC)	Service \$03 of ISO 15031-5	
Freeze Frame data	Service \$02 of ISO 15031-5	
System Readiness Test (SRT) code	Service \$01 of ISO 15031-5	
1st Trip Diagnostic Trouble Code (1st Trip DTC)	Service \$07 of ISO 15031-5	
1st Trip Freeze Frame data		
Test values and Test limits	Service \$06 of ISO 15031-5	
Calibration ID	Service \$09 of ISO 15031-5	

The above information can be checked using procedures listed in the table below.

 \times : Applicable —: Not applicable

	DTC	1st trip DTC	Freeze Frame data	1st trip Freeze Frame data	SRT code	SRT status	Test value
CONSULT-III	×	×	×	×	×	×	_
GST	×	×	×	_	×	×	×
ECM	×	×*	_	_	_	×	_

^{*:} When DTC and 1st trip DTC simultaneously appear on the display, they cannot be clearly distinguished from each other.

The malfunction indicator lamp (MIL) on the instrument panel lights up when the same malfunction is detected in two consecutive trips (Two trip detection logic), or when the ECM enters fail-safe mode. (Refer to EC-1247, <a href="Fail Safe".)

TWO TRIP DETECTION LOGIC

When a malfunction is detected for the first time, 1st trip DTC and 1st trip Freeze Frame data are stored in the ECM memory. The MIL will not light up at this stage. <1st trip>

If the same malfunction is detected again during the next drive, the DTC and Freeze Frame data are stored in the ECM memory, and the MIL lights up. The MIL lights up at the same time when the DTC is stored. <2nd trip> The "trip" in the "Two Trip Detection Logic" means a driving mode in which self-diagnosis is performed during vehicle operation. Specific on board diagnostic items will cause the ECM to light up or blink the MIL, and store DTC and Freeze Frame data, even in the 1st trip, as shown below.

×: Applicable —: Not applicable

	MIL				DTC		1st trip DTC	
Items	1st trip		2nd trip		1st trip	2nd trip	1st trip	and trin
	Blinking	Lighting up	Blinking	Lighting up	displaying	displaying	displaying	2nd trip displaying
Misfire (Possible three way catalyst damage) — DTC: P0300 - P0304 is being detected	×	_	_	_	_	_	×	_
Misfire (Possible three way catalyst damage) — DTC: P0300 - P0304 is being detected	_	_	×	_	_	×	_	_
One trip detection diagnoses (Refer to EC-1250, "DTC Index".)	_	×	_	_	×	_	_	_
Except above	_	_	_	×	_	×	×	_

DTC AND FREEZE FRAME DATA

DTC and 1st Trip DTC

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

The 1st trip DTC (whose number is the same as the DTC number) is displayed for the latest self-diagnostic result obtained. If the ECM memory was cleared previously, and the 1st trip DTC did not reoccur, the 1st trip DTC will not be displayed.

If a malfunction is detected during the 1st trip, the 1st trip DTC is stored in the ECM memory. The MIL will not light up (two trip detection logic). If the same malfunction is not detected in the 2nd trip (meeting the required driving pattern), the 1st trip DTC is cleared from the ECM memory. If the same malfunction is detected in the 2nd trip, both the 1st trip DTC and DTC are stored in the ECM memory and the MIL lights up. In other words, the DTC is stored in the ECM memory and the MIL lights up when the same malfunction occurs in two consecutive trips. If a 1st trip DTC is stored and a non-diagnostic operation is performed between the 1st and 2nd trips, only the 1st trip DTC will continue to be stored. For malfunctions that blink or light up the MIL during the 1st trip, the DTC and 1st trip DTC are stored in the ECM memory.

Procedures for clearing the DTC and the 1st trip DTC from the ECM memory are described in "How to Erase DTC and 1st Trip DTC".

For malfunctions in which 1st trip DTCs are displayed, refer to <u>EC-1250</u>, "<u>DTC Index</u>". These items are required by legal regulations to continuously monitor the system/component. In addition, the items monitored non-continuously are also displayed on CONSULT-III.

1st trip DTC is specified in Service \$07 of ISO 15031-5. 1st trip DTC detection occurs without lighting up the MIL and therefore does not warn the driver of a malfunction. However, 1st trip DTC detection will not prevent the vehicle from being tested, for example during Inspection/Maintenance (I/M) tests.

When a 1st trip DTC is detected, check, print out or write down and erase (1st trip) DTC and Freeze Frame data as specified in Work Flow procedure Step 2, refer to <u>EC-921, "Work Flow"</u>. Then perform DTC CONFIRMATION PROCEDURE or Component Function Check to try to duplicate the malfunction. If the malfunction is duplicated, the item requires repair.

Freeze Frame Data and 1st Trip Freeze Frame Data

The ECM records the driving conditions such as fuel system status, calculated load value, engine coolant temperature, short term fuel trim, long term fuel trim, engine speed, vehicle speed, absolute throttle position, base fuel schedule and intake air temperature at the moment a malfunction is detected.

Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data. The data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT-III or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-III screen, not on the GST.

Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. 1st trip freeze frame data is stored in the ECM memory along with the 1st trip DTC. There is no priority for 1st trip freeze frame data and it is updated each time a different 1st trip DTC is detected. However, once freeze frame data (2nd trip detection/MIL on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

Priority	Items			
1	Freeze frame data	Misfire — DTC: P0300 - P0304 Fuel Injection System Function — DTC: P0171, P0172		
2		Except the above items (Includes CVT related items)		
3	1st trip freeze frame data			

For example, the EGR malfunction (Priority: 2) was detected and the freeze frame data was stored in the 2nd trip. After that when the misfire (Priority: 1) is detected in another trip, the freeze frame data will be updated from the EGR malfunction to the misfire. The 1st trip freeze frame data is updated each time a different malfunction is detected. There is no priority for 1st trip freeze frame data. However, once freeze frame data is stored in the ECM memory, 1st trip freeze data is no longer stored (because only one freeze frame data or 1st trip freeze frame data can be stored in the ECM). If freeze frame data is stored in the ECM memory and freeze frame data with the same priority occurs later, the first (original) freeze frame data remains unchanged in the ECM memory.

Both 1st trip freeze frame data and freeze frame data (along with the DTCs) are cleared when the ECM memory is erased. Procedures for clearing the ECM memory are described in "How to Erase DTC and 1st Trip DTC".

How to Read DTC and 1st Trip DTC

(P)With CONSULT-III

With GST

CONSULT-III or GST (Generic Scan Tool) Examples: P0340, P0850, P1148, etc.

These DTCs are prescribed by SAE J2012.

[FOR MEXICO] < FUNCTION DIAGNOSIS >

(CONSULT-III also displays the malfunctioning component or system.)

No Tools

The number of blinks of the MIL in the Diagnostic Test Mode II (Self-Diagnostic Results) indicates the DTC. Example: 0340, 0850, 1148, etc.

These DTCs are controlled by NISSAN.

- 1st trip DTC No. is the same as DTC No.
- Output of a DTC indicates a malfunction. However, GST or the Diagnostic Test Mode II do not indicate whether the malfunction is still occurring or has occurred in the past and has returned to normal. CONSULT-III can identify malfunction status as shown below. Therefore, using CONSULT-III (if available) is recommended.

DTC or 1st trip DTC of a malfunction is displayed in "SELF-DIAGNOSTIC RESULTS" mode of CONSULT-III. Time data indicates how many times the vehicle was driven after the last detection of a DTC.

If the DTC is being detected currently, the time data will be [0].

If a 1st trip DTC is stored in the ECM, the time data will be [1t].

How to Erase DTC and 1st Trip DTC

(P) With CONSULT-III

NOTE:

- If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- If the DTC is not for CVT related items (see EC-1250, "DTC Index"), skip step 1.
- 1. Erase DTC in TCM. Refer to TM-41, "Diagnosis Description".
- Select "ENGINE" with CONSULT-III.
- Select "SELF-DIAG RESULTS".
- 4. Touch "ERASE". (DTC in ECM will be erased.)

With GST

NOTE:

- If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- If the DTC is not for CVT related items (see EC-1250, "DTC Index"), skip step 1.
- Erase DTC in TCM. Refer to TM-41, "Diagnosis Description".
- Select Service \$04 with GST (Generic Scan Tool).

No Tools

NOTE:

- If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- If the DTC is not for CVT related items (see <u>EC-1250</u>, "DTC Index"), skip step 1.
- 1. Erase DTC in TCM. Refer to TM-41, "Diagnosis Description".
- Erase DTC in ECM. Refer to How to Erase Diagnostic Test Mode II (Self-diagnostic Results).
- If the battery is disconnected, the emission-related diagnostic information will be lost within 24
- The following data are cleared when the ECM memory is erased.
- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- Freeze frame data
- 1st trip freeze frame data
- System readiness test (SRT) codes

Actual work procedures are explained using a DTC as an example. Be careful so that not only the DTC, but all of the data listed above, are cleared from the ECM memory during work procedures.

SYSTEM READINESS TEST (SRT) CODE

System Readiness Test (SRT) code is specified in Service \$01 of ISO 15031-5.

As part of an enhanced emissions test for Inspection & Maintenance (I/M), certain states require the status of SRT be used to indicate whether the ECM has completed self-diagnosis of major emission systems and components. Completion must be verified in order for the emissions inspection to proceed.

If a vehicle is rejected for a State emissions inspection due to one or more SRT items indicating "INCMP", use the information in this Service Manual to set the SRT to "CMPLT".

In most cases the ECM will automatically complete its self-diagnosis cycle during normal usage, and the SRT status will indicate "CMPLT" for each application system. Once set as "CMPLT", the SRT status remains "CMPLT" until the self-diagnosis memory is erased.

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[FOR MEXICO]

Occasionally, certain portions of the self-diagnostic test may not be completed as a result of the customer's normal driving pattern; the SRT will indicate "INCMP" for these items.

NOTE:

The SRT will also indicate "INCMP" if the self-diagnosis memory is erased for any reason or if the ECM memory power supply is interrupted for several hours.

If, during the state emissions inspection, the SRT indicates "CMPLT" for all test items, the inspector will continue with the emissions test. However, if the SRT indicates "INCMP" for one or more of the SRT items the vehicle is returned to the customer untested.

NOTE:

If MIL is ON during the state emissions inspection, the vehicle is also returned to the customer untested even though the SRT indicates "CMPLT" for all test items. Therefore, it is important to check SRT ("CMPLT") and DTC (No DTCs) before the inspection.

SRT Item

The table below shows required self-diagnostic items to set the SRT to "CMPLT".

SRT item (CONSULT-III indication)	Performance Priority*	Required self-diagnostic items to set the SRT to "CMPLT"	Corresponding DTC No.
CATALYST	2	Three way catalyst function	P0420
EVAP SYSTEM	2	EVAP control system purge flow monitoring	P0441
	1	EVAP control system	P0442
	2	EVAP control system	P0456
HO2S	2	Air fuel ratio (A/F) sensor 1	P0133
		Heated oxygen sensor 2	P0137
		Heated oxygen sensor 2	P0138
		Heated oxygen sensor 2	P0139

^{*:} If completion of several SRTs is required, perform driving patterns (DTC CONFIRMATION PROCEDURE), one by one based on the priority for models with CONSULT-III.

SRT Set Timing

SRT is set as "CMPLT" after self-diagnosis has been performed one or more times. Completion of SRT is done regardless of whether the result is OK or NG. The set timing is different between OK and NG results and is shown in the table below.

Self-diagnosis result		Example						
		Diagnosis	\leftarrow ON \rightarrow		on cycle $OFF \leftarrow ON \rightarrow OF$	F ← ON →		
All OK	Case 1	P0400	OK (1)	— (1)	OK (2)	— (2)		
		P0402	OK (1)	—(1)	—(1)	OK (2)		
		P1402	OK (1)	OK (2)	— (2)	— (2)		
		SRT of EGR	"CMPLT"	"CMPLT"	"CMPLT"	"CMPLT"		
	Case 2	P0400	OK (1)	— (1)	—(1)	— (1)		
		P0402	— (0)	— (0)	OK (1)	— (1)		
		P1402	OK (1)	OK (2)	— (2)	— (2)		
		SRT of EGR	"INCMP"	"INCMP"	"CMPLT"	"CMPLT"		
NG exists	Case 3	P0400	OK	OK	_	_		
		P0402	_	_	_	_		
		P1402	NG	_	NG	NG (Consecutive NG)		
		(1st trip) DTC	1st trip DTC	_	1st trip DTC	DTC (= MIL ON)		
		SRT of EGR	"INCMP"	"INCMP"	"INCMP"	"CMPLT"		

< FUNCTION DIAGNOSIS > [FOR MEXICO]

NG: Self-diagnosis is carried out and the result is NG.

-: Self-diagnosis is not carried out.

When all SRT related self-diagnoses showed OK results in a single cycle (Ignition OFF-ON-OFF), the SRT will indicate "CMPLT". → Case 1 above

When all SRT related self-diagnoses showed OK results through several different cycles, the SRT will indicate "CMPLT" at the time the respective self-diagnoses have at least one OK result. \rightarrow Case 2 above

If one or more SRT related self-diagnoses showed NG results in 2 consecutive cycles, the SRT will also indicate "CMPLT". → Case 3 above

The table above shows that the minimum number of cycles for setting SRT as "INCMP" is one (1) for each self-diagnosis (Case 1 & 2) or two (2) for one of self-diagnoses (Case 3). However, in preparation for the state emissions inspection, it is unnecessary for each self-diagnosis to be executed twice (Case 3) for the following reasons:

- The SRT will indicate "CMPLT" at the time the respective self-diagnoses have one (1) OK result.
- The emissions inspection requires "CMPLT" of the SRT only with OK self-diagnosis results.
- When, during SRT driving pattern, 1st trip DTC (NG) is detected prior to "CMPLT" of SRT, the self-diagnosis memory must be erased from ECM after repair.
- If the 1st trip DTC is erased, all the SRT will indicate "INCMP".

NOTE:

SRT can be set as "CMPLT" together with the DTC(s). Therefore, DTC check must always be carried out prior to the state emission inspection even though the SRT indicates "CMPLT".

SRT Service Procedure

If a vehicle has failed the state emissions inspection due to one or more SRT items indicating "INCMP", review the flowchart diagnostic sequence on the next page.

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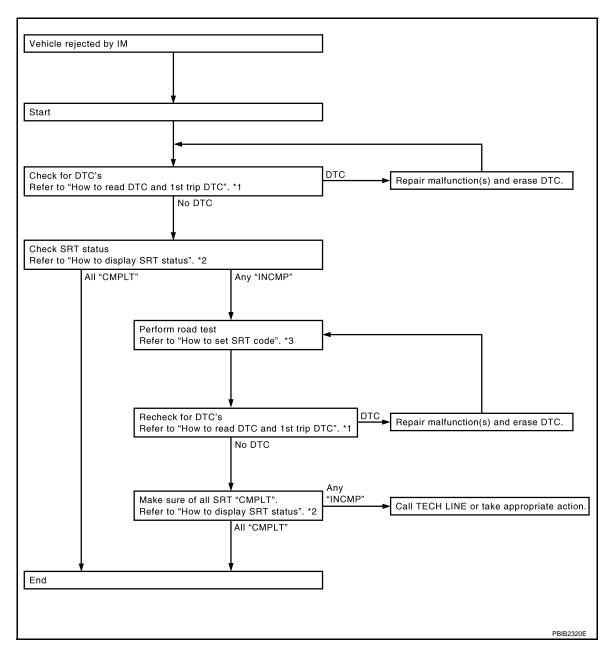
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*1 "How to Read DTC and 1st Trip DTC" *2 "How to Display SRT Status" *3 "How to Set SRT Code"

How to Display SRT Status

(P)WITH CONSULT-III

Selecting "SRT STATUS" in "DTC CONFIRMATION" mode with CONSULT-III.

For items whose SRT codes are set, a "CMPLT" is displayed on the CONSULT-III screen; for items whose SRT codes are not set, "INCMP" is displayed.

NOTE:

Though displayed on the CONSULT-III screen, "HO2S HTR" is not SRT item.

WITH GST

Selecting Service \$01 with GST (Generic Scan Tool)

NO TOOLS

A SRT code itself can not be displayed while only SRT status can be.

- Turn ignition switch ON and wait 20 seconds.
- SRT status is indicated as shown below.
 - When all SRT codes are set, MIL lights up continuously.

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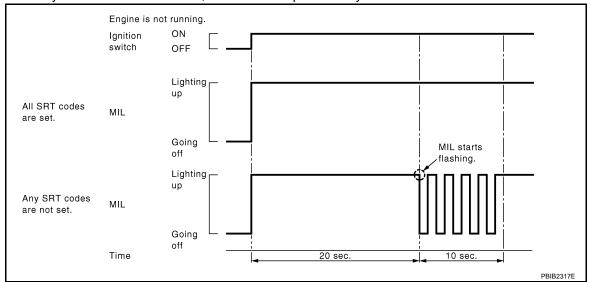
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• When any SRT codes are not set, MIL will flash periodically for 10 seconds.

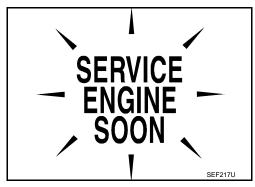


MALFUNCTION INDICATOR LAMP (MIL)

Description

The MIL is located on the instrument panel.

- The MIL will light up when the ignition switch is turned ON without the engine running. This is a bulb check.
 If the MIL does not light up, refer to MWI-22, "WARNING LAMPS/INDICATOR LAMPS: System Diagram".
- 2. When the engine is started, the MIL should go off. If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.



On Board Diagnostic System Function

The on board diagnostic system has the following three functions.

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< FUNCTION DIAGNOSIS >

[FOR MEXICO]

Diagnostic Test Mode	KEY and ENG. Status	Function	Explanation of Function
Mode I	Ignition switch in ON position Engine stopped	BULB CHECK	This function checks the MIL bulb for damage (blown, open circuit, etc.). If the MIL does not come on, check MIL circuit.
	Engine running	MALFUNCTION WARNING	This is a usual driving condition. When a malfunction is detected twice in two consecutive driving cycles (two trip detection logic), the MIL will light up to inform the driver that a malfunction has been detected. The following malfunctions will light up or blink the MIL in the 1st trip. • Misfire (Possible three way catalyst damage) • One trip detection diagnoses
Mode II	Ignition switch in ON position Engine stopped	SELF-DIAGNOSTIC RESULTS	This function allows DTCs and 1st trip DTCs to be read.

Diagnostic Test Mode I — Bulb Check

In this mode, the MIL on the instrument panel should stay ON. If it remains OFF, check the bulb. Refer to MWI-22, "WARNING LAMPS/INDICATOR LAMPS: System Diagram".

Diagnostic Test Mode I — Malfunction Warning

MIL	Condition		
ON	When the malfunction is detected.		
OFF	No malfunction.		

This DTC number is clarified in Diagnostic Test Mode II (SELF-DIAGNOSTIC RESULTS)

Diagnostic Test Mode II — Self-diagnostic Results

In this mode, the DTC and 1st trip DTC are indicated by the number of blinks of the MIL as shown below. The DTC and 1st trip DTC are displayed at the same time. If the MIL does not illuminate in diagnostic test mode I (Malfunction warning), all displayed items are 1st trip DTCs. If only one code is displayed when the MIL illuminates in diagnostic test mode II (SELF-DIAGNOSTIC RESULTS), it is a DTC; if two or more codes are displayed, they may be either DTCs or 1st trip DTCs. DTC No. is same as that of 1st trip DTC. These unidentified codes can be identified by using the CONSULT-III or GST. A DTC will be used as an example for how to read a code.

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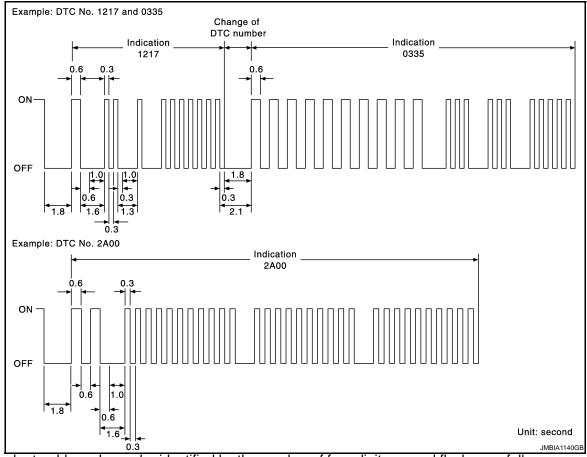
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A particular trouble code can be identified by the number of four-digit numeral flashes as follows.

Number	0	1	2	3	4	5	6	7	8	9	Α	В	С	D	Е	F
Flashes	10	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16

The length of time the 1,000th-digit numeral flashes on and off is 1.2 seconds consisting of an ON (0.6-second) - OFF (0.6-second) cycle.

The 100th-digit numeral and lower digit numerals consist of a 0.3-second ON and 0.3-second OFF cycle.

A change from one digit numeral to another occurs at an interval of 1.0-second OFF. In other words, the later numeral appears on the display 1.3 seconds after the former numeral has disappeared.

A change from one trouble code to another occurs at an interval of 1.8-second OFF.

In this way, all the detected malfunctions are classified by their DTC numbers. The DTC 0000 refers to no malfunction. (See <u>EC-1250, "DTC Index"</u>)

How to Switch Diagnostic Test Mode

NOTE:

- It is better to count the time accurately with a clock.
- It is impossible to switch the diagnostic mode when an accelerator pedal position sensor circuit has a malfunction.
- Always ECM returns to Diagnostic Test Mode I after ignition switch is turned OFF.

HOW TO SET DIAGNOSTIC TEST MODE II (SELF-DIAGNOSTIC RESULTS)

- Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 2. Repeat the following procedure quickly five times within 5 seconds.
- Fully depress the accelerator pedal.
- Fully release the accelerator pedal.
- 3. Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 10 seconds until the MIL starts blinking.

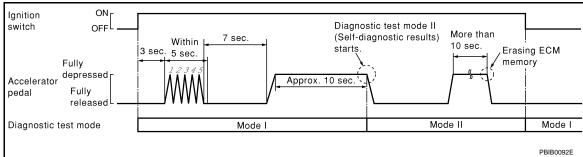
NOTE:

Do not release the accelerator pedal for 10 seconds if MIL may start blinking on the halfway of this 10 seconds. This blinking is displaying SRT status and is continued for another 10 seconds.

Fully release the accelerator pedal.
 ECM has entered to Diagnostic Test Mode II (Self-diagnostic results).

NOTE:

Wait until the same DTC (or 1st trip DTC) appears to confirm all DTCs certainly.



HOW TO ERASE DIAGNOSTIC TEST MODE II (SELF-DIAGNOSTIC RESULTS)

- Set ECM in Diagnostic Test Mode II (Self-diagnostic results). Refer to "How to Set Diagnostic Test Mode II (Self-diagnostic Results)".
- Fully depress the accelerator pedal and keep it for more than 10 seconds.The emission-related diagnostic information has been erased from the backup memory in the ECM.
- 3. Fully release the accelerator pedal, and confirm the DTC 0000 is displayed.

How to Erase Diagnostic Test Mode II (Self-diagnostic Results)

The DTC can be erased from the back up memory in the ECM by depressing accelerator pedal. Refer to "How to Erase Diagnostic Test Mode II (Self-diagnostic Results)".

- If the battery is disconnected, the DTC will be lost from the backup memory within 24 hours.
- Be careful not to erase the stored memory before starting trouble diagnoses.

OBD System Operation Chart

Relationship Between MIL, 1st Trip DTC, DTC and Detectable Items

- When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data are stored in the ECM memory.
- When the same malfunction is detected in two consecutive trips, the DTC and the freeze frame data are stored in the ECM memory, and the MIL will come on.
- The MIL will go off after the vehicle is driven 3 times (driving pattern B) with no malfunction. The drive is counted only when the recorded driving pattern is met (as stored in the ECM). If another malfunction occurs while counting, the counter will reset.
- The DTC and the freeze frame data will be stored until the vehicle is driven 40 times (driving pattern A) without the same malfunction recurring (except for Misfire and Fuel Injection System). For Misfire and Fuel Injection System, the DTC and freeze frame data will be stored until the vehicle is driven 80 times (driving pattern C) without the same malfunction recurring. The "TIME" in "SELF-DIAGNOSTIC RESULTS" mode of CONSULT-III will count the number of times the vehicle is driven.
- The 1st trip DTC is not displayed when the self-diagnosis results in OK for the 2nd trip.

Summary Chart

Items	Fuel Injection System	Misfire	Other
MIL (goes off)	3 (pattern B)	3 (pattern B)	3 (pattern B)
DTC, Freeze Frame Data (no display)	80 (pattern C)	80 (pattern C)	40 (pattern A)
1st Trip DTC (clear)	1 (pattern C), *1	1 (pattern C), *1	1 (pattern B)
1st Trip Freeze Frame Data (clear)	*1, *2	*1, *2	1 (pattern B)

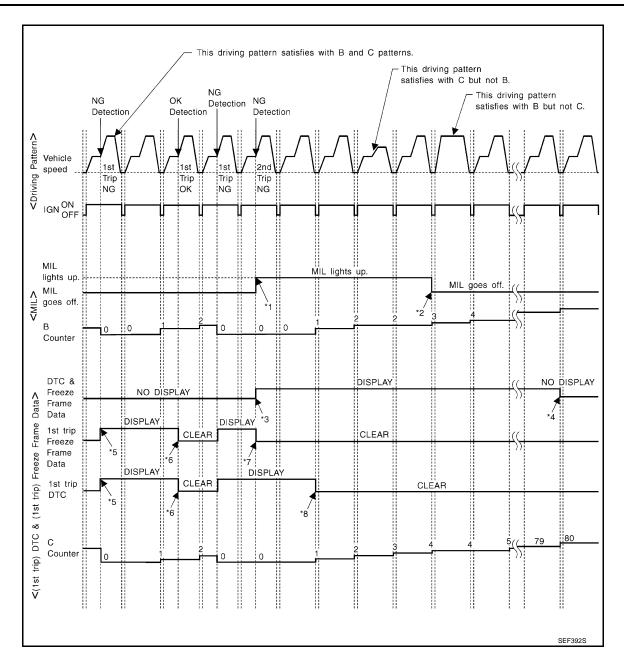
For details about patterns B and C under "Fuel Injection System" and "Misfire", see "EXPLANATION FOR DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM".

For details about patterns A and B under Other, see "EXPLANATION FOR DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM".

Relationship Between MIL, DTC, 1st Trip DTC and Driving Patterns for "Misfire <Exhaust Quality Deterioration>", "Fuel Injection System"

^{*1:} Clear timing is at the moment OK is detected.

^{*2:} Clear timing is when the same malfunction is detected in the 2nd trip.



- *1: When the same malfunction is detected in two consecutive trips, MIL will light up.
- *4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 80 times (pattern C) without the same malfunction. (The DTC and the freeze frame data still remain in ECM.)
- *7: When the same malfunction is detected in the 2nd trip, the 1st trip freeze frame data will be cleared.

- *2: MIL will go off after vehicle is driven 3 *3: When the same malfunction is detimes (pattern B) without any malfunctions.
- *5: When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.
- *8: 1st trip DTC will be cleared when vehicle is driven once (pattern C) without the same malfunction after DTC is stored in ECM.
- tected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.
- The 1st trip DTC and the 1st trip freeze frame data will be cleared at the moment OK is detected.

Explanation for Driving Patterns for "Misfire < Exhaust Quality Deterioration>", "Fuel Injection System" <Driving Pattern B>

Driving pattern B means the vehicle operation as follows:

All components and systems should be monitored at least once by the OBD system.

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- The B counter will be cleared when the malfunction is detected once regardless of the driving pattern.
- The B counter will be counted up when driving pattern B is satisfied without any malfunction.
- The MIL will go off when the B counter reaches 3. (*2 in "OBD SYSTEM OPERATION CHART")

<Driving Pattern C>

Driving pattern C means the vehicle operation as follows:

The following conditions should be satisfied at the same time:

Engine speed: (Engine speed in the freeze frame data) \pm 375 rpm

Calculated load value: (Calculated load value in the freeze frame data) \times (1±0.1) [%]

Engine coolant temperature (T) condition:

- When the freeze frame data shows lower than 70°C (158°F), T should be lower than 70°C (158°F).
- When the freeze frame data shows higher than or equal to 70°C (158°F), T should be higher than or equal to 70°C (158°F).

Example:

If the stored freeze frame data is as follows:

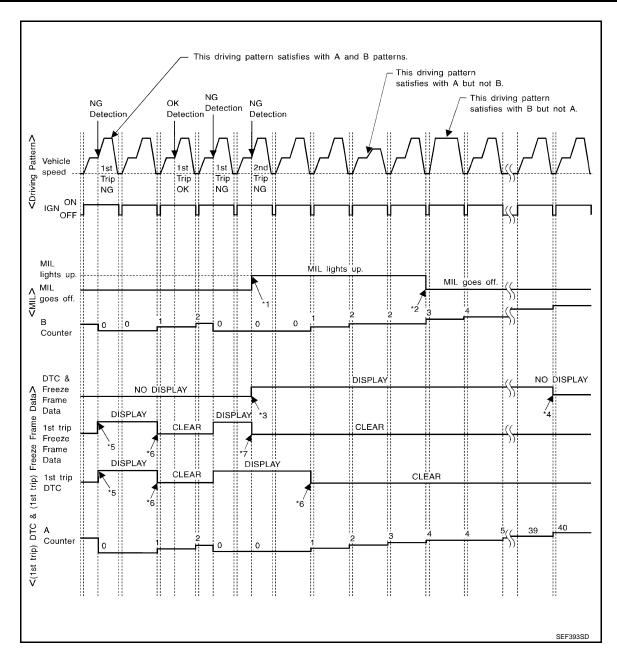
Engine speed: 850 rpm, Calculated load value: 30%, Engine coolant temperature: 80°C (176°F)

To be satisfied with driving pattern C, the vehicle should run under the following conditions:

Engine speed: 475 - 1,225 rpm, Calculated load value: 27 - 33%, Engine coolant temperature: more than 70°C (158°F)

- The C counter will be cleared when the malfunction is detected regardless of vehicle conditions above.
- The C counter will be counted up when vehicle conditions above is satisfied without the same malfunction.
- The DTC will not be displayed after C counter reaches 80.
- The 1st trip DTC will be cleared when C counter is counted once without the same malfunction after DTC is stored in ECM.

Relationship Between MIL, DTC, 1st Trip DTC and Driving Patterns Except For "Misfire <Exhaust Quality Deterioration>", "Fuel Injection System"



- *1: When the same malfunction is detected in two consecutive trips, MIL will light up.
- *4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 40 times (pattern A) without the same malfunction. (The DTC and the freeze frame data still remain in ECM.)
- *7: When the same malfunction is detected in the 2nd trip, the 1st trip freeze frame data will be cleared.

- *2: MIL will go off after vehicle is driven 3 *3: When the same malfunction is detimes (pattern B) without any malfunctions.
- *5: When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.
- tected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.
- *6: 1st trip DTC will be cleared after vehicle is driven once (pattern B) without the same malfunction.

Explanation for Driving Patterns Except for "Misfire < Exhaust Quality Deterioration>", "Fuel Injection System"

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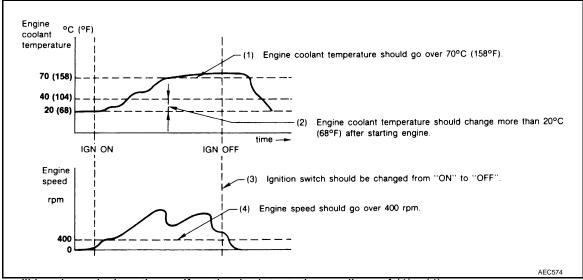
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<Driving Pattern A>



- The A counter will be cleared when the malfunction is detected regardless of (1) (4).
- The A counter will be counted up when (1) (4) are satisfied without the same malfunction.
- The DTC will not be displayed after the A counter reaches 40.

<Driving Pattern B>

Driving pattern B means the vehicle operation as follows:

All components and systems should be monitored at least once by the OBD system.

- The B counter will be cleared when the malfunction is detected once regardless of the driving pattern.
- The B counter will be counted up when driving pattern B is satisfied without any malfunctions.
- The MIL will go off when the B counter reaches 3 (*2 in OBD SYSTEM OPERATION CHART).

CONSULT-III Function

INFOID:0000000002994377

FUNCTION

Diagnostic test mode	Function
Work Support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on the CONSULT-III unit.
Self Diagnostic Result	Self-diagnostic results such as 1st trip DTC, DTCs and 1st trip freeze frame data or freeze frame data can be read and erased quickly.*
Data Monitor	Input/Output data in the ECM can be read.
Active Test	Diagnostic Test Mode in which CONSULT-III drives some actuators apart from the ECMs and also shifts some parameters in a specified range.
DTC & SRT Confirmation	The status of system monitoring tests and the self-diagnosis status/result can be confirmed.
Function Test	This mode is used to inform customers when their vehicle condition requires periodic maintenance.
ECU Part Number	ECM part number can be read.

^{*:} The following emission-related diagnostic information is cleared when the ECM memory is erased.

- · Diagnostic trouble codes
- · 1st trip diagnostic trouble codes
- Freeze frame data
- 1st trip freeze frame data
- · System readiness test (SRT) codes
- · Test values

ENGINE CONTROL COMPONENT PARTS/CONTROL SYSTEMS APPLICATION

				DIAGNOS	STIC TEST	MODE		
			Self Diagr	nostic Result			DTC & SR mati	
	Item	Work Support	DTC*1	FREEZE FRAME DATA*2	Data Monitor	Active Test	SRT STA- TUS	DTC WORK SUP- PORT
	Crankshaft position sensor (POS)		×	×	×			
	Camshaft position sensor (PHASE)		×	×	×			
	Mass air flow sensor		×		×			
	Engine coolant temperature sensor		×	×	×	×		
	Air fuel ratio (A/F) sensor 1		×		×		×	×
	Heated oxygen sensor 2		×		×		×	×
INPUT	Vehicle speed sensor		×	×	×			
	Accelerator pedal position sensor		×		×			
	Throttle position sensor		×	×	×			
	Intake air temperature sensor			×	×			
INPUT	Knock sensor		×					
Ż	Refrigerant pressure sensor				×			
	Closed throttle position switch (accelerator pedal position sensor signal)				×			
	Air conditioner switch				×			
	Park/neutral position (PNP) switch		×		×			
	Stop lamp switch		×		×			
	Battery voltage				×			
	Load signal				×			
	Primary speed sensor		×		×			
	ASCD steering switch		×		×			
	ASCD brake switch		×		×			
	Fuel injector				×	×		
	Power transistor (Ignition timing)				×	×		
	Throttle control motor relay		×		×			
	Throttle control motor		×					
	EVAP canister purge volume control solenoid valve		×		×	×		×
Ď	Air conditioner relay				×			
OUTPUT	Fuel pump relay	×			×	×		
0	Cooling fan relay		×		×	×		
	Air fuel ratio (A/F) sensor 1 heater		×		×		×* ³	
	Heated oxygen sensor 2 heater		×		×		×* ³	
OUTPUT	Intake valve timing control solenoid valve		×		×	×	^	
	Calculated load value			×	×			

X: Applicable

^{*1:} This item includes 1st trip DTCs.

^{*2:} This mode includes 1st trip freeze frame data or freeze frame data. The items appear on CONSULT-III screen in freeze frame data mode only if a 1st trip DTC or DTC is detected. For details, refer to EC-983, "Diagnosis Description".

^{*3:} Always "CMPLT" is displayed.

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

INSPECTION PROCEDURE

Refer to CONSULT-III Operators Manual.

WORK SUPPORT MODE

Work Item

WORK ITEM	CONDITION	USAGE
FUEL PRESSURE RELEASE	FUEL PUMP WILL STOP BY TOUCHING "START" DUR- ING IDLING. CRANK A FEW TIMES AFTER ENGINE STALLS.	When releasing fuel pressure from fuel line
IDLE AIR VOL LEARN	THE IDLE AIR VOLUME THAT KEEPS THE ENGINE WITHIN THE SPECIFIED RANGE IS MEMORIZED IN ECM.	When learning the idle air volume
SELF-LEARNING CONT	THE COEFFICIENT OF SELF-LEARNING CONTROL MIXTURE RATIO RETURNS TO THE ORIGINAL COEF- FICIENT.	When clearing mixture ratio self- learning value
VIN REGISTRATION	IN THIS MODE, VIN IS REGISTERED IN ECM.	When registering VIN in ECM
TARGET IDLE RPM ADJ*	IDLE CONDITION	When setting target idle speed
TARGET IGN TIM ADJ*	IDLE CONDITION	When adjusting target ignition timing

^{*:} This function is not necessary in the usual service procedure.

SELF-DIAGNOSTIC RESULT MODE

Self Diagnostic Item

Regarding items of DTC and 1st trip DTC, refer to EC-1250. "DTC Index".)

Freeze Frame Data and 1st Trip Freeze Frame Data

Freeze frame data item*	Description
DIAG TROUBLE CODE [PXXXX]	The engine control component part/control system has a trouble code, it is displayed as PXXXX. (Refer to EC-1250, "DTC_Index".)
FUEL SYS-B1	 "Fuel injection system status" at the moment a malfunction is detected is displayed. One mode in the following is displayed. Mode2: Open loop due to detected system malfunction Mode3: Open loop due to driving conditions (power enrichment, deceleration enleanment) Mode4: Closed loop - using oxygen sensor(s) as feedback for fuel control Mode5: Open loop - has not yet satisfied condition to go to closed loop
CAL/LD VALUE [%]	The calculated load value at the moment a malfunction is detected is displayed.
COOLANT TEMP [°C] or [°F]	The engine coolant temperature at the moment a malfunction is detected is displayed.
L-FUEL TRM-B1 [%]	 "Long-term fuel trim" at the moment a malfunction is detected is displayed. The long-term fuel trim indicates much more gradual feedback compensation to the base fuel schedule than short-term fuel trim.
S-FUEL TRM-B1 [%]	 "Short-term fuel trim" at the moment a malfunction is detected is displayed. The short-term fuel trim indicates dynamic or instantaneous feedback compensation to the base fuel schedule.
ENGINE SPEED [rpm]	The engine speed at the moment a malfunction is detected is displayed.
VEHICL SPEED [km/h] or [mph]	The vehicle speed at the moment a malfunction is detected is displayed.
ABSOL TH-P/S [%]	The throttle valve opening angle at the moment a malfunction is detected is displayed.
B/FUEL SCHDL [msec]	The base fuel schedule at the moment a malfunction is detected is displayed.
INT/A TEMP SE [°C] or [°F]	The intake air temperature at the moment a malfunction is detected is displayed.

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

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Freeze frame data item*	Description	
FUEL SYS-B2		
L-FUEL TRM-B2 [%]		-
S-FUEL TRM-B2 [%]	Always a certain value is displayed. These items are not efficient for S35 models.	
INT MANI PRES [kPa]		
FTFMCH1		

^{*:} The items are the same as those of 1st trip freeze frame data.

DATA MONITOR MODE

Monitored Item

×: Applicable

Monitored item	Unit	Description	Remarks
ENG SPEED	rpm	Indicates the engine speed computed from the signal of the crankshaft position sensor (POS) and camshaft position sensor (PHASE).	 Accuracy becomes poor if engine speed drops below the idle rpm. If the signal is interrupted while the engine is running, an abnormal value may be indicated.
MAS A/F SE-B1	V	The signal voltage of the mass air flow sensor is displayed.	 When the engine is stopped, a certain value is indicated. When engine is running specification range is indicated in "SPEC".
B/FUEL SCHDL	msec	"Base fuel schedule" indicates the fuel injection pulse width programmed into ECM, prior to any learned on board correction.	When engine is running specification range is indicated in "SPEC".
A/F ALPHA-B1	%	The mean value of the air-fuel ratio feedback cor- rection factor per cycle is indicated.	 When the engine is stopped, a certain value is indicated. When engine is running specification range is indicated in "SPEC". This data also includes the data for the air-fuel ratio learning control.
COOLAN TEMP/S	°C or °F	The engine coolant temperature (determined by the signal voltage of the engine coolant tempera- ture sensor) is displayed.	When the engine coolant temperature sensor is open or short-circuited, ECM enters fail-safe mode. The en- gine coolant temperature determined by the ECM is displayed.
A/F SEN1 (B1)	V	The A/F signal computed from the input signal of the air fuel ratio (A/F) sensor 1 is displayed.	
HO2S2 (B1)	V	The signal voltage of the heated oxygen sensor 2 is displayed.	
HO2S2 MNTR(B1)	RICH/LEAN	Display of heated oxygen sensor 2 signal: RICH: means the amount of oxygen after three way catalyst is relatively small. LEAN: means the amount of oxygen after three way catalyst is relatively large.	When the engine is stopped, a certain value is indicated.
VHCL SPEED SE	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from combination meter is dis- played.	
BATTERY VOLT	V	The power supply voltage of ECM is displayed.	
ACCEL SEN 1 ACCEL SEN 2	V	The accelerator pedal position sensor signal voltage is displayed.	ACCEL SEN 2 signal is converted by ECM internally. Thus, it differs from ECM terminal voltage signal.
TP SEN 1-B1 TP SEN 2-B1	- V	The throttle position sensor signal voltage is displayed.	TP SEN 2-B1 signal is converted by ECM internally. Thus, it differs from ECM terminal voltage signal.

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

Monitored item	Unit	Description	Remarks
INT/A TEMP SE	°C or °F	The intake air temperature (determined by the signal voltage of the intake air temperature sen- sor) is indicated.	
START SIGNAL	ON/OFF	 Indicates start signal status [ON/OFF] computed by the ECM according to the signals of engine speed and battery voltage. 	 After starting the engine, [OFF] is dis- played regardless of the starter sig- nal.
CLSD THL POS	ON/OFF	 Indicates idle position [ON/OFF] computed by ECM according to the accelerator pedal position sensor signal. 	
AIR COND SIG	ON/OFF	Indicates [ON/OFF] condition of the air conditioner switch as determined by the air conditioner signal.	
P/N POSI SW	ON/OFF	Indicates [ON/OFF] condition from the park/neutral position (PNP) switch signal.	
PW/ST SIGNAL	ON/OFF	[ON/OFF] condition of the power steering system (determined by the signal sent from EPS control unit) is indicated.	
LOAD SIGNAL	ON/OFF	 Indicates [ON/OFF] condition from the electrical load signal. ON: Rear window defogger switch is ON and/or lighting switch is in 2nd position. OFF: Both rear window defogger switch and light- ing switch are OFF. 	
IGNITION SW	ON/OFF	Indicates [ON/OFF] condition from ignition switch signal.	
HEATER FAN SW	ON/OFF	Indicates [ON/OFF] condition from the heater fan switch signal.	
BRAKE SW	ON/OFF	Indicates [ON/OFF] condition from the stop lamp switch signal.	
INJ PULSE-B1	msec	Indicates the actual fuel injection pulse width compensated by ECM according to the input sig- nals.	When the engine is stopped, a certain computed value is indicated.
IGN TIMING	BTDC	Indicates the ignition timing computed by ECM according to the input signals.	When the engine is stopped, a certain value is indicated.
CAL/LD VALUE	%	"Calculated load value" indicates the value of the current air flow divided by peak air flow.	
MASS AIRFLOW	g⋅m/s	Indicates the mass air flow computed by ECM according to the signal voltage of the mass air flow sensor.	
PURG VOL C/V	%	 Indicates the EVAP canister purge volume control solenoid valve control value computed by the ECM according to the input signals. The opening becomes larger as the value increases. 	
INT/V TIM (B1)	°CA	Indicates [°CA] of intake camshaft advance angle.	
INT/V SOL(B1)	%	 The control value of the intake valve timing control solenoid valve (determined by ECM according to the input signals) is indicated. The advance angle becomes larger as the value increases. 	
AIR COND RLY	ON/OFF	The air conditioner relay control condition (determined by ECM according to the input signals) is indicated.	
FUEL PUMP RLY	ON/OFF	Indicates the fuel pump relay control condition determined by ECM according to the input sig- nals.	

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

Monitored item	Unit	Description	Remarks
THRTL RELAY	ON/OFF	Indicates the throttle control motor relay control condition determined by the ECM according to the input signals.	
COOLING FAN	HI/LOW/OFF	Indicates the condition of the cooling fan (determined by ECM according to the input signals). HI: High speed operation LOW: Low speed operation OFF: Stop	
HO2S2 HTR (B1)	ON/OFF	Indicates [ON/OFF] condition of heated oxygen sensor 2 heater determined by ECM according to the input signals.	
I/P PULLY SPD	rpm	Indicates the engine speed computed from the turbine revolution sensor signal.	
VEHICLE SPEED	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from TCM is displayed.	
IDL A/V LEARN	YET/CMPLT	Display the condition of Idle Air Volume Learning YET: Idle air volume learning has not been per- formed yet. CMPLT: Idle air volume learning has already been performed successfully.	
TRVL AFTER MIL	km or mile	Distance traveled while MIL is activated.	
A/F S1 HTR(B1)	%	 Air fuel ratio (A/F) sensor 1 heater control value computed by ECM according to the input signals. The current flow to the heater becomes larger as the value increases. 	
AC PRESS SEN	V	The signal voltage from the refrigerant pressure sensor is displayed.	
VHCL SPEED SE	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from combination meter is dis- played.	
SET VHCL SPD	km/h or mph	The preset vehicle speed is displayed.	
MAIN SW	ON/OFF	Indicates [ON/OFF] condition from MAIN switch signal.	
CANCEL SW	ON/OFF	Indicates [ON/OFF] condition from CANCEL switch signal.	
RESUME/ACC SW	ON/OFF	Indicates [ON/OFF] condition from RESUME/AC- CELERATE switch signal.	
SET SW	ON/OFF	Indicates [ON/OFF] condition from SET/COAST switch signal.	
BRAKE SW1	ON/OFF	Indicates [ON/OFF] condition from ASCD brake switch signal.	
BRAKE SW2	ON/OFF	Indicates [ON/OFF] condition of stop lamp switch signal.	
VHCL SPD CUT	NON/CUT	Indicates the vehicle cruise condition. NON: Vehicle speed is maintained at the ASCD set speed. CUT: Vehicle speed decreased to excessively low compared with the ASCD set speed, and ASCD operation is cut off.	
LO SPEED CUT	NON/CUT	Indicates the vehicle cruise condition. NON: Vehicle speed is maintained at the ASCD set speed. CUT: Vehicle speed decreased to excessively low, and ASCD operation is cut off.	
AT OD MONITOR	ON/OFF	Indicates [ON/OFF] condition of A/T O/D according to the input signal from the TCM.	

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

Monitored item	Unit	Description	Remarks
AT OD CANCEL	ON/OFF	Indicates [ON/OFF] condition of A/T O/D cancel request signal.	
CRUISE LAMP	ON/OFF	 Indicates [ON/OFF] condition of CRUISE lamp determined by the ECM according to the input signals. 	
SET LAMP	ON/OFF	Indicates [ON/OFF] condition of SET lamp determined by the ECM according to the input signals.	
A/F ADJ-B1 — twee		Indicates the correction of factor stored in ECM. The factor is calculated from the difference between the target air-fuel ratio stored in ECM and the air-fuel ratio calculated from A/F sensor 1 signal.	

NOTE:

Any monitored item that does not match the vehicle being diagnosed is deleted from the display automatically.

ACTIVE TEST MODE

Test Item

TEST ITEM	CONDITION	JUDGMENT	CHECK ITEM (REMEDY)
FUEL INJECTION	Engine: Return to the original trouble condition Change the amount of fuel injection using CONSULT-III.	If trouble symptom disappears, see CHECK ITEM.	 Harness and connectors Fuel injector Air fuel ratio (A/F) sensor 1
IGNITION TIMING	Engine: Return to the original trouble condition Timing light: Set Retard the ignition timing using CONSULT-III.	If trouble symptom disappears, see CHECK ITEM.	Perform Idle Air Volume Learning.
POWER BALANCE	 Engine: After warming up, idle the engine. A/C switch OFF Shift lever: P or N Cut off each fuel injector signal one at a time using CONSULT-III. 	Engine runs rough or dies.	 Harness and connectors Compression Fuel injector Power transistor Spark plug Ignition coil
COOLING FAN*	Ignition switch: ON Turn the cooling fan "LOW", "HI" and "OFF" using CONSULT-III.	Cooling fan moves and stops.	Harness and connectors IPDM E/R (Cooling fan relay) Cooling fan motor
ENG COOLANT TEMP	Engine: Return to the original trouble condition Change the engine coolant temperature using CONSULT-III.	If trouble symptom disappears, see CHECK ITEM.	Harness and connectors Engine coolant temperature sensor Fuel injector
FUEL PUMP RELAY	Ignition switch: ON (Engine stopped) Turn the fuel pump relay "ON" and "OFF" using CONSULT-III and listen to operating sound.	Fuel pump relay makes the operating sound.	Harness and connectors Fuel pump relay
PURG VOL CONT/V	 Engine: After warming up, run engine at 1,500 rpm. Change the EVAP canister purge volume control solenoid valve opening percent using CONSULT-III. 	Engine speed changes according to the opening percent.	Harness and connectors Solenoid valve
V/T ASSIGN ANGLE	Engine: Return to the original trouble condition Change intake valve timing using CONSULT-III.	If trouble symptom disappears, see CHECK ITEM.	Harness and connectors Intake valve timing control solenoid valve

^{*:} Leaving cooling fan OFF with CONSULT-III while engine is running may cause the engine to overheat.

< FUNCTION DIAGNOSIS >

[FOR MEXICO]

DTC & SRT CONFIRMATION MODE

SRT STATUS Mode

For details, refer to EC-983, "Diagnosis Description".

SRT WORK SUPPORT Mode

This mode enables a technician to drive a vehicle to set the SRT while monitoring the SRT status.

DTC WORK SUPPORT Mode

Test mode	Test item	Corresponding DTC No.	Reference page
A/F SEN1	A/F SEN1(B1) P1278/P1279	P0133	EC-1069
	A/F SEN1(B1) P1276	P0130	EC-1059
HO2S2	HO2S2(B1) P1146	P0138	EC-1080
	HO2S2(B1) P1147	P0137	EC-1074
	HO2S2(B1) P0139	P0139	EC-1087

^{*:} DTC P1442 and P1456 does not apply to S35 models but appears in DTC Work Support Mode screens.

Diagnosis Tool Function

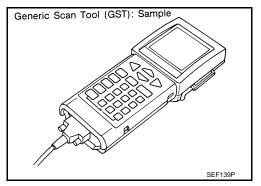
INFOID:0000000002994872

DESCRIPTION

Generic Scan Tool (OBD II scan tool) complying with ISO 15031-4 has 8 different functions explained below.

ISO 15765-4 is used as the protocol.

The name "GST" or "Generic Scan Tool" is used in this service manual.



FUNCTION

Diagnostic Service		Function	
Service \$01	READINESS TESTS	This diagnostic service gains access to current emission-related data values, including analog inputs and outputs, digital inputs and outputs, and system status information.	
Service \$02	(FREEZE DATA)	This diagnostic service gains access to emission-related data value which were stored by ECM during the freeze frame. For details, refer to EC-983 , "Diagnosis Description".	
Service \$03	DTCs	This diagnostic service gains access to emission-related power train trouble codes which were stored by ECM.	
Service \$04	CLEAR DIAG INFO	This diagnostic service can clear all emission-related diagnostic information. This includes: • Clear number of diagnostic trouble codes (Service \$01) • Clear diagnostic trouble codes (Service \$03) • Clear trouble code for freeze frame data (Service \$01) • Clear freeze frame data (Service \$02) • Reset status of system monitoring test (Service \$01) • Clear on board monitoring test results (Service \$06 and \$07)	
Service \$06	(ON BOARD TESTS)	This diagnostic service accesses the results of on board diagnostic monitoring tests of specific components/systems that are not continuously monitored.	
Service \$07	(ON BOARD TESTS)	This diagnostic service enables the off board test drive to obtain test results for emission-related powertrain components/systems that are continuously monitored during normal driving conditions.	
Service \$08	_	This diagnostic service is not applicable on this vehicle.	
Service \$09	(CALIBRATION ID)	This diagnostic service enables the off-board test device to request specific vehicle information such as Vehicle Identification Number (VIN) and Calibration IDs.	

Revision: 2008 January EC-1003 2008 Rogue

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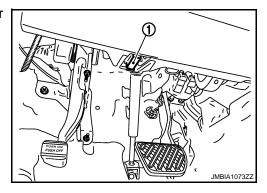
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[FOR MEXICO]

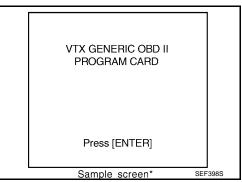
INSPECTION PROCEDURE

- 1. Turn ignition switch OFF.
- 2. Connect "GST" to data link connector (1), which is located under LH dash panel.
- 3. Turn ignition switch ON.



4. Enter the program according to instruction on the screen or in the operation manual.

(*: Regarding GST screens in this section, sample screens are shown.)



Perform each diagnostic mode according to each service procedure.

For further information, see the GST Operation Manual of the tool maker.

OBD II FUNCTIONS

F0: DATA LIST

F1: FREEZE DATA

F2: DTCs

F3: SNAPSHOT

F4: CLEAR DIAG INFO

F5: O2 TEST RESULTS

F6: READINESS TESTS

F7: ON BOARD TESTS

F8: EXPAND DIAG PROT

F9: UNIT CONVERSION

Sample screen* SEF416S

TROUBLE DIAGNOSIS - SPECIFICATION VALUE

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

COMPONENT DIAGNOSIS

TROUBLE DIAGNOSIS - SPECIFICATION VALUE

Description INFOID:0000000002994379

The specification (SP) value indicates the tolerance of the value that is displayed in "SPEC" of "DATA MONI-TOR" mode of CONSULT-III during normal operation of the Engine Control System. When the value in "SPEC" of "DATA MONITOR" mode is within the SP value, the Engine Control System is confirmed OK. When the value in "SPEC" of "DATA MONITOR" mode is NOT within the SP value, the Engine Control System may have one or more malfunctions.

The SP value is used to detect malfunctions that may affect the Engine Control System, but will not light the MIL.

The SP value will be displayed for the following three items:

- B/FUEL SCHDL (The fuel injection pulse width programmed into ECM prior to any learned on board correc-
- A/F ALPHA-B1 (The mean value of air-fuel ratio feedback correction factor per cycle)
- MAS A/F SE-B1 (The signal voltage of the mass air flow sensor)

Component Function Check

1.start

Make sure that all of the following conditions are satisfied.

- Vehicle driven distance: More than 5,000 km (3,107 miles)
- Barometric pressure: 98.3 104.3 kPa (1.003 1.064 kg/cm², 14.25 15.12 psi)
- Atmospheric temperature: 20 30°C (68 86°F)
- Engine coolant temperature: 75 95°C (167 203°F)
- Engine speed: Idle
- Transmission: Warmed-up
- After the engine is warmed up to normal operating temperature, drive vehicle until "FLUID TEMP SE" (CVT fluid temperature sensor signal) indicates more than 60°C (140°F).
- Electrical load: Not applied
- Rear window defogger switch, air conditioner switch, lighting switch are OFF. Steering wheel is straight ahead.

>> GO TO 2.

2.PERFORM "SPEC" OF "DATA MONITOR" MODE

(P)With CONSULT-III

NOTE:

Perform "SPEC" in "DATA MONITOR" mode in maximum scale display.

- 1. Perform EC-925, "BASIC INSPECTION: Special Repair Requirement".
- Select "B/FUEL SCHDL", "A/F ALPHA-B1" and "MAS A/F SE-B1" in "SPEC" of "DATA MONITOR" mode with CONSULT-III.
- 3. Make sure that monitor items are within the SP value.

Is the inspection result normal?

>> END YES

>> Go to EC-1006, "Diagnosis Procedure". NO

EC-1005 Revision: 2008 January 2008 Rogue

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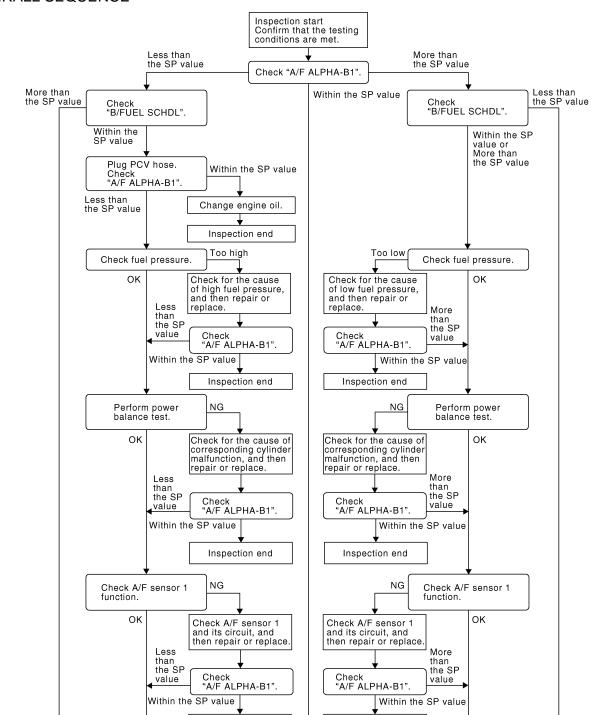
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Diagnosis Procedure

OVERALL SEQUENCE



Inspection end

Disconnect and reconnect ECM harness connector.

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Inspection end

Disconnect and reconnect

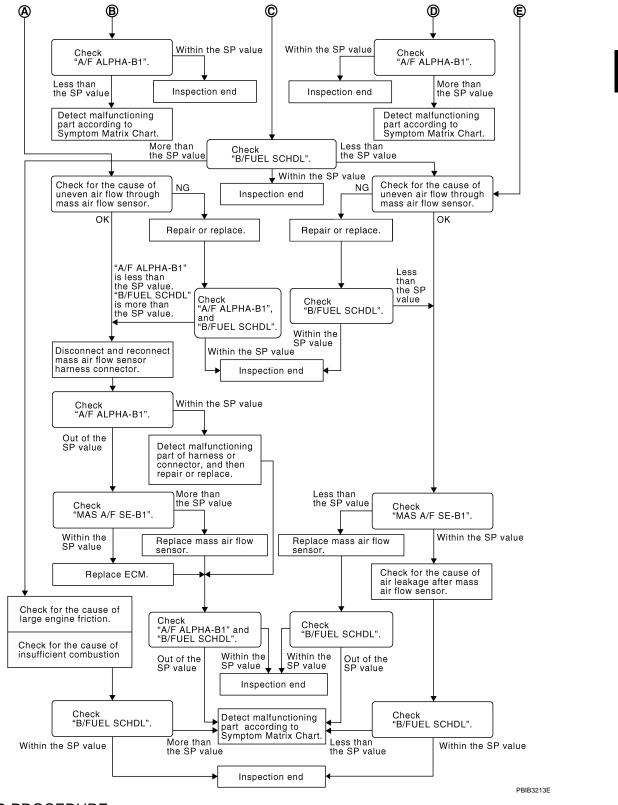
ECM harness connector.

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DETAILED PROCEDURE

1.CHECK "A/F ALPHA-B1"

(E)With CONSULT-III

- Start engine.
- Confirm that the testing conditions are met. Refer to <u>EC-1005</u>, "Component Function Check".
- 3. Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the each indication is within the SP value.

TROUBLE DIAGNOSIS - SPECIFICATION VALUE

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

NOTE:

Check "A/F ALPHA-B1" for approximately 1 minute because they may fluctuate. It is NG if the indication is out of the SP value even a little.

Is the measurement value within the SP value?

YES >> GO TO 17.

NO-1 >> Less than the SP value: GO TO 2.

NO-2 >> More than the SP value: GO TO 3.

2.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 4.

NO >> More than the SP value: GO TO 19.

3.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 6.

NO-1 >> More than the SP value: GO TO 6.

NO-2 >> Less than the SP value: GO TO 25.

4.CHECK "A/F ALPHA-B1"

- 1. Stop the engine.
- 2. Disconnect PCV hose, and then plug it.
- 3. Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 5.

NO >> GO TO 6.

5. CHANGE ENGINE OIL

- 1. Stop the engine.
- Change engine oil.

NOTE:

This symptom may occur when a large amount of gasoline is mixed with engine oil because of driving conditions (such as when engine oil temperature does not rise enough since a journey distance is too short during winter). The symptom will not be detected after changing engine oil or changing driving condition.

>> INSPECTION END

6. CHECK FUEL PRESSURE

Check fuel pressure. (Refer to EC-1272, "Inspection".)

Is the inspection result normal?

YES >> GO TO 9.

NO-1 >> Fuel pressure is too high: Replace "fuel filter and fuel pump assembly" and then GO TO 8.

NO-2 >> Fuel pressure is too low: GO TO 7.

.DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging

Is the inspection result normal?

YES >> Replace "fuel filter and fuel pump assembly" and then GO TO 8.

NO >> Repair or replace and then GO TO 8.

$oldsymbol{8}.$ CHECK "A/F ALPHA-B1"

TROUBLE DIAGNOSIS - SPECIFICATION VALUE	
< COMPONENT DIAGNOSIS >	FOR MEXICO]
 Start engine. Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the interest the SP value. 	dication is within A
Is the measurement value within the SP value?	
YES >> INSPECTION END NO >> GO TO 9.	EC
9. PERFORM POWER BALANCE TEST	
 Perform "POWER BALANCE" in "ACTIVE TEST" mode. Make sure that the each cylinder produces a momentary engine speed drop. 	C
Is the inspection result normal?	D
YES >> GO TO 12. NO >> GO TO 10.	D
10. DETECT MALFUNCTIONING PART	E
Check the following.	
 Ignition coil and its circuit (Refer to <u>EC-1215</u>, "<u>Component Function Check</u>".) Fuel injector and its circuit (Refer to <u>EC-1209</u>, "<u>Component Function Check</u>".) Intake air leakage Low compression pressure (Refer to <u>EM-23</u>, "<u>Inspection</u>".) 	F
Is the inspection result normal?	
YES >> Replace fuel injector and then GO TO 11.	G
NO >> Repair or replace malfunctioning part and then GO TO 11. 11.CHECK "A/F ALPHA-B1"	
	H
 Start engine. Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the interest the SP value. 	dication is within
Is the measurement value within the SP value?	
YES >> INSPECTION END NO >> GO TO 12.	J
12. CHECK A/F SENSOR 1 FUNCTION	J
Perform all DTC CONFIRMATION PROCEDURE related with A/F sensor 1.	
• For DTC P0130, refer to EC-1059, "DTC Logic".	K
 For DTC P0131, refer to <u>EC-1063, "DTC Logic"</u>. For DTC P0132, refer to <u>EC-1066, "DTC Logic"</u>. 	
• For DTC P0133, refer to EC-1069, "DTC Logic".	L
• For DTC P2A00, refer to <u>EC-1193, "DTC Logic"</u> . Is any DTC detected?	
YES >> GO TO 15.	M
NO >> GO TO 13.	
13.check a/f sensor 1 circuit	N
Perform DIAGNOSTIC PROCEDURE according to corresponding DTC.	IV
>> GO TO 14.	0
14.CHECK "A/F ALPHA-B1"	O
1 Start engine	

 Start engine.
 Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the each indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> GO TO 15.

15. DISCONNECT AND RECONNECT ECM HARNESS CONNECTOR

Stop the engine.

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TROUBLE DIAGNOSIS - SPECIFICATION VALUE

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

2. Disconnect ECM harness connector. Check pin terminal and connector for damage, and then reconnect it.

>> GO TO 16.

16. CHECK "A/F ALPHA-B1"

Start engine.

Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Detect malfunctioning part according to EC-1261, "Symptom Table".

17. CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO-1 >> More than the SP value: GO TO 18.

NO-2 >> Less than the SP value: GO TO 25.

18. DETECT MALFUNCTIONING PART

- 1. Check for the cause of large engine friction. Refer to the following.
- Engine oil level is too high
- Engine oil viscosity
- Belt tension of power steering, alternator, A/C compressor, etc. is excessive
- Noise from engine
- Noise from transmission, etc.
- 2. Check for the cause of insufficient combustion. Refer to the following.
- Valve clearance malfunction
- Intake valve timing control function malfunction
- Camshaft sprocket installation malfunction, etc.

>> Repair or replace malfunctioning part, and then GO TO 30.

19. CHECK INTAKE SYSTEM

Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.

- Crushed air ducts
- · Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system

Is the inspection result normal?

YES >> GO TO 21.

NO >> Repair or replace malfunctioning part, and then GO TO 20.

20. CHECK "A/F ALPHA-B1", AND "B/FUEL SCHDL"

Select "A/F ALPHA-B1" and "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the each indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> "B/FUEL SCHDL" is more, "A/F ALPHA-B1" is less than the SP value: GO TO 21.

21. DISCONNECT AND RECONNECT MASS AIR FLOW SENSOR HARNESS CONNECTOR

- 1. Stop the engine.
- 2. Disconnect mass air flow sensor harness connector. Check pin terminal and connector for damage and then reconnect it again.

>> GO TO 22.

TROUBLE DIAGNOSIS - SPECIFICATION VALUE

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22.CHECK "A/F ALPHA-B1"

Start engine.

Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

>> Detect malfunctioning part of mass air flow sensor circuit and repair it. Refer to EC-1031, "DTC Logic". Then GO TO 29.

NO >> GO TO 23.

23.CHECK "MAS A/F SE-B1"

Select "MAS A/F SE-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 24.

NO >> More than the SP value: Replace mass air flow sensor, and then GO TO 29.

24.replace ecm

Replace ECM.

2. Go to EC-928, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> GO TO 29.

25. CHECK INTAKE SYSTEM

Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.

Crushed air ducts

- Malfunctioning seal of air cleaner element
- · Uneven dirt of air cleaner element
- · Improper specification of intake air system

Is the inspection result normal?

YES >> GO TO 27.

NO >> Repair or replace malfunctioning part, and then GO TO 26.

26.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Less than the SP value: GO TO 27.

27.CHECK "MAS A/F SE-B1"

Select "MAS A/F SE-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> GO TO 28.

NO >> Less than the SP value: Replace mass air flow sensor, and then GO TO 30.

28. CHECK INTAKE SYSTEM

Check for the cause of air leak after the mass air flow sensor. Refer to the following.

- Disconnection, looseness, and cracks in air duct
- Looseness of oil filler cap
- · Disconnection of oil level gauge
- Open stuck, breakage, hose disconnection, or cracks of PCV valve
- Disconnection or cracks of EVAP purge hose, open stuck of EVAP canister purge volume control solenoid
- Malfunctioning seal of rocker cover gasket
- Disconnection, looseness, or cracks of hoses, such as vacuum hose, connecting to intake air system parts

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· Malfunctioning seal of intake air system, etc.

>> GO TO 30.

29. CHECK "A/F ALPHA-B1" AND "B/FUEL SCHDL"

Select "A/F ALPHA-B1" and "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Detect malfunctioning part according to EC-1261, "Symptom Table".

30.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and then make sure that the indication is within the SP value.

Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Detect malfunctioning part according to EC-1261, "Symptom Table".

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000002994382

1.INSPECTION START

Start engine.

Is engine running?

YES >> GO TO 8.

NO >> GO TO 2.

2. CHECK ECM POWER SUPPLY CIRCUIT-I

- Turn ignition switch OFF and then ON.
- Check the voltage between ECM harness connector and ground.

ECM		Ground	Voltage
Connector	Terminal	Oround	voltage
E16	93	Ground	Battery voltage

Is the inspection result normal?

>> GO TO 4. YES

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R harness connector E14
- 15A fuse (No. 64)
- · Harness for open or short between ECM and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK GROUND CONNECTION-I

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace ground connection.

${f 5}$.CHECK ECM GROUND CIRCUIT FOR OPEN AND SHORT-I

- Disconnect ECM harness connectors.
- Check the continuity between ECM harness connector and ground.

E	ECM Ground		Continuity
Connector	Terminal	Giodila	Continuity
F7	12		
1 7	16		
	107	Ground	Existed
E16	108		LXISIEU
LIO	111		
	112		

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 7.

>> GO TO 6. NO

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[FOR MEXICO]

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F121, E7
- Harness for open or short between ECM and ground

>> Repair open circuit or short to power in harness or connectors.

7.CHECK ECM POWER SUPPLY CIRCUIT-II

- 1. Reconnect ECM harness connectors.
- 2. Turn ignition switch ON.
- 3. Check the voltage between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Voltage
Connector	Terminal	Oround	voltage
E15	47	Ground	Battery voltage

Is the inspection result normal?

YES >> Go to EC-1215, "Diagnosis Procedure".

NO >> GO TO 8.

8. CHECK ECM POWER SUPPLY CIRCUIT-III

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Check the voltage between ECM harness connector and ground.

ECM		Ground	Voltage
Connector	Terminal	Glodila	voltage
E16	105	Ground	After turning ignition switch OFF, battery voltage will exist for a few seconds, then drop approximately 0V.

Is the inspection result normal?

YES >> GO TO 14.

NO-1 >> Battery voltage does not exist: GO TO 9.

NO-2 >> Battery voltage exists for more than a few seconds: GO TO 11.

9. CHECK ECM POWER SUPPLY CIRCUIT-IV

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Check the voltage between ECM harness connector and ground.

ECM		Ground	Voltage
Connector	Terminal	Oround	voltage
F7	24	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 11.

10.CHECK ECM POWER SUPPLY CIRCUIT-V

- 1. Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector E15.
- 3. Check the continuity between ECM harness connector and IPDM E/R harness connector.

ECM		IPDN	M E/R	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E16	105	E15	48	Existed

4. Also check harness for short to ground and short to power.

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Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

11. CHECK ECM POWER SUPPLY CIRCUIT-VI

- 1. Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector E15.
- 3. Check the continuity between ECM harness connector and IPDM E/R harness connector.

ECM		IPDN	ЛE/R	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F7	24	E15	51	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 13.

NO >> GO TO 12.

12. DETECT MALFUNCTIONING PART

Check the following.

- Harness or connectors F121, E7
- Harness for open or short between ECM and IPDM E/R

>> Repair open circuit or short to ground or short power in harness or connectors.

13. CHECK 20A FUSE

- 1. Disconnect 20A fuse (No. 62) from IPDM E/R.
- 2. Check 20A fuse.

Is the inspection result normal?

YES >> GO TO 17.

NO >> Replace 20A fuse.

14. CHECK GROUND CONNECTION-II

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Repair or replace ground connection.

15. CHECK ECM GROUND CIRCUIT FOR OPEN AND SHORT-II

- 1. Disconnect ECM harness connector.
- 2. Check the continuity between ECM harness connector and ground.

ECM		Ground	Continuity
Connector	Terminal	Giodila	Continuity
F7	12		
17	16		
	107	Ground	Existed
E16	108		LXISIEU
L10	111		
	112		

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 17.

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NO >> GO TO 16.

16. DETECT MALFUNCTIONING PART

Check the following.

- Harness or connectors F121, E7
- Harness for open or short between ECM and ground

>> Repair open circuit or short to power in harness or connectors.

17. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair open circuit or short to power in harness or connectors.

U1000, U1001 CAN COMM CIRCUIT

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U1000, U1001 CAN COMM CIRCUIT

Description INFOID:000000002994383

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
U1000	CAN communication	When ECM is not transmitting or receiving CAN communication signal of OBD (emission related diagnosis) for 2 seconds or more.	Harness or connectors (CAN communication line is open or
U1001	line	When ECM is not transmitting or receiving CAN communication signal other than OBD (emission related diagnosis) for 2 seconds or more.	shorted)

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 3 seconds.
- 2. Check DTC.

Is DTC detected?

YES >> EC-1017, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

Go to LAN-14, "Trouble Diagnosis Flow Chart".

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P0011 IVT CONTROL

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0011 is displayed with DTC P0075, first perform the trouble diagnosis for <u>EC-1139</u>, "DTC <u>Logic"</u>.

DTC No.	Trouble diagnosis name	Detecting condition	Possible cause
P0011	Intake valve timing control performance	There is a gap between angle of target and phase-control angle degree.	Crankshaft position sensor (POS) Camshaft position sensor (PHASE) Intake valve control solenoid valve Accumulation of debris to the signal pick-up portion of the camshaft Timing chain installation Foreign matter caught in the oil groove for intake valve timing control

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is between 10V and 16V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE-I

(II) With CONSULT-III

- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Maintain the following conditions for at least 6 consecutive seconds. Hold the accelerator pedal as steady as possible.

VHCL SPEED SE	100 - 120 km/h (63 - 75 mph)
ENG SPEED	1,700 - 2,000 rpm
COOLAN TEMP/S	More than 60°C (140°F)
B/FUEL SCHDL	More than 3.5 msec
Shift lever	D position

CAUTION:

Always drive at a safe speed.

- 4. Stop vehicle with engine running and let engine idle for 10 seconds.
- 5. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-1019, "Diagnosis Procedure"

NO >> GO TO 3.

3.PERFORM DTC CONFIRMATION PROCEDURE-II

(P)With CONSULT-III

1. Maintain the following conditions for at least 20 consecutive seconds.

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ENG SPEED	1,200 - 3,175 rpm (A constant rotation is maintained.)
COOLAN TEMP/S	More than 70°C (221°F)
Shift lever	1st or 2nd position
Driving location uphill	Driving vehicle uphill (Increased engine load will help maintain the driving conditions required for this test.)
CAUTION: Always drive at	•

2. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-1019, "Diagnosis Procedure"

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK OIL PRESSURE WARNING LAMP

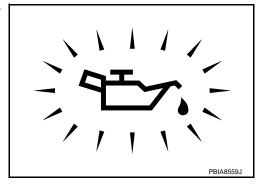
Start engine.

2. Check oil pressure warning lamp and confirm it is not illuminated.

Is oil pressure warning lamp illuminated?

YES >> Go to LU-5, "Inspection".

NO >> GO TO 2.



2.check intake valve timing control solenoid valve

Refer to EC-1020, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace intake valve timing control solenoid valve.

3.CHECK CRANKSHAFT POSITION SENSOR (POS)

Refer to EC-1115, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace crankshaft position sensor (POS).

4. CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-1118, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace camshaft position sensor (PHASE).

5.CHECK CAMSHAFT (INTAKE)

Check the following.

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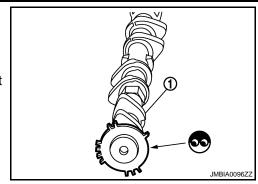
- Accumulation of debris to the signal plate of camshaft (1) rear end
- · Chipping signal plate of camshaft rear end

Is the inspection result normal?

YES >> GO TO 6.

NO >>

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft.



6. CHECK TIMING CHAIN INSTALLATION

Check service records for any recent repairs that may cause timing chain misaligned.

Are there any service records that may cause timing chain misaligned?

YES >> Check timing chain installation. Refer to EM-69, "Removal and Installation".

NO >> GO TO 7.

7.CHECK LUBRICATION CIRCUIT

Refer to EM-52, "Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Clean lubrication line.

8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002994388

1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- Turn ignition switch OFF.
- Disconnect intake valve timing control solenoid valve harness connector.
- 3. Check resistance between intake valve timing control solenoid valve terminals as follows.

Terminals	Resistance
1 and 2	7.0 - 7.5Ω [at 20°C (68°F)]
1 or 2 and ground	${}^{\infty}\!\Omega$ (Continuity should not exist)

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace intake valve timing control solenoid valve.

2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

1. Remove intake valve timing control solenoid valve.

Provide 12V DC between intake valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Make sure that the plunger moves as shown in the figure.

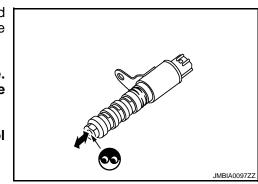
CAUTION:

Do not apply 12V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

Is the inspection result normal?



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YES >> INSPECTION END

NO >> Replace intake valve timing control solenoid valve.

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P0031, P0032 A/F SENSOR 1 HEATER

Description

SYSTEM DESCRIPTION

Sensor	Input Signal to ECM	ECM function	Actuator
Camshaft position sensor (PHASE) Crankshaft position sensor (POS)	Engine speed	Air fuel ratio (A/F) sensor 1	Air fuel ratio (A/F) sensor 1 heater
Mass air flow sensor	Amount of intake air	neater control	neater

The ECM performs ON/OFF duty control of the A/F sensor 1 heater corresponding to the engine operating condition to keep the temperature of A/F sensor 1 element at the specified range.

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0031	Air fuel ratio (A/F) sensor 1 heater control circuit low	The current amperage in the A/F sensor 1 heater circuit is out of the normal range. (An excessively low voltage signal is sent to ECM through the A/F sensor 1 heater.)	Harness or connectors (The A/F sensor 1 heater circuit is open or shorted.) A/F sensor 1 heater
P0032	Air fuel ratio (A/F) sensor 1 heater control circuit high	The current amperage in the A/F sensor 1 heater circuit is out of the normal range. (An excessively high voltage signal is sent to ECM through the A/F sensor 1 heater.)	Harness or connectors (The A/F sensor 1 heater circuit is shorted.) A/F sensor 1 heater

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than between 11V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for at least 10 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1022, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994391

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect air fuel ratio (A/F) sensor 1 harness connector.
- 2. Turn ignition switch ON.

P0031, P0032 A/F SENSOR 1 HEATER

< COMPONENT DIAGNOSIS >

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Check the voltage between A/F sensor 1 harness connector and ground.

A/F se	ensor 1	Ground	Voltage
Connector	Terminal	Giodila	voltage
F27	4	Ground	Battery voltage

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Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

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3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F123, E6
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

4. CHECK A/F SENSOR 1 HEATER OUTPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sensor 1		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F27	3	F7	4	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK A/F SENSOR 1 HEATER

Refer to EC-1024, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

.CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

>> INSPECTION END

P0031, P0032 A/F SENSOR 1 HEATER

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Component Inspection

INFOID:0000000002994392

1. CHECK AIR FUEL RATIO (A/F) SENSOR 1

- 1. Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.
- 3. Check resistance between A/F sensor 1 terminals as follows.

Terminals	Resistance
3 and 4	1.98 - 2.66 Ω [at 25°C (77°F)]
3 and 1, 2	Ω∞
4 and 1, 2	(Continuity should not exist)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Heated Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

P0037, P0038 HO2S2 HEATER

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

P0037, P0038 HO2S2 HEATER

Description INFOID:000000002994393

SYSTEM DESCRIPTION

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Sensor	Input signal to ECM	ECM function	Actuator	
Camshaft position sensor (PHASE) Crankshaft position sensor (POS)	Engine speed	Heated oxygen sensor 2		
Engine coolant temperature sensor	Engine coolant temperature	heater control	Heated oxygen sensor 2 heater	
Mass air flow sensor	Amount of intake air			

The ECM performs ON/OFF control of the heated oxygen sensor 2 heater corresponding to the engine speed, amount of intake air and engine coolant temperature.

OPERATION

Engine speed rpm	Heated oxygen sensor 2 heater	F
Above 3,600	OFF	
Below 3,600 rpm after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load	ON	G

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0037	Heated oxygen sensor 2 heater control circuit low	The current amperage in the heated oxygen sensor 2 heater circuit is out of the normal range. (An excessively low voltage signal is sent to ECM through the heated oxygen sensor 2 heater.)	 Harness or connectors (The heated oxygen sensor 2 heater circuit is open or shorted.) Heated oxygen sensor 2 heater
P0038	Heated oxygen sensor 2 heater control circuit high	The current amperage in the heated oxygen sensor 2 heater circuit is out of the normal range. (An excessively high voltage signal is sent to ECM through the heated oxygen sensor 2 heater.)	 Harness or connectors (The heated oxygen sensor 2 heater circuit is shorted.) Heated oxygen sensor 2 heater

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

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If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check 1st trip DTC.

Is 1st tip DTC detected?

Revision: 2008 January

YES >> Go to EC-1026, "Diagnosis Procedure".

NO >> INSPECTION END

EC-1025

2008 Rogue

< COMPONENT DIAGNOSIS >

Diagnosis Procedure

INFOID:0000000002994395

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK HO2S2 POWER SUPPLY CIRCUIT

- 1. Disconnect heated oxygen sensor 2 harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between HO2S2 harness connector and ground.

НО	2S2	Ground	Voltage	
Connector	Terminal	Oround		
F31	2	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F123, E6
- IPDM E/R connector E14
- 15A fuse (No. 63)
- Harness for open or short between heated oxygen sensor 2 and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK HO2S2 OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between HO2S2 harness connector and ECM harness connector.

НС	HO2S2		ECM	
Connector	Terminal	Connector Terminal		Continuity
F31	3	F7	13	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK HEATED OXYGEN SENSOR 2 HEATER

Refer to EC-1027, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 6.

6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

• Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

P0037, P0038 HO2S2 HEATER

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

• Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

INFOID:0000000002994396

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>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK HEATED OXYGEN SENSOR 2 HEATER

- Turn ignition switch OFF.
- Disconnect heated oxygen sensor 2 harness connector. 2.
- 3. Check resistance between HO2S2 terminals as follows.

Terminals	Resistance
2 and 3	3.3 - 4.4 Ω [at 25°C (77°F)]
1 and 2, 3, 4	Ω∞
4 and 1, 2, 3	(Continuity should not exist)

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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[FOR MEXICO]

P0075 IVT CONTROL SOLENOID VALVE

Description

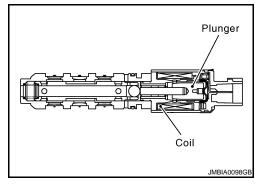
Intake valve timing control solenoid valve is activated by ON/OFF pulse duty (ratio) signals from the ECM.

The intake valve timing control solenoid valve changes the oil amount and direction of flow through intake valve timing control unit or stops oil flow.

The longer pulse width advances valve angle.

The shorter pulse width retards valve angle.

When ON and OFF pulse widths become equal, the solenoid valve stops oil pressure flow to fix the intake valve angle at the control position.



DTC Logic

INFOID:00000000002994398

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0075	Intake valve timing control solenoid valve circuit	An improper voltage is sent to the ECM through intake valve timing control solenoid valve.	Harness or connectors (Intake valve timing control solenoid valve circuit is open or shorted.) Intake valve timing control solenoid valve

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 5 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1028, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994399

1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect intake valve timing control solenoid valve harness connector.
- Turn ignition switch ON.
- Check the voltage between intake valve timing control solenoid valve harness connector and ground.

Intake valve timing control solenoid valve		Ground	Voltage	
Connector	Terminal			
F45	2	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

P0075 IVT CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

2.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between intake valve timing control solenoid valve and IPDM E/R

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>> Repair open circuit or short to ground or short to power in harness or connectors.

3.check intake valve timing control solenoid valve output signal circuit for open AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between intake valve timing control solenoid valve harness connector and ECM harness connector.

	timing control oid valve	ECM		Continuity
Connector	Terminal	Connector Terminal		
F45	1	F8	78	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

f 4.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Refer to EC-1029, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace intake valve timing control solenoid valve.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-41. "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002994400

1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- Turn ignition switch OFF.
- 2. Disconnect intake valve timing control solenoid valve harness connector.
- 3. Check resistance between intake valve timing control solenoid valve terminals as follows.

Terminals	Resistance	
1 and 2	7.0 - 7.5Ω [at 20°C (68°F)]	
1 or 2 and ground	${}^{\infty}\Omega$ (Continuity should not exist)	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace intake valve timing control solenoid valve.

2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

Remove intake valve timing control solenoid valve.

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P0075 IVT CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

2. Provide 12V DC between intake valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Make sure that the plunger moves as shown in the figure.

CAUTION:

Do not apply 12V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

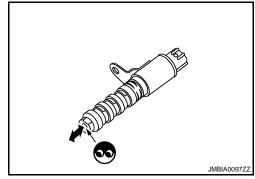
NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace intake valve timing control solenoid valve.

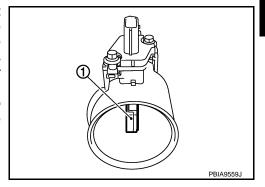


P0101 MAF SENSOR

Description INFOID:0000000002994401

The mass air flow sensor (1) is placed in the stream of intake air. It measures the intake flow rate by measuring a part of the entire intake flow. The mass air flow sensor controls the temperature of the hot wire to a certain amount. The heat generated by the hot wire is reduced as the intake air flows around it. The more air, the greater the heat loss.

Therefore, the electric current supplied to hot wire is changed to maintain the temperature of the hot wire as air flow increases. The ECM detects the air flow by means of this current change.



DTC Logic INFOID:0000000002994402

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition Possible cause		Possible cause	(-
		A)	A high voltage from the sensor is sent to ECM under light load driving condition.	Harness or connectors (The sensor circuit is open or shorted.) Mass air flow sensor	Н
P0101	Mass air flow sensor circuit range/performance	B)	A low voltage from the sensor is sent to ECM under heavy load driving condition.	Harness or connectors (The sensor circuit is open or shorted.) Intake air leaks Mass air flow sensor Intake air temperature sensor	I

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

If engine will not start or stops soon, wait at least 10 seconds with engine stopped (Ignition switch ON) instead of running engine at idle speed.

>> GO TO 2.

2.perform dtc confirmation procedure for malfunction a

- 1. Start engine and warm it up to normal operating temperature.
- Run engine for at least 10 seconds at idle speed.
- Check 1st trip DTC.

Is 1st trip DTC detected?

>> Go to EC-1033, "Diagnosis Procedure".

NO-1 >> With CONSULT-III: GO TO 3.

NO-2 >> Without CONSULT-III: GO TO 5.

3.check mass air flow sensor function

- Turn ignition switch ON.
- Start engine and warm it up to normal operating temperature. If engine cannot be started, go to EC-1033, "Diagnosis Procedure".

EC-1031 Revision: 2008 January 2008 Rogue

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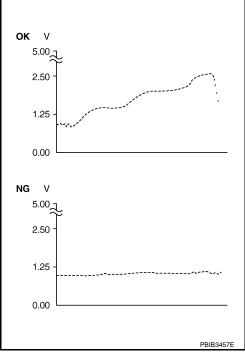
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- 3. Select "DATA MONITOR" mode with CONSULT-III.
- 4. Check the voltage of "MAS A/F SE-B1" with "DATA MONITOR".
- 5. Increases engine speed to about 4,000 rpm.
- Monitor the linear voltage rise in response to engine speed increases.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Go to EC-1033, "Diagnosis Procedure".



[FOR MEXICO]

4. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B

1. Maintain the following conditions for at least 10 consecutive seconds.

ENG SPEED	More than 2,000 rpm
	· '
THRTL SEN 1-B1	More than 3V
THRTL SEN 2-B1	More than 3V
Shift lever	Suitable position
Driving location	Driving vehicle uphill (Increased engine load) will help maintain the driving conditions required for this test.

CAUTION:

Always drive vehicle at a safe speed.

2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1033, "Diagnosis Procedure".

NO >> INSPECTION END

${f 5}$ Perform component function check for malfunction ${f B}$

Perform component function check. Refer to EC-1032, "Component Function Check".

NOTE:

Use component function check to check the overall function of the mass air flow sensor circuit. During this check, a DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1033, "Diagnosis Procedure".

Component Function Check

INFOID:0000000002994403

1. PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

With GST

- 1. Start engine and warm it up to normal operating temperature.
- Select Service \$01 with GST.

P0101 MAF SENSOR

< COMPONENT DIAGNOSIS >

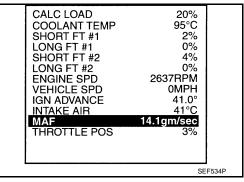
[FOR MEXICO]

- Check the mass air flow sensor signal with Service \$01.
- Check for linear mass air flow sensor signal value rise in response to increases to about 4,000 rpm in engine speed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1033, "Diagnosis Procedure".



Diagnosis Procedure

INFOID:0000000002994404

1.INSPECTION START

Confirm the detected malfunction (A or B). Refer to EC-1031, "DTC Logic".

Which malfunction is detected?

Α >> GO TO 3.

В >> GO TO 2.

2.check intake system

Check the following for connection.

- Air duct
- Vacuum hoses
- Intake air passage between air duct and intake manifold

Is the inspection result normal?

YES >> GO TO 3.

NO >> Reconnect the parts.

3.check ground connection

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace ground connection.

$oldsymbol{4}.$ CHECK MAF SENSOR POWER SUPPLY CIRCUIT

- Disconnect mass air flow (MAF) sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between MAF sensor harness connector and ground.

MAF	sensor	Ground	Voltage	
Connector Terminal		Oround	voltage	
E18	5	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

DETECT MALFUNCTIONING PART

Check the following.

- Harness for open or short between mass air flow sensor and ECM
- Harness for open or short between mass air flow sensor and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK MAF SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

Turn ignition switch OFF.

EC-1033 Revision: 2008 January 2008 Rogue

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< COMPONENT DIAGNOSIS >

- 2. Disconnect ECM harness connector.
- Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF sensor		E	Continuity	
Connector	Terminal	Connector Terminal		Continuity
E18	4	F7	56	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

7.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- Harness for open or short between mass air flow sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK MAF SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF sensor		E	CM	Continuity
Connector	Terminal	Connector Terminal		Continuity
E18	3	F8	58	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 9.

9. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- Harness for open or short between mass air flow sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

10. CHECK INTAKE AIR TEMPERATURE SENSOR

Refer to EC-1045, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace mass air flow sensor (with intake air temperature sensor).

11. CHECK MASS AIR FLOW SENSOR

Refer to EC-1035, "Component Inspection"

Is the inspection result normal?

YES >> GO TO 12.

NO >> Replace mass air flow sensor.

12. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0101 MAF SENSOR

< COMPONENT DIAGNOSIS >

Component Inspection

INFOID:0000000002994405

[FOR MEXICO]

1. CHECK MASS AIR FLOW SENSOR-I

(P)With CONSULT-III

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- Start engine and warm it up to normal operating temperature.
- Connect CONSULT-III and select "DATA MONITOR" mode.
- Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
MAS A/F SE-B1	Ignition switch ON (Engine stopped.)	Approx. 0.4V
	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- Start engine and warm it up to normal operating temperature.
- 4. Check the voltage between ECM harness connector terminals under the following conditions.

ECM				
Connector	+	_	Condition	Voltage
Terminal	Terminal	Terminal		
F8 (MAF			Ignition switch ON (Engine stopped.)	Approx. 0.4V
	58	56	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
	(MAF sensor signal)	,	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

2.CHECK FOR THE CAUSE OF UNEVEN AIR FLOW THROUGH MASS AIR FLOW SENSOR

- Turn ignition switch OFF.
- Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.
- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system parts

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.CHECK MASS AIR FLOW SENSOR-II

(P)With CONSULT-III

- 1. Repair or replace malfunctioning part.
- Start engine and warm it up to normal operating temperature.
- Connect CONSULT-III and select "DATA MONITOR" mode.
- Select "MAS A/F SE-B1" and check indication.

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Monitor item	Condition	MAS A/F SE-B1
MAS A/F SE-B1	Ignition switch ON (Engine stopped.)	Approx. 0.4V
	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

♥Without CONSULT-III

- Repair or replace malfunctioning part.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Check the voltage between ECM harness connector terminals under the following conditions.

ECM				
Connector	+	_	Condition	Voltage
Terminal	Terminal	Terminal		
			Ignition switch ON (Engine stopped.)	Approx. 0.4V
	58 (MAF sensor signal) 56 (Sensor gound)	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V	
F8 (N			2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK MASS AIR FLOW SENSOR-III

(P)With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT-III and select "DATA MONITOR" mode.
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
MAS AVE SE-BI	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Without CONSULT-III

- 1. Turn ignition switch OFF.
- Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the voltage between ECM harness connector terminals under the following conditions.

P0101 MAF SENSOR

ECM				
Connector	+	_	Condition	Voltage
Terminal	Terminal	Terminal		
58 F8 (MAF sens signal)			Ignition switch ON (Engine stopped.)	Approx. 0.4V
	58	56	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
	(MAF sensor signal)	(Sensor gound)	2,000 ipin (Engine is waimed up to normal operating temper	1.4 - 1.8V
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Clean or replace mass air flow sensor.

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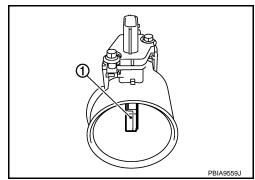
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P0102, P0103 MAF SENSOR

Description INFOID:000000002994406

The mass air flow sensor (1) is placed in the stream of intake air. It measures the intake flow rate by measuring a part of the entire intake flow. The mass air flow sensor controls the temperature of the hot wire to a certain amount. The heat generated by the hot wire is reduced as the intake air flows around it. The more air, the greater the heat loss.

Therefore, the electric current supplied to hot wire is changed to maintain the temperature of the hot wire as air flow increases. The ECM detects the air flow by means of this current change.



DTC Logic

INFOID:0000000002994407

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0102	Mass air flow sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.) Intake air leaks Mass air flow sensor
P0103	Mass air flow sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.) Mass air flow sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

Which DTC is detected?

P0102 >> GO TO 2.

P0103 >> GO TO 3.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0102

- Start engine and wait at least 5 seconds.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1039, "Diagnosis Procedure".

NO >> INSPECTION END

3.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0103-I

- 1. Turn ignition switch ON and wait at least 5 seconds.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1039, "Diagnosis Procedure".

NO >> GO TO 4.

4.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0103-II

- 1. Start engine and wait at least 5 seconds.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-1039, "Diagnosis Procedure".

NO >> INSPECTION END

P0102, P0103 MAF SENSOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Diagnosis Procedure

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1.INSPECTION START

Confirm the detected DTC.

Which DTC is detected?

P0102 >> GO TO 2.

P0103 >> GO TO 3.

2. CHECK INTAKE SYSTEM

Check the following for connection.

- Air duct
- Vacuum hoses
- Intake air passage between air duct to intake manifold

Is the inspection result normal?

YES >> GO TO 3.

NO >> Reconnect the parts.

3.CHECK GROUND CONNECTION

1. Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace ground connection.

f 4.CHECK MAF SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect mass air flow (MAF) sensor harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between MAF sensor harness connector and ground.

MAF	sensor	- Ground Voltage		
Connector	Terminal	Oround	Voltage	
E18	5	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

DETECT MALFUNCTIONING PART

Check the following.

- Harness for open or short between mass air flow sensor and ECM
- Harness for open or short between mass air flow sensor and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK MAF SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF sensor		ECM		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
E18	4	F8	56	Existed	

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8.

< COMPONENT DIAGNOSIS >

NO >> GO TO 7.

7. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- Harness for open or short between mass air flow sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK MAF SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF sensor		E	Continuity		
Connector	Terminal	Connector Terminal		Continuity	
E18	3	F8	58	Existed	

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 9.

9. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- Harness for open or short between mass air flow sensor and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

10. CHECK MASS AIR FLOW SENSOR

Refer to EC-1040, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace mass air flow sensor.

11. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002994409

1. CHECK MASS AIR FLOW SENSOR-I

(P)With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- Connect CONSULT-III and select "DATA MONITOR" mode.
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
MAS A/F SE-B1	Ignition switch ON (Engine stopped.)	Approx. 0.4V
	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

P0102, P0103 MAF SENSOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Without CONSULT-III

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the voltage between ECM harness connector terminals under the following conditions.

ECM			2	
Connector -	+	_	Condition	Voltage
	Terminal	Terminal	İ	
	58 56 (MAF sensor (Sensor signal) gound)		Ignition switch ON (Engine stopped.)	Approx. 0.4V
		58 56	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
F8		`	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
		*	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 2.

2.check for the cause of uneven air flow through mass air flow sensor

- Turn ignition switch OFF.
- Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.
- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system parts

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.CHECK MASS AIR FLOW SENSOR-II

(P)With CONSULT-III

- 1. Repair or replace malfunctioning part.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Connect CONSULT-III and select "DATA MONITOR" mode.
- 4. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
WAS AVE SE-BT	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Without CONSULT-III

- 1. Repair or replace malfunctioning part.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Check the voltage between ECM harness connector terminals under the following conditions.

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ECM					
Connector	+	_	Condition	Voltage	
	Terminal	Terminal			
F8	58 (MAF sensor signal)	ensor (Sensor	Ignition switch ON (Engine stopped.)	Approx. 0.4V	
			Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V	
			2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V	
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*	

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK MASS AIR FLOW SENSOR-III

(P)With CONSULT-III

- Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT-III and select "DATA MONITOR" mode.
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
	Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the voltage between ECM harness connector terminals under the following conditions.

ECM				
Connector	+ -		Condition	Voltage
	Terminal	Terminal		
F8	58 (MAF sensor signal)	`	Ignition switch ON (Engine stopped.)	Approx. 0.4V
			Idle (Engine is warmed-up to normal operating temperature.)	0.8 - 1.2V
			2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.4 - 1.8V
			Idle to about 4,000 rpm	0.9 - 1.2V to Approx. 2.4V*

^{*:} Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Clean or replace mass air flow sensor.

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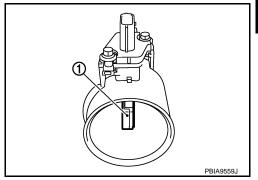
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P0112, P0113 IAT SENSOR

Description INFOID:0000000002994410

The intake air temperature sensor is built-into mass air flow sensor (1). The sensor detects intake air temperature and transmits a signal to the ECM.

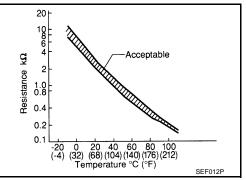
The temperature sensing unit uses a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.



<Reference data>

Intake air temperature °C (°F)	Voltage* V	Resistance kΩ
25 (77)	3.3	1.800 - 2.200
80 (176)	1.2	0.283 - 0.359

^{*:} These data are reference values and are measured between ECM terminals 50 (Intake air temperature sensor) and 58 (Sensor ground).



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0112	Intake air temperature sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0113	Intake air temperature sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	Intake air temperature sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 5 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1043, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44. "Circuit Inspection".

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[FOR MEXICO]

< COMPONENT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK INTAKE AIR TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect mass air flow sensor (with intake air temperature sensor) harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between mass air flow sensor harness connector and ground.

MAF	sensor	Ground	Voltage	
Connector Terminal		Giodila	voltage	
E18	2	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- · Harness for open or short between mass air flow sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK INTAKE AIR TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between mass air flow sensor harness connector and ECM harness connector.

MAF	sensor	E	Continuity	
Connector	Terminal	Connector Terminal		Continuity
E18	1	F8	56	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6. F123
- Harness for open or short between mass air flow sensor and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK INTAKE AIR TEMPERATURE SENSOR

Refer to EC-1045, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace mass air flow sensor (with intake air temperature sensor).

7.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0112, P0113 IAT SENSOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Component Inspection

INFOID:0000000002994413

1. CHECK INTAKE AIR TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector.
- 3. Check resistance between mass air flow sensor terminals as follows.

Terminals	Condition		Resistance k Ω
1 and 2	Intake air temperature °C (°F)	25 (77)	1.800 - 2.200

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mass air flow sensor (with intake air temperature sensor).

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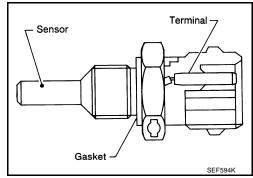
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P0117, P0118 ECT SENSOR

Description INFOID:000000002994414

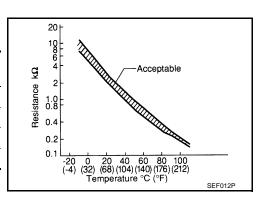
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



<Reference data>

Engine coolant temperature °C (°F)	Voltage* V	Resistance kΩ
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.37 - 2.63
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260

^{*:} These data are reference values and are measured between ECM terminals 46 (Engine coolant temperature sensor) and 52 (Sensor ground).



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble Diagnosis Name	DTC Detecting Condition	Possible Cause
P0117	Engine coolant temperature sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0118	Engine coolant temperature sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-1046, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

CHECK GROUND CONNECTION

1. Turn ignition switch OFF.

Revision: 2008 January

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P0117, P0118 ECT SENSOR [FOR MEXICO] < COMPONENT DIAGNOSIS > Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection". Α Is the inspection result normal? YES >> GO TO 2. NO >> Repair or replace ground connection. EC 2.CHECK ECT SENSOR POWER SUPPLY CIRCUIT Disconnect engine coolant temperature (ECT) sensor harness connector. Turn ignition switch ON. Check the voltage between ECT sensor harness connector and ground. ECT sensor D Ground Voltage **Terminal** Connector F80 Ground Approx. 5V Е Is the inspection result normal? YES >> GO TO 3. NO >> Repair open circuit or short to ground or short to power in harness or connectors. 3.check ect sensor ground circuit for open and short F 1. Turn ignition switch OFF. Disconnect ECM harness connector. Check the continuity between ECT sensor harness connector and ECM harness connector. ECT sensor **ECM** Н Continuity Connector **Terminal** Connector Terminal F80 2 F8 52 Existed Also check harness for short to ground and short to power. Is the inspection result normal? YES >> GO TO 4. NO >> Repair open circuit or short to ground or short to power in harness or connectors. f 4.CHECK ENGINE COOLANT TEMPERATURE SENSOR Refer to EC-1047, "Component Inspection". Is the inspection result normal? YES >> GO TO 5. NO >> Replace engine coolant temperature sensor. 5. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

${f 1}$.CHECK ENGINE COOLANT TEMPERATURE SENSOR

- Turn ignition switch OFF.
- 2. Disconnect engine coolant temperature sensor harness connector.
- Remove engine coolant temperature sensor.

EC-1047 Revision: 2008 January 2008 Rogue

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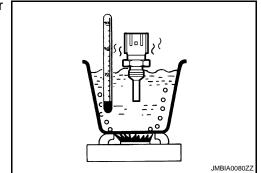
P0117, P0118 ECT SENSOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

4. Check resistance between engine coolant temperature sensor terminals by heating with hot water as shown in the figure.

Terminals	Condition			Resistance	
			20 (68)	2.37 - 2.63	kΩ
1 and 2	Temperature	°C (°F)	50 (122)	0.68 - 1.00	kΩ
			90 (194)	0.236 - 0.260	kΩ



Is the inspection result normal?

YES >> INSPECTION END

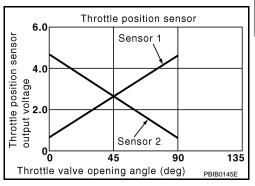
NO >> Replace engine coolant temperature sensor.

P0122, P0123 TP SENSOR

Description INFOID:0000000002994418

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic INFOID:00000000002994419

DTC DETECTION LOGIC

NOTE:

If DTC P0122 or P0123 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-1139, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0122	Throttle position sensor 2 circuit low input	An excessively low voltage from the TP sensor 2 is sent to ECM.	Harness or connectors (TP sensor 2 circuit is open or shorted.)
P0123	Throttle position sensor 2 circuit high input	An excessively high voltage from the TP sensor 2 is sent to ECM.	Electric throttle control actuator (TP sensor 2)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2 .PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1049, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2 .CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY CIRCUIT

- Turn ignition switch ON.

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- Disconnect electric throttle control actuator harness connector.

< COMPONENT DIAGNOSIS >

3. Check the voltage between electric throttle control actuator harness connector and ground.

Electric throttle	control actuator	Ground	Voltage	
Connector	Terminal	Giouna	Voltage	
F29	1	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3.check throttle position sensor 2 ground circuit for open and short

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle control actuator		ECM		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
F29	4	F8	36	Existed	

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK THROTTLE POSITION SENSOR 2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle	control actuator	E	CM	Continuity	
Connector	Terminal	Connector Terminal		Continuity	
F29	3	F8	38	Existed	

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

$\mathbf{5}$.CHECK THROTTLE POSITION SENSOR

Refer to EC-1051, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- 2. Go to EC-1051, "Special Repair Requirement".

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0122, P0123 TP SENSOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Component Inspection

INFOID:0000000002994421

1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set shift lever to D position.
- 6. Check the voltage between ECM harness connector terminals.

ECM							
+ -		-	Condition		Voltage		
Connector	Terminal	Connector	Terminal				
F8	37 (TP sensor 1 signal)	F8	36 (Sensor	Accelerator pedal	Fully released Fully depressed Fully released	More than 0.36V Less than 4.75V Less than 4.75V	
	(TP sensor 2 signal)		ground)		Fully depressed	More than 0.36V	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- Go to <u>EC-1051</u>, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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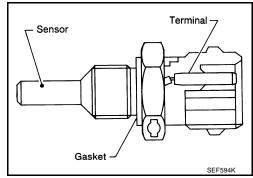
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P0125 ECT SENSOR

Description INFOID:000000002994423

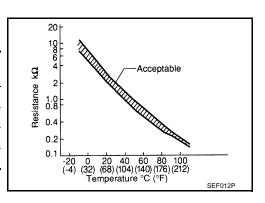
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



<Reference data>

Engine coolant temperature °C (°F)	Voltage* V	Resistance kΩ
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.37 - 2.63
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260

^{*:} These data are reference values and are measured between ECM terminals 46 (Engine coolant temperature sensor) and 52 (Sensor ground).



INFOID:0000000002994424

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0125 is displayed with P0117 or P0118, first perform the trouble diagnosis for DTC P0117 or P0118. Refer to EC-1046, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0125	Insufficient engine coolant temperature for closed loop fuel control	 Voltage sent to ECM from the sensor is not practical, even when some time has passed after starting the engine. Engine coolant temperature is insufficient for closed loop fuel control. 	Harness or connectors (High resistance in the circuit) Engine coolant temperature sensor Thermostat

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.CHECK ENGINE COOLANT TEMPERATURE SENSOR FUNCTION

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT-III.
- 3. Check that "COOLAN TEMP/S" is above 10°C (50°F).

With GST

Follow the procedure "With CONSULT-III" above.

Is it above 10°C (50°F)?

Revision: 2008 January EC-1052 2008 Rogue

P0125 ECT SENSOR

< COMPONENT DIAGNOSIS > [FOR MEXICO]	
YES >> INSPECTION END NO >> GO TO 3.	А
3. PERFORM DTC CONFIRMATION PROCEDURE	
With CONSULT-III Start engine and run it for 65 minutes at idle speed.	EC
2. Check 1st tip DTC. If "COOLAN TEMP/S" increases to more than 10°C (50°F) within 65 minutes, stop engine because the test result will be OK. CAUTION:	С
Be careful not to overheat engine. With GST Follow the procedure "With CONSULT-III" above. Is 1st trip DTC detected?	D
YES >> EC-1053, "Diagnosis Procedure" NO >> INSPECTION END	Е
Diagnosis Procedure	_
1. CHECK GROUND CONNECTION	F
 Turn ignition switch OFF. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection". Is the inspection result normal?	G
YES >> GO TO 2. NO >> Repair or replace ground connection.	Н
2.CHECK ENGINE COOLANT TEMPERATURE SENSOR	
Refer to EC-1053, "Component Inspection".	I
Is the inspection result normal? YES >> GO TO 3.	
NO >> Replace engine coolant temperature sensor. 3.CHECK THERMOSTAT OPERATION	J
When the engine is cold [lower than 70°C (158°F)] condition, grasp lower radiator hose and confirm the engine coolant does not flow. Is the inspection result normal?	K
YES >> GO TO 4.	L
NO >> Repair or replace thermostat. Refer to CO-25 , "Removal and Installation". 4. CHECK INTERMITTENT INCIDENT	
Refer to GI-41, "Intermittent Incident".	M
INCRECTION END	
>> INSPECTION END Component Inspection INFOID:000000002994426	Ν
1.CHECK ENGINE COOLANT TEMPERATURE SENSOR	0
 Turn ignition switch OFF. Disconnect engine coolant temperature sensor harness connector. Remove engine coolant temperature sensor. 	Р

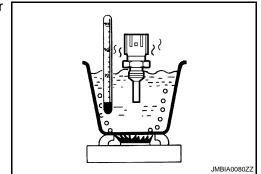
P0125 ECT SENSOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

4. Check resistance between engine coolant temperature sensor terminals by heating with hot water as shown in the figure.

Terminals		Resistance			
			20 (68)	2.37 - 2.63	kΩ
1 and 2	Temperature	°C (°F)	50 (122)	0.68 - 1.00	kΩ
			90 (194)	0.236 - 0.260	kΩ



Is the inspection result normal?

YES >> INSPECTION END

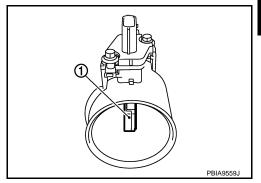
NO >> Replace engine coolant temperature sensor.

P0127 IAT SENSOR

Description INFOID:0000000002994427

The intake air temperature sensor is built-into mass air flow sensor (1). The sensor detects intake air temperature and transmits a signal to the ECM.

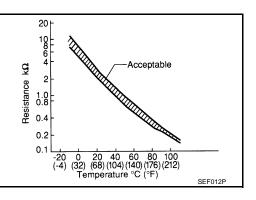
The temperature sensing unit uses a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.



<Reference data>

Intake air temperature °C (°F)	Voltage* V	Resistance kΩ
25 (77)	3.3	1.800 - 2.200
80 (176)	1.2	0.283 - 0.359

^{*:} These data are reference values and are measured between ECM terminals 50 (Intake air temperature sensor) and 58 (Sensor ground).



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0127	Intake air temperature too high	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signal from engine coolant temperature sensor.	 Harness or connectors (The sensor circuit is open or shorted) Intake air temperature sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

This test may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT-III

- Wait until engine coolant temperature is less than 90°C (194°F)
- Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-III.
- Check the engine coolant temperature.
- If the engine coolant temperature is not less than 90°C (194°F), turn ignition switch OFF and cool down engine.

NOTE:

Perform the following steps before engine coolant temperature is above 90°C (194°F).

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P0127 IAT SENSOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Start engine.

3. Hold vehicle speed at more than 70 km/h (43 MPH) for 100 consecutive seconds.

CAUTION:

Always drive vehicle at a safe speed.

4. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-1056, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994429

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK INTAKE AIR TEMPERATURE SENSOR

Refer to EC-1056, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace mass air flow sensor (with intake air temperature sensor).

3. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002994430

1. CHECK INTAKE AIR TEMPERATURE SENSOR

- Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector.
- 3. Check resistance between mass air flow sensor terminals as follows.

Terminals	Condition	Resistance k Ω	
1 and 2	Intake air temperature °C (°F)	25 (77)	1.800 - 2.200

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mass air flow sensor (with intake air temperature sensor).

[FOR MEXICO]

P0128 THERMOSTAT FUNCTION

DTC Logic INFOID:0000000002994431

DTC DETECTION LOGIC

NOTE:

If DTC P0128 is displayed with DTC PP0300, P0301, P0302, P0303 or P0304, first perform the trouble diagnosis for DTC P0300, P0301, P0302, P0303, P0304. Refer to EC-1104, "DTC Logic".

Engine coolant temperature has not risen enough to open the thermostat even though the engine has run long

This is due to a leak in the seal or the thermostat stuck open.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0128	Thermostat function	The engine coolant temperature does not reach to specified temperature even though the engine has run long enough.	ThermostatLeakage from sealing portion of thermostatEngine coolant temperature sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

- For best results, perform at ambient temperature of -10°C (14°F) or higher.
- For best results, perform at engine coolant temperature of -10°C (14°F) to 52°C (126°F).
- Before performing the following procedure, do not fill with the fuel.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- Turn A/C switch OFF.
- Turn blower fan switch OFF.
- Turn ignition switch ON.
- Select "COOLAN TEMP/S" in "DATA MONITOR" mode with CONSULT-III.
- Check the indication of "COOLAN TEMP/S"

If it is below 52°C (126°F), go to following step.

If it is above 52°C (126°F), cool down the engine to less than 52°C (126°F). Then go to next steps.

6. Start engine and let it idle for at least 30 minutes.

If "COOLAN TEMP/S" increases to more than 71°C (160°F) within 30 minutes, turn ignition switch OFF because the test result will be OK.

Check 1st trip DTC.

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-1105, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-1058. "Component Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace engine coolant temperature sensor.

$\mathbf{2}.$ CHECK THERMOSTAT

Refer to CO-25, "Removal and Installation".

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P0128 THERMOSTAT FUNCTION

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Is the inspection result normal?

YES >> INSPECTION END NO >> Replace thermostat.

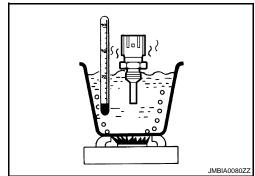
Component Inspection

INFOID:0000000002994433

1.CHECK ENGINE COOLANT TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect engine coolant temperature sensor harness connector.
- 3. Remove engine coolant temperature sensor.
- 4. Check resistance between engine coolant temperature sensor terminals by heating with hot water as shown in the figure.

Terminals		Resistance			
			20 (68)	2.37 - 2.63	kΩ
1 and 2	Temperature	°C (°F)	50 (122)	0.68 - 1.00	kΩ
			90 (194)	0.236 - 0.260	kΩ



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor.

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P0130 A/F SENSOR 1

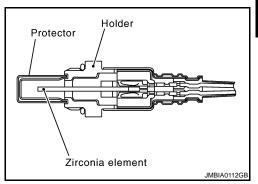
Description INFOID:0000000002994434

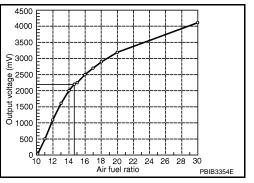
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement λ = 1, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800° C (1,472°F).





DTC Logic

DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal fluctuates according to fuel feedback control.

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible Cause
P0130	Air fuel ratio (A/F) sensor 1	A)	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly in the range other than approx. 2.2V.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.)
	Sircuit	B)	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 2.2V.	A/F sensor 1

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

- 1. Start engine and warm it up to normal operating temperature.
- Let it idle for 2 minutes.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1061, "Diagnosis Procedure".

NO-1 >> With CONSULT-III: GO TO 3.

NO-2 >> Without CONSULT-III: GO TO 7.

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$3.\mathsf{CHECK}$ AIR FUEL RATIO (A/F) SENSOR 1 FUNCTION

- 1. Select "A/F SEN1 (B1)" in "DATA MONITOR" mode with CONSULT-III.
- 2. Check "A/F SEN1 (B1)" indication.

Does the indication fluctuates around 2.2 V?

YES >> GO TO 4.

NO >> Go to EC-1061, "Diagnosis Procedure".

f 4. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-I

- Select "A/F SEN1 (B1) P1276" of "A/F SEN1" in "DTC WORK SUPPORT" mode with CONSULT-III.
- 2. Touch "START".
- 3. When the following conditions are met, "TESTING" will be displayed on the CONSULT-III screen.

ENG SPEED	1,750 - 2,600 rpm
VHCL SPEED SE	More than 64 km/h (40 mph)
B/FUEL SCHDL	1.0 - 8.0 msec
Shift lever	D position

If "TESTING" is not displayed after 20 seconds, retry from step 2.

CAUTION:

Always drive vehicle at a safe speed.

Is "TESTING" displayed on CONSULT-III screen?

YES >> GO TO 5.

NO >> Check A/F sensor 1 function again. GO TO 3.

${f 5.}$ PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-II

Release accelerator pedal fully.

NOTE:

Never apply brake during releasing the accelerator pedal.

Which does "TESTING" change to?

COMPLETED>>GO TO 6.

OUT OF CONDITION>>Retry DTC CONFIRMATION PROCEDURE. GO TO 4.

6.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-III

Touch "SELF-DIAG RESULT"

Which is displayed on CONSULT-III screen?

OK >> INSPECTION END

NG >> Go to EC-1061, "Diagnosis Procedure".

7.PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

Perform Component Function Check. Refer to EC-1060, "Component Function Check".

NOTE

Use component function check to check the overall function of the A/F sensor 1 circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1061, "Diagnosis Procedure".

Component Function Check

1. PERFORM COMPONENT FUNCTION CHECK

With GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Drive the vehicle at a speed of 80 km/h (50 MPH) for a few minutes in the suitable gear position.
- Set D position, then release the accelerator pedal fully until the vehicle speed decreases to 50 km/h (31 MPH).

CAUTION:

P0130 A/F SENSOR 1

[FOR MEXICO] < COMPONENT DIAGNOSIS >

Always drive vehicle at a safe speed.

NOTE:

Never apply brake during releasing the accelerator pedal.

- 4. Repeat steps 2 to 3 for five times.
- 5. Stop the vehicle and turn ignition switch OFF.
- 6. Wait at least 10 seconds and restart engine.
- 7. Repeat steps 2 to 3 for five times.
- 8. Stop the vehicle and connect GST to the vehicle.
- 9. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1061, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect A/F sensor 1 harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between A/F sensor 1 harness connector and ground.

A/F ser	nsor 1	Ground	Voltage
Connector	Terminal	Ground	voltage
F27	4	Ground	Battery voltage

Is the inspection result normal?

>> GO TO 4. YES

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

f 4.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F ser	A/F sensor 1		ECM	
Connector	Terminal	Connector	Terminal	Continuity
F27	1	F8	45	Existed
121	2		49	LXISIEU

4. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

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A/F sensor 1		ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Giodila	Continuity
F27	1	F8	45	Ground	Not existed
1 21	2	10	49	Giodila	Not existed

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace.

6. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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P0131 A/F SENSOR 1

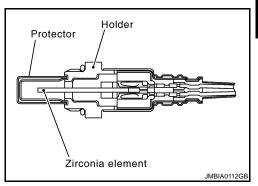
Description INFOID:0000000002994438

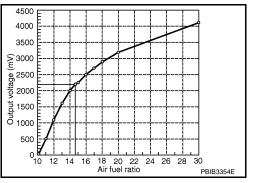
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800°C (1,472°F).





DTC Logic INFOID:0000000002994439

DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal is not inordinately low.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P0131	Air fuel ratio (A/F) sensor 1 circuit low voltage	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 0V.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.) A/F sensor 1

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V at idle.

>> GO TO 2.

2.CHECK A/F SENSOR FUNCTION

(P)With CONSULT-III

- Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" in "DATA MONITOR" mode with CONSULT-III.
- Check "A/F SEN1 (B1)" indication.

Follow the procedure "With CONSULT-III" above.

Is the indication constantly approx. 0V?

>> Go to EC-1064, "Diagnosis Procedure".

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< COMPONENT DIAGNOSIS >

NO >> GO TO 3.

3. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

1. Turn ignition switch OFF, wait at least 10 seconds and then restart engine.

2. Drive and accelerate vehicle to more than 40 km/h (25 MPH) within 20 seconds after restarting engine. **CAUTION**:

Always drive vehicle at a safe speed.

3. Maintain the following conditions for about 20 consecutive seconds.

ENG SPEED	1,000 - 3,200 rpm
VHCL SPEED SE	More than 40 km/h (25 mph)
B/FUEL SCHDL	1.5 - 9.0 msec
Shift lever	Suitable position

NOTE:

- Keep the accelerator pedal as steady as possible during the cruising.
- If this procedure is not completed within 1 minute after restarting engine at step 1, return to step
- 4. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-1064, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994440

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect A/F sensor 1 harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between A/F sensor 1 harness connector and ground.

A/F sensor 1 Connector Terminal		Ground	Voltage
		Giodila	voltage
F27	4	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- · Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

P0131 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

4. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sensor 1		EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F27	1	F8	45	Existed
1 21	2	10	49	LAISIGU

4. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F ser	A/F sensor 1		ECM		Continuity
Connector	Terminal	Connector	Terminal	Ground	Continuity
F27	1	F8	45	Ground	Not existed
1 21	2	10	49	Ground	NOT EXISTED

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace.

O.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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P0132 A/F SENSOR 1

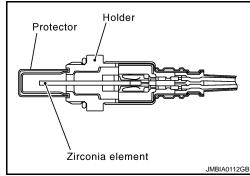
Description INFOID:000000002994441

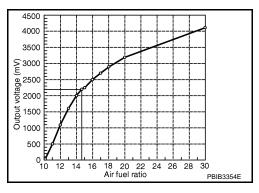
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800° C (1,472°F).





DTC Logic

DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal is not inordinately high.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P0132	Air fuel ratio (A/F) sensor 1 circuit high voltage	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 5V.	 Harness or connectors (The A/F sensor 1 circuit is open or shorted.) A/F sensor 1

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V at idle.

>> GO TO 2.

2. CHECK A/F SENSOR FUNCTION

(P)With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "A/F SEN1 (B1)" indication.

With GST

Follow the procedure "With CONSULT-III" above.

Is the indication constantly approx. 5 V?

YES >> Go to EC-1067, "Diagnosis Procedure".

P0132 A/F SENSOR 1

[FOR MEXICO] < COMPONENT DIAGNOSIS > NO >> GO TO 3.

3.perform dtc confirmation procedure

(P)With CONSULT-III

Turn ignition switch OFF, wait at least 10 seconds and then restart engine.

Drive and accelerate vehicle to more than 40 km/h (25 MPH) within 20 seconds after restarting engine. **CAUTION:**

Always drive vehicle at a safe speed.

3. Maintain the following conditions for about 20 consecutive seconds.

ENG SPEED	1,000 - 3,200 rpm
VHCL SPEED SE	More than 40 km/h (25 mph)
B/FUEL SCHDL	1.5 - 9.0 msec
Shift lever	Suitable position

NOTE:

- Keep the accelerator pedal as steady as possible during the cruising.
- If this procedure is not completed within 1 minute after restarting engine at step 1, return to step
- 4. Check 1st trip DTC.

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC is detected?

YES >> Go to EC-1067, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect A/F sensor 1 harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between A/F sensor 1 harness connector and ground.

A/F sensor 1		Ground	Voltage	
Connector	onnector Terminal			
F27	4	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

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4. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sei	nsor 1	ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F27	1	F8	45	Existed
1 21	2	10	49	LAISIGU

4. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F ser	nsor 1	EC	M Ground		Continuity
Connector	Terminal	Connector	Terminal	Giodila	Continuity
F27	1	F8	45	Ground	Not existed
1 21	2	1-0	49	Giodila	NOT EXISTED

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace.

O.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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P0133 A/F SENSOR 1

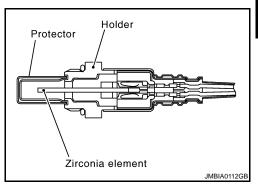
Description INFOID:000000002994444

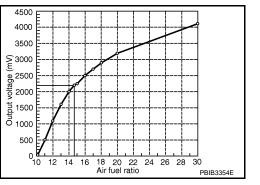
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800°C (1,472°F).





DTC Logic

DTC DETECTION LOGIC

To judge the malfunction of A/F sensor 1, this diagnosis measures response time of the A/F signal computed by ECM from the A/F sensor 1 signal. The time is compensated by engine operating (speed and load), fuel feedback control constant, and the A/F sensor 1 temperature index. Judgment is based on whether the compensated time (the A/F signal cycling time index) is inordinately long or not.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause	
P0133	Air fuel ratio (A/F) sensor 1 circuit slow response	The response of the A/F signal computed by ECM from A/F sensor 1 signal takes more than the specified time.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.) A/F sensor 1 A/F sensor 1 A/F sensor 1 heater Fuel pressure Fuel injector Intake air leaks Exhaust gas leaks PCV Mass air flow sensor	L N

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 5.

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2.perform dtc confirmation procedure-i

(P)With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1minute under no load.
- Let engine idle for 1 minute.
- Select A/F SEN1(B1) P1278/P1279 of A/F SEN1 in DTC WORK SUPPORT mode with CONSULT-III.
- 6. Touch "START".

Is "COMPLETED" displayed on COUSULT-III?

YES >> GO TO 3 NO >> GO TO 4.

3.PERFORM DTC CONFIRMATION PROCEDURE-II

Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III?

OK >> INSPECTION END

NG >> Go to EC-1071, "Diagnosis Procedure".

4. PERFORM DTC CONFIRMATION PROCEDURE

- After perform the following procedure, "TESTING" will be displayed on the CONSULT-III screen.
- Increase the engine speed up to 4,000 to 5,000 rpm and keep it for 10 seconds.
- Fully release accelerator pedal and then let engine idle for about 10 seconds.

If "TESTING" is not displayed after 10 seconds, refer to EC-1005, "Component Function Check".

- Wait for about 20 seconds at idle at under the condition that "TESTING" is displayed on the CONSULT-III screen.
- Make sure that "TESTING" changes to "COMPLETED".
 - If "TESTING" changed to "OUT OF CONDITION", refer to EC-1005, "Component Function Check".
- Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III?

OK >> INSPECTION END

NG >> Go to EC-1071, "Diagnosis Procedure".

5. CHECK AIR-FUEL RATIO SELF-LEARNING VALUE

- 1. Start engine and warm it up to normal operating temperature.
- 2. Select Service \$01 with GST.
- 3. Calculate the total value of "Short term fuel trim" and "Long term fuel trim" indications.

Is the total percentage within $\pm 15\%$?

YES >> GO TO 7. NO >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- · Intake air leaks
- Exhaust gas leaks
- Incorrect fuel pressure
- Lack of fuel
- Fuel injector
- Incorrect PCV hose connection
- PCV valve
- · Mass air flow sensor

>> Repair or replace malfunctioning part.

7.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.

P0133 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

- Let engine idle for 1 minute.
- Increase the engine speed up to 4,000 to 5,000 rpm and keep it for 10 seconds.
- Fully release accelerator pedal and then let engine idle for about 1 minute.
- Check 1st trip DTC detected?.

Is 1st trip DTC detected?

YES >> Go to EC-1071, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

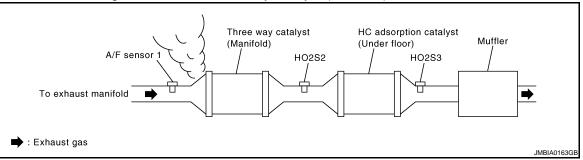
2.retighten a/f sensor 1 $\,$

Loosen and retighten the A/F sensor 1. Refer to EM-32, "Removal and Installation".

>> GO TO 3.

3. CHECK EXHAUST GAS LEAK

- Start engine and run it at idle.
- Listen for an exhaust gas leak before three way catalyst (manifold).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 4.

4. CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 5.

f 5.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to EC-932, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 or P172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171 or P0172. Refer to EC-1093, "DTC Logic" or EC-1097, "DTC Logic".

NO >> GO TO 6.

$oldsymbol{6}$.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

Disconnect A/F sensor 1 harness connector.

[FOR MEXICO]

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< COMPONENT DIAGNOSIS >

- 2. Turn ignition switch ON.
- Check the voltage between A/F sensor 1 harness connector and ground.

A/F sensor 1 Connector Terminal		Ground	Voltage
		Glodila	voltage
F27	4	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

7.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- · Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

$8.\mathsf{CHECK}$ A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F ser	A/F sensor 1		ECM	
Connector	Terminal	Connector Terminal		Continuity
F27	1	F8	45	Existed
1 21	2	1.0	49	LAISIEU

4. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F sensor 1		ECM		Ground	Continuity
Connector	Terminal	Connector	Terminal	Giodila	Continuity
E27	1	F8	45	Ground	Not existed
F27	2	ГО	49	Ground	Not existed

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9.CHECK AIR FUEL RATIO (A/F) SENSOR 1 HEATER

Refer to EC-1024, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 13.

10.CHECK MASS AIR FLOW SENSOR

Check mass air flow sensor.

Refer to EC-1035, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace mass air flow sensor.

11. CHECK PCV VALVE

P0133 A/F SENSOR 1	
< COMPONENT DIAGNOSIS > [FOR MEXICO]	
Refer to EC-1221, "Component Inspection".	
Is the inspection result normal?	Α
YES >> GO TO 12. NO >> Repair or replace PCV valve.	
12.CHECK INTERMITTENT INCIDENT	EC
Perform GI-41, "Intermittent Incident".	
Is the inspection result normal?	С
YES >> GO TO 13.	C
NO >> Repair or replace.	
13. REPLACE AIR FUEL RATIO (A/F) SENSOR 1	D
Replace air fuel ratio (A/F) sensor 1.	
• Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a	Е
hard surface such as a concrete floor; use a new one.	
• Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant	F
(commercial service tool).	F
>> INSPECTION END	G
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P0137 H02S2

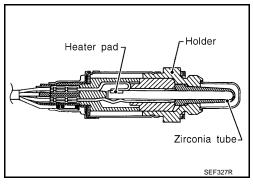
Description INFOID:000000002994447

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas on each bank.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

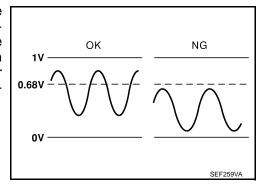
Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



DTC Logic

DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the maximum voltage of the sensor is sufficiently high during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0137	Heated oxygen sensor 2 circuit low voltage	The maximum voltage from the sensor is not reached to the specified voltage.	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector Intake air leaks

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2. NO >> GO TO 5.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30 °C (32 to 86 °F).

>> GO TO 3.

3. PERFORM DTC CONFIRMATION PROCEDURE

P0137 HO2S2

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- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).

If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches to 70°C (158°F).

- Open engine hood.
- 8. Select "HO2S2 (B1) P1147" of "HO2S2" in "DTC WORK SUPPORT" mode with CONSULT-III.
- 9. Start engine and following the instruction of CONSULT-III.

NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

10. Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III screen?

OK >> INSPECTION END

NG >> Go to EC-1076, "Diagnosis Procedure".

CAN NOT BE DIAGNOSED>>GO TO 4.

f 4.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

- Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- 2. Perform DTC CONFIRMATION PROCEDURE again.

>> GO TO 3.

5. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to <a>EC-1075. "Component Function Check".

NOTE:

Use component function check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1076, "Diagnosis Procedure".

Component Function Check

1.PERFORM COMPONENT FUNCTION CHECK-I

Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector terminals under the following condition.

ECM ECM		CM Condition		Voltage	
Connector	Terminal	Connector	Terminal	Condition	vollage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connectors under the following condition.

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ECM ECM		Condition	Voltage		
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

3.perform component function check-iii

Check the voltage between ECM harness connector and ground under the following condition.

ECM		ECM		Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1076, "Diagnosis Procedure".

Diagnosis Procedure

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1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to <u>EC-932</u>, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- 2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171. Refer to <u>EC-1093</u>. "DTC Logic".

NO >> GO TO 3.

3.CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Disconnect heated oxygen sensor 2 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	:S2	EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F31	1	F8	35	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between HO2S2 harness connector and ECM harness connector.

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HO2S2		EC	Continuity		
Connector	Terminal	Connector	Terminal	Continuity	
F31 4 F8 33 Existed					
2. Check the continuity between HO2S2 harness connector					

or or ECM harness connector and ground.

HO2	IO2S2 ECM			Ground	Continuity
Connector	Terminal	Connector Terminal		Ground	Continuity
F31	4	F8	33	Ground	Not existed

Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK HEATED OXYGEN SENSOR 2

Refer to EC-1077, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

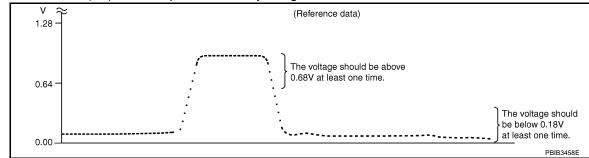
NO >> GO TO 3.

2.CHECK HEATED OXYGEN SENSOR 2

(P)With CONSULT-III

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)" as the monitor item with CONSULT-III.

EC-1077 Revision: 2008 January 2008 Rogue Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S2 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S2 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3.CHECK HEATED OXYGEN SENSOR 2-I

⊠Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground under the following condition.

	ECM			
Connector	+	_	Condition	Voltage
Connector	Terminal	Terminal		
F8	33 (HO2S2 signal)	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground under the following condition.

ECM					
Connector	+	-	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5.CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground under the following condition.

P0137 H02S2

[FOR MEXICO]

ECM					
Connector	+	-	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

6. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

 Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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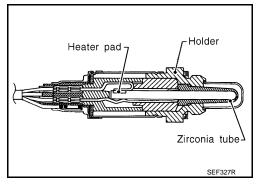
Description INFOID:000000002994452

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas on each bank.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



DTC Logic

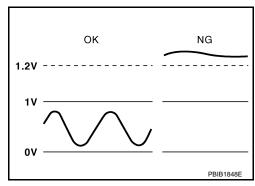
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DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time.

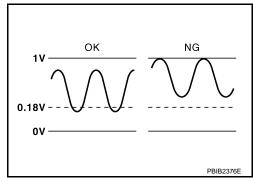
MALFUNCTION A

To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the voltage is unusually high during the various driving condition such as fuel-cut.



MALFUNCTION B

To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the minimum voltage of sensor is sufficiently low during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
P0138	Heated oxygen sensor 2 circuit high voltage	A)	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2
		В)	The minimum voltage from the sensor is not reached to the specified voltage.	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector

DTC CONFIRMATION PROCEDURE

[FOR MEXICO]

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

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>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1082, "Diagnosis Procedure".

NO-1 >> With CONSULT-III: GO TO 3.

NO-2 >> Without CONSULT-III: GO TO 5.

3.perform dtc confirmation procedure for malfunction b

NOTE:

For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30 °C (32 to 86 °F).

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).
- If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches to 70°C (158°F).
- 7. Open engine hood.
- 8. Select "HO2S2 (B1) P1146" of "HO2S2" in "DTC WORK SUPPORT" mode with CONSULT-III.
- Start engine and following the instruction of CONSULT-III.

NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

10. Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III

OK >> INSPECTION END

NG >> Go to EC-1082, "Diagnosis Procedure".

CAN NOT BE DIAGNOSED>>GO TO 4.

4.PERFORM DTC CONFIRMATION PROCEDURE FOR MALUNCTION B AGAIN

- Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- Perform DTC CONFIRMATION PROCEDURE again.

>> GO TO 3.

5. PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

Perform component function check. Refer to <u>EC-1082</u>, "<u>Diagnosis Procedure</u>".

NOTE:

Use component function check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1082, "Diagnosis Procedure".

Component Function Check

INFOID:0000000002994454

1.PERFORM COMPONENT FUNCTION CHECK-I

Without CONSULT-III

1. Start engine and warm it up to the normal operating temperature.

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- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector terminals under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	vollage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

$2.\mathsf{PERFORM}$ COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connectors under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voitage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

3. PERFORM COMPONENT FUNCTION CHECK-III

Check the voltage between ECM harness connector and ground under the following condition.

ECM		ECM		Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	voltage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1082, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000002994455

1.INSPECTION START

Confirm the detected malfunction (A or B). Refer to EC-1080, "DTC Logic".

Which malfunction is detected?

A >> GO TO 2.

B >> GO TO 9.

2.CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace ground connection.

3. CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

Disconnect heated oxygen sensor 2 harness connector.

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- Disconnect ECM harness connector.
- 3. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	.S2	EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F31	1	F8	35	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	S2	EC	Continuity	
Connector	Connector Terminal			Terminal
F31	4	F8	33	Existed

2. Check the continuity between HO2S2 harness connector or ECM harness connector and ground.

HO2	.S2	EC	М	Ground	Continuity	
Connector Terminal		Connector	Terminal	Ground	Continuity	
F31	4	F8	33	Ground	Not existed	

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

 $\mathbf{5}.$ CHECK HO2S2 CONNECTOR FOR WATER

Check connectors for water.

Water should not exist.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace harness or connectors.

6.CHECK HEATED OXYGEN SENSOR 2

Refer to EC-1085, "Component Inspection",

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

7.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

8. CHECK INTERMITTENT INCIDENT

Refer to GI-44, "Circuit Inspection".

>> INSPECTION END

9. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace ground connection.

10.clear the mixture ratio self-learning value

- Clear the mixture ratio self-learning value. Refer to <u>EC-932</u>, "MIXTURE RATIO SELF-LEARNING VALUE <u>CLEAR</u>: <u>Special Repair Requirement</u>".
- 2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0172. Refer to EC-1097, "DTC Logic".

NO >> GO TO 11.

11. CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	.S2	EC	Continuity	
Connector Terminal		Connector	Terminal	Continuity
F31	1	F8	35	Existed

5. Also check harness for short to ground and short to power.

<u>Is the inspection result normal?</u>

YES >> GO TO 12.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

12. CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	:S2	EC	Continuity	
Connector	onnector Terminal		Terminal	Continuity
F31	4	F8	33	Existed

2. Check the continuity between HO2S2 harness connector or ECM harness connector and ground.

HO2S2		EC	М	Ground	Continuity	
Connector	or Terminal Connector		Terminal	Ground	Continuity	
F31	4	F8	33	Ground	Not existed	

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

13. CHECK HEATED OXYGEN SENSOR 2

Refer to EC-1085, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.

[FOR MEXICO]

NO >> GO TO 14.

14.replace heated oxygen sensor 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.

>> INSPECTION END

15. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1.INSPECTION START

Do vou have CONSULT-III?

Do you have CONSULT-III?

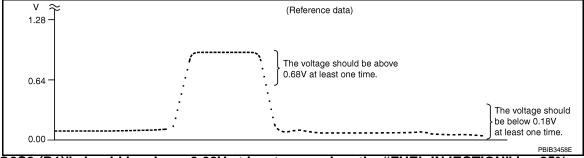
YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK HEATED OXYGEN SENSOR $_2$

With CONSULT-III

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III. 1.
- Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)" as the monitor item with CONSULT-III.
- Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HO2S2 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S2 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3.check heated oxygen sensor 2-1

Without CONSULT-III

- Start engine and warm it up to the normal operating temperature. 1.
- Turn ignition switch OFF and wait at least 10 seconds. 2.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- Check the voltage between ECM harness connector and ground under the following condition.

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ECM					
Connector	+	_	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground under the following condition.

ECM					
Connector	+	_	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground under the following condition.

ECM					
Connector	+	-	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

6. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

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P0139 HO2S2

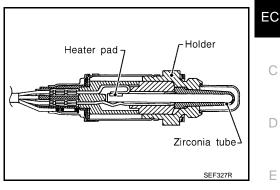
Description INFOID:0000000002994457

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas on each bank.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air-fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1V in richer conditions to 0V in leaner conditions.

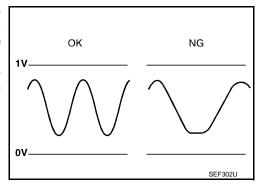
Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



DTC Logic INFOID:00000000002994458

DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (mamifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the switching response of the sensor's voltage is faster than specified during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0139	Heated oxygen sensor 2 circuit slow response	It takes more time for the sensor to respond be- tween rich and lean than the specified time.	 Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector Intake air leaks

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 5.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 3.

3.PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- Start engine and warm it up to the normal operating temperature.

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- 3. Start engine and warm it up to the normal operating temperature.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Open engine hood.
- Select "HO2S2 (B1) P0139" of "HO2S2" in "DTC WORK SUPPORT" mode with CONSULT-III.
- 8. Start engine and following the instruction of CONSULT-III.

NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

9. Touch "SELF-DIAG RESULT".

Which is displayed on CONSULT-III?

OK >> INSPECTION END

NG >> GO TO 4.

CAN NOT BE DIAGNOSED>>GO TO 4.

4. PERFORM THE RESULT OF DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- Perform DTC CONFIRMATION PROCEDURE again.

>> GO TO 3.

5. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-1088, "Component Function Check".

NOTE:

Use Component Function Check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1089, "Diagnosis Procedure".

Component Function Check

INFOID:0000000002994459

1. PERFORM COMPONENT FUNCTION CHECK-I

⋈Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector terminals under the following condition.

E	ECM		CM	Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	A change of voltage should be more than 0.30V for 1 second during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connectors under the following condition.

E	CM	E	ECM Condition		Voltage
Connector	Terminal	Connector	Terminal	Condition	voltage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	A change of voltage should be more than 0.30V for 1 second during this procedure.

P0139 HO2S2

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Is the inspection result normal?

>> INSPECTION END

NO >> GO TO 3.

3.perform component function check-iii

Check the voltage between ECM harness connector and ground under the following condition.

E	CM	ECM		Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	vollage
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	A change of voltage should be more than 0.30V for 1 second during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1089, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to EC-932, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 or P0172 detected? Is it difficult to start engine?

>> Perform trouble diagnosis for DTC P0171 or P0172. Refer to EC-1093, "DTC Logic" or EC-1097, YES "DTC Logic".

NO >> GO TO 3.

${f 3.}$ CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect heated oxygen sensor 2 harness connector. 2.
- 3. Disconnect ECM harness connector.
- Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	S2	EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F31	1	F8	35	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

f 4 .CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	S2	EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F31	4	F8	33	Existed

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2. Check the continuity between HO2S2 harness connector or ECM harness connector and ground.

HO2	.S2	EC	М	Ground	Continuity
Connector	Terminal	Connector	Terminal	Giodila	Continuity
F31	4	F8	33	Ground	Not existed

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK HEATED OXYGEN SENSOR 2

Refer to EC-1090, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 6.

6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002994461

1. INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

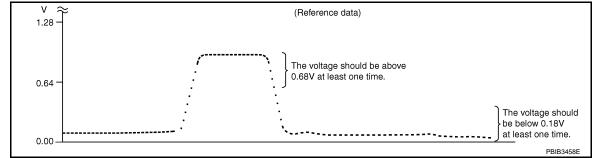
YES >> GO TO 2. NO >> GO TO 3.

2.CHECK HEATED OXYGEN SENSOR 2

(P)With CONSULT-III

- 1. Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)" as the monitor item with CONSULT-III.

Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to ±25%.



"HÖ2S2 (B1)" should be above 0.68V at least once when the "FUEL INJECTION" is +25%. "HO2S2 (B1)" should be below 0.18V at least once when the "FUEL INJECTION" is -25%.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3.CHECK HEATED OXYGEN SENSOR 2-I

Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4 Let engine idle for 1 minute.
- Check the voltage between ECM harness connector and ground under the following condition.

	ECM				
Connector	+	_	Condition	Voltage	
Connector	Terminal	Terminal			
F8	33 (HO2S2 signal)	35 (Sensor ground)	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.	

Is the inspection result normal?

>> INSPECTION END YES

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground under the following condition.

	ECM			
Connector	+	-	Condition	Voltage
Connector	Terminal	Terminal		
F8	33 (HO2S2 signal)	35 (Sensor ground)	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground under the following condition.

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	ECM			
Connector	+	_	Condition	Voltage
Connector	Terminal	Terminal		
F8	33 (HO2S2 signal)	35 (Sensor ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage should be above 0.68V at least once during this procedure. The voltage should be below 0.18V at least once during this procedure.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

6. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

CAUTION:

- Discard any heated oxygen sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new heated oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

P0171 FUEL INJECTION SYSTEM FUNCTION

DTC Logic INFOID:0000000002994462

DTC DETECTION LOGIC

With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the A/F sensors 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios.

In case the amount of the compensation value is extremely large (The actual mixture ratio is too lean.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input signal to ECM	ECM function	Actuator
A/F sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)	Fuel injection control	Fuel injector

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0171	Fuel injection system too lean	 Fuel injection system does not operate properly. The amount of mixture ratio compensation is too large. (The mixture ratio is too lean.) 	Intake air leaks A/F sensor 1 Fuel injector Exhaust gas leaks Incorrect fuel pressure Lack of fuel Mass air flow sensor Incorrect PCV hose connection

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE-I

- Clear the mixture ratio self-learning value. Refer to EC-932, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- Start engine.

Is it difficult to start engine?

YES >> GO TO 3.

NO >> GO TO 4.

3. RESTART ENGINE

If it is difficult to start engine, the fuel injection system has a malfunction, too.

Crank engine while depressing accelerator pedal.

Does engine start?

YES >> Go to EC-1094, "Diagnosis Procedure".

NO >> Check exhaust and intake air leak visually.

f 4.PERFORM DTC CONFIRMATION PROCEDURE-II

- Start engine and let it idle for at least 10 minutes.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1094, "Diagnosis Procedure".

NO >> GO TO 5.

5.PERFORM DTC CONFIRMATION PROCEDURE-III

Turn ignition switch OFF and wait at least 10 seconds.

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< COMPONENT DIAGNOSIS >

[FOR MEXICO]

2. Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for 10 minutes. Refer to the table below.

Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

Engine speed	Engine speed in the freeze frame data $\pm400~\text{rpm}$	
Vehicle speed	Vehicle speed in the freeze frame data \pm 10 km/h (6 MPH)	
Engine coolant temperature (T) condition	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).	
Engine coolant temperature (1) condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).	

3. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1094, "Diagnosis Procedure".

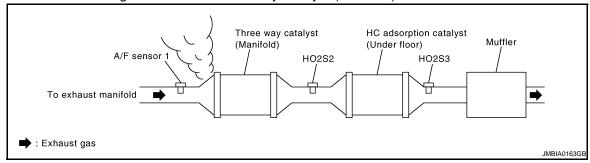
NO >> INSPECTION END

Diagnosis Procedure

INFOID:00000000002994463

1.CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before three way catalyst (manifold).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 2.

2.CHECK FOR INTAKE AIR LEAK

- 1. Listen for an intake air leak after the mass air flow sensor.
- 2. Check PCV hose connection.

Intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 3.

3.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect corresponding A/F sensor 1 harness connector.
- Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sensor 1		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F27	1	F8	45	Existed
1.21	2	1.0	49	LAISIEU

5. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

A/F se	ensor 1	I	ECM	0	Quarter is
Connector	Terminal	Connector	Terminal	- Ground	Continuity
F27	1 2	F8	45 49	Ground	Not existed
6. Also ch		ss for short			<u> </u>
Is the inspe					
	GO TO 4.				
4			r short to gro	ound or s	hort to power in harness or connectors.
4.CHECK					
			o. Refer to <u>E</u>		"Inspection". d check fuel pressure. Refer to EC-1272, "Inspection".
z. IIIStali i	iuei piessu	re gauge k	it [331 (3 -44)	32 i)] aii	d check fuel pressure. Refer to EG-1272, hispection.
At i	dling: App	roximately	/ 350 kPa (3	.57 kg/c	m ² , 51 psi)
Is the inspe	ection resul	t normal?			
	GO TO 6.				
_	• GO TO 5.		_		
		NCTIONING			
			for clogging.		
•	ection resul		ad fual auman	0000000	15.29
	Replace Repair or		nd fuel pump	assemb	·y .
`	-	· R FLOW SE	NSOR		
®With CO	NSULT-III				
1. Install	all removed		<i>"</i>		
2. Check	"MASS AIF	R FLOW" ir	ı "Data Mon	NTOR" n	node with CONSULT-III.
1.0	- 4.0 g·m/s	sec: at	idling		
	- 10.0 g⋅m/		2,500 rpm		
∰With GS	Τ				
1. Install	all removed				
2. Check	mass air fl	ow sensor	signal in Ser	/ice \$01	with GST.
1.0	- 4.0 g·m/s	sec: at	idling		
4.0	- 10.0 g·m	/sec: at	2,500 rpm		
s the meas	surement v	alue within	the specifica	tion?	
YES >>	GO TO 7.		•		
NO >>					loose connections in the mass air flow sensor circuit or
7 CUECK			C-1031, "DTC LINJECTOR	Logic .	
_		IN OF FUEL	INJECTUR		
With CO 1. Start e					
		BALANCE	" in "ACTIVE	E TEST"	mode with CONSULT-III.
3. Make s	sure that ea	ach circuit p	roduces a m	omentar	y engine speed drop.

Without CONSULT-III 1. Let engine idle.

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

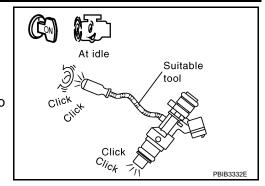
2. Listen to each fuel injector operating sound.

Clicking noise should be heard.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Perform trouble diagnosis for FUEL INJECTOR, refer to EC-1209, "Component Function Check".



8. CHECK FUEL INJECTOR

- 1. Turn ignition switch OFF.
- 2. Confirm that the engine is cooled down and there are no fire hazards near the vehicle.
- 3. Disconnect all fuel injector harness connectors.
- Remove fuel tube assembly. Refer to <u>EM-42, "Removal and Installation"</u>. Keep fuel hose and all fuel injectors connected to fuel tube.
- 5. Disconnect all ignition coil harness connectors.
- 6. Prepare pans or saucers under each fuel injector.
- 7. Crank engine for about 3 seconds.

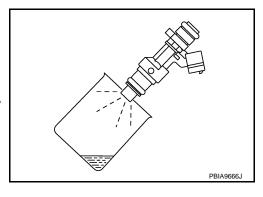
Fuel should be sprayed evenly for each fuel injector.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Rep

>> Replace fuel injectors from which fuel does not spray out. Always replace O-ring with new ones.



9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

P0172 FUEL INJECTION SYSTEM FUNCTION

DTC Logic

DTC DETECTION LOGIC

With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the A/F sensors 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios.

In case the amount of the compensation value is extremely large (The actual mixture ratio is too rich.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input signal to ECM	ECM function	Actuator
A/F sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)	Fuel injection control	Fuel injector

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0172	Fuel injection system too rich	 Fuel injection system does not operate properly. The amount of mixture ratio compensation is too large. (The mixture ratio is too rich.) 	 A/F sensor 1 Fuel injector Exhaust gas leaks Incorrect fuel pressure Mass air flow sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE-I

- Clear the mixture ratio self-learning value. Refer to <u>EC-932</u>, "MIXTURE RATIO SELF-LEARNING VALUE <u>CLEAR</u>: Special Repair Requirement".
- 2. Start engine.

Is it difficult to start engine?

YES >> GO TO 3.

NO >> GO TO 4.

RESTART ENGINE

If it is difficult to start engine, the fuel injection system has a malfunction, too.

Crank engine while depressing accelerator pedal.

Does engine start?

YES >> Go to EC-1098, "Diagnosis Procedure".

NO >> Remove spark plugs and check for fouling, etc.

4. PERFORM DTC CONFIRMATION PROCEDURE-II

Start engine and let it idle for at least 10 minutes.

Is 1st trip DTC detected?

YES >> Go to EC-1098, "Diagnosis Procedure".

NO >> GO TO 5.

5.PERFORM DTC CONFIRMATION PROCEDURE-III

1. Turn ignition switch OFF and wait at least 10 seconds.

2. Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for 10 minutes. Refer to the table below.

Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

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Engine speed	Engine speed in the freeze frame data $\pm400~\text{rpm}$	
Vehicle speed	Vehicle speed in the freeze frame data ± 10 km/h (6 MPH)	
Engine coolant temperature (T) condition	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).	
Engine coolant temperature (1) condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).	

3. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1098, "Diagnosis Procedure".

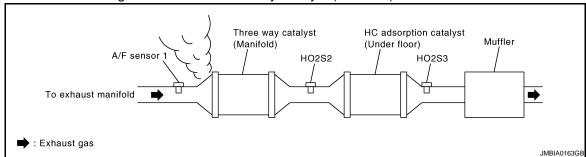
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994465

1. CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before three way catalyst (manifold).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 2.

2.CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 3.

3.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect corresponding A/F sensor 1 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F	A/F sensor 1 ECM		ECM	Continuity
Connector	Terminal	Connector Terminal		Continuity
F27	1	F8	45	Existed
1 21	2	1-0	49	LAISIEU

5. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F s	A/F sensor 1		ECM				Continuity
Connector	Terminal	Connector Terminal		Ground	Continuity		
F27	1	F8	45	Ground	Not existed		
121	2	10	49	Giodila	NOI EXISTED		

6. Also check harness for short to power.

< COMPONENT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK FUEL PRESSURE

- Release fuel pressure to zero. Refer to EC-1272, "Inspection".
- Install fuel pressure gauge kit [SST (J-44321)] and check fuel pressure. Refer to EC-1272, "Inspection". 2.

At idling: Approximately 350 kPa (3.57 kg/cm², 51 psi)

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging.

Is the inspection result normal?

YES >> Replace "fuel filter and fuel pump assembly".

NO >> Repair or replace

O.CHECK MASS AIR FLOW SENSOR

(P)With CONSULT-III

- Install all removed parts.
- Check "MASS AIR FLOW" in "DATA MONITOR" mode with CONSULT-III.

1.0 - 4.0 g·m/sec: at idling

4.0 - 10.0 g·m/sec: at 2,500 rpm

With GST

- 1. Install all removed parts.
- 2. Check mass air flow sensor signal in "Service \$01" with GST.

1.0 - 4.0 q·m/sec: at idling 4.0 - 10.0 g·m/sec: at 2,500 rpm

Is the measurement value within the specification?

YES >> GO TO 7.

NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or grounds. Refer to EC-1031, "DTC Logic".

EC-1099

7.CHECK FUNCTION OF FUEL INJECTOR

(P)With CONSULT-III

- 1. Start engine.
- 2. Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- Make sure that each circuit produces a momentary engine speed drop.

⊗Without CONSULT-III

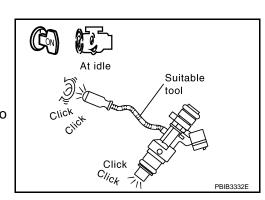
- 1. Let engine idle.
- Listen to each fuel injector operating sound.

Clicking noise should be heard.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Perform trouble diagnosis for FUEL INJECTOR, refer to EC-1209, "Component Function Check".



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8.CHECK FUEL INJECTOR

- Remove fuel injector assembly. Refer to <u>EM-42</u>. "<u>Removal and Installation</u>". Keep fuel hose and all fuel injectors connected to fuel tube.
- 2. Confirm that the engine is cooled down and there are no fire hazards near the vehicle.
- 3. Disconnect all fuel injector harness connectors.
- 4. Disconnect all ignition coil harness connectors.
- 5. Prepare pans or saucers under each fuel injectors.
- 6. Crank engine for about 3 seconds.

 Make sure fuel does not drip from fuel injector.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace the fuel injectors from which fuel is dripping. Always replace O-ring with new one.

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

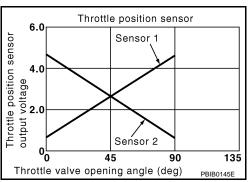
>> INSPECTION END

P0222, P0223 TP SENSOR

Description INFOID:0000000002994474

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic INFOID:00000000002994475

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0222	Throttle position sensor 1 circuit low input	An excessively low voltage from the TP sensor 1 is sent to ECM.	Harness or connectors (TP sensor 1 circuit is open or shorted.)
P0223	Throttle position sensor 1 circuit high input	An excessively high voltage from the TP sensor 1 is sent to ECM.	Electric throttle control actuator (TP sensor 1)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1101, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK THROTTLE POSITION SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect electric throttle control actuator harness connector.
- Turn ignition switch ON. 2.
- Check the voltage between electric throttle control actuator harness connector and ground.

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Electric throttle of	control actuator	Ground	Voltage
Connector Terminal		Giodila	voltage
F29	1	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3.check throttle position sensor 1 ground circuit for open and short

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F29	4	F8	36	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK THROTTLE POSITION SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle control actuator		E	CM	Continuity
Connector	Terminal	Connector Terminal		Continuity
F29	2	F8	37	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK THROTTLE POSITION SENSOR

Refer to EC-1103, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- Go to <u>EC-1051</u>, "Special Repair Requirement".

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0222, P0223 TP SENSOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Component Inspection

INFOID:0000000002994477

1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set shift lever to D position.
- 6. Check the voltage between ECM harness connector terminals.

ECM						
+		_		Condition		Voltage
Connector	Terminal	Connector	Terminal			
F0	37 (TP sensor 1 signal)	F0	36		Fully released Fully depressed	More than 0.36V Less than 4.75V
F8	38 (TP sensor 2 signal)	F8	(Sensor ground)	Accelerator pedal	Fully released Fully depressed	Less than 4.75V More than 0.36V

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.replace electric throttle control actuator

- 1. Replace electric throttle control actuator.
- Go to <u>EC-1103</u>, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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P0300, P0301, P0302, P0303, P0304 MISFIRE

DTC Logic

DTC DETECTION LOGIC

When a misfire occurs, engine speed will fluctuate. If the engine speed fluctuates enough to cause the crank-shaft position (CKP) sensor (POS) signal to vary, ECM can determine that a misfire is occurring.

Sensor	Input signal to ECM	ECM function	
Crankshaft position sensor (POS)	Engine speed	On board diagnosis of misfire	

The misfire detection logic consists of the following two conditions.

One Trip Detection Logic (Three Way Catalyst Damage)

On the 1st trip that a misfire condition occurs that can damage the three way catalyst (TWC) due to over-heating, the MIL will blink.

When a misfire condition occurs, the ECM monitors the CKP sensor signal every 200 engine revolutions for a change.

When the misfire condition decreases to a level that will not damage the TWC, the MIL will turn off.

If another misfire condition occurs that can damage the TWC on a second trip, the MIL will blink.

When the misfire condition decreases to a level that will not damage the TWC, the MIL will remain on.

If another misfire condition occurs that can damage the TWC, the MIL will begin to blink again.

Two Trip Detection Logic (Exhaust quality deterioration)

For misfire conditions that will not damage the TWC (but will affect vehicle emissions), the MIL will only light when the misfire is detected on a second trip. During this condition, the ECM monitors the CKP sensor signal every 1,000 engine revolutions.

A misfire malfunction can be detected on any one cylinder or on multiple cylinders.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0300	Multiple cylinder misfire detected	Multiple cylinder misfire.	Improper spark plug
P0301	No.1 cylinder misfire detected	No. 1 cylinder misfires.	Insufficient compression Incorrect fuel pressure
P0302	No. 2 cylinder misfire detected	No. 2 cylinder misfires.	The fuel injector circuit is open or shorted
P0303	No. 3 cylinder misfire detected	No. 3 cylinder misfires.	Fuel injector Intake air leak
P0304	No. 4 cylinder misfire detected	No. 4 cylinder misfires.	The ignition signal circuit is open or shorted Lack of fuel Signal plate A/F sensor 1 Incorrect PCV hose connection

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE-I

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- Restart engine and let it idle for about 15 minutes.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1105, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform dtc confirmation procedure-ii

1. Turn ignition switch OFF and wait at least 10 seconds.

P0300, P0301, P0302, P0303, P0304 MISFIRE

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Start engine and drive the vehicle under the similar conditions to (1st trip) Freeze Frame Data for a certain time. Refer to the table below.

Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

CAUTION:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws when driving.

Engine speed	Engine speed in the freeze frame data ± 400 rpm
Vehicle speed	Vehicle speed in the freeze frame data \pm 10 km/h (6 MPH)
Engine coolant temperature (T)	When the freeze frame data shows lower than 70 °C (158 °F), T should be lower than 70 °C (158 °F).
condition	When the freeze frame data shows higher than or equal to 70 °C (158 °F), T should be higher than or equal to 70 °C (158 °F).

The time to driving varies according to the engine speed in the freeze frame data.

Engine speed	Time
Around 1,000 rpm	Approximately 10 minutes
Around 2,000 rpm	Approximately 5 minutes
More than 3,000 rpm	Approximately 3.5 minutes

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1105, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK FOR INTAKE AIR LEAK AND PCV HOSE

- Start engine and run it at idle speed.
- Listen for the sound of the intake air leak.
- Check PCV hose connection.

Is intake air leak detected?

YES >> Discover air leak location and repair.

NO >> GO TO 2.

2.CHECK FOR EXHAUST SYSTEM CLOGGING

Stop engine and visually check exhaust tube, three way catalyst and muffler for dents.

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 3.

YES-2 >> Without CONSULT-III: GO TO 4.

NO >> Repair or replace malfunctioning part.

3.PERFORM POWER BALANCE TEST

(II) With CONSULT-III

- 1. Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- Make sure that each circuit produces a momentary engine speed drop.

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 4.

4. CHECK FUNCTION OF FUEL INJECTOR

Start engine and let engine idle.

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2. Listen to each fuel injector operating sound.

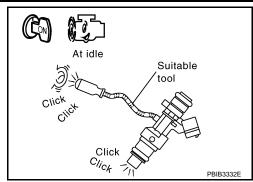
Clicking noise should be heard.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Perform troub

>> Perform trouble diagnosis for FUEL INJECTOR, refer to <u>EC-1210</u>, "Component Inspection".



5. CHECK FUNCTION OF IGNITION COIL-I

CAUTION:

Do the following procedure in the place where ventilation is good without the combustible.

- 1. Turn ignition switch OFF.
- 2. Remove fuel pump fuse in IPDM E/R to release fuel pressure.

NOTE:

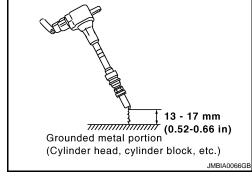
Do not use CONSULT-III to release fuel pressure, or fuel pressure applies again during the following procedure.

- 3. Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.
- 6. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 7. Remove ignition coil and spark plug of the cylinder to be checked.
- 8. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 9. Connect spark plug and harness connector to ignition coil.
- 10. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

CAUTION:

 Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.



It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken.
 NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 6.

6. CHECK FUNCTION OF IGNITION COIL-II

- Turn ignition switch OFF.
- Disconnect spark plug and connect a known-good spark plug.
- 3. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

Is the inspection result normal?

YES >> GO TO 7.

NO >> Check ignition coil, power transistor and their circuits. Refer to EC-1215, "Component Function Check".

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

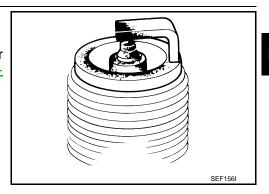
7. CHECK SPARK PLUG

Check the initial spark plug for fouling, etc.

Is the inspection result normal?

YES >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-18, "Removal and Installation".

NO >> Repair or clean spark plug. Then GO TO 8.



8. CHECK FUNCTION OF IGNITION COIL-III

- Reconnect the initial spark plugs.
- 2. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

Spark should be generated.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-18, "Removal and Installation".

9. CHECK COMPRESSION PRESSURE

Check compression pressure. Refer to EM-23, "Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Check pistons, piston rings, valves, valve seats and cylinder head gaskets.

10. CHECK FUEL PRESSURE

- Install all removed parts.
- Release fuel pressure to zero. Refer to EC-1272, "Inspection".
- Install fuel pressure gauge kit [SST (J-44321)] and check fuel pressure. Refer to EC-1272, "Inspection".

At idling: Approximately 350 kPa (3.57 kg/cm², 51 psi)

Is the inspection result normal?

YES >> GO TO 12.

NO >> GO TO 11.

11. DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging.

Is the inspection result normal?

YES >> Replace "fuel filter and fuel pump assembly".

NO >> Repair or replace.

12.CHECK IGNITION TIMING

Check the following items. Refer to EC-925, "BASIC INSPECTION: Special Repair Requirement".

Items	Specifications
Target idle speed	700 ± 50 rpm (in P or N position)
Ignition timing	15 ± 5°BTDC (in P or N position)

Is the inspection result normal?

YES >> GO TO 13.

NO >> Follow the EC-925, "BASIC INSPECTION: Special Repair Requirement".

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[FOR MEXICO]

13. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect corresponding A/F sensor 1 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F se	ensor 1	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F27	1	F8	45	Existed
Γ21	2	го	49	Existed

5. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F se	ensor 1	ECM		Ground	Continuity
Connector	Terminal	Connector Terminal		Giodila	
F27	1	F8	45	Ground	Not existed
ΓΖΙ	2	ГО	49	Giodila	Not existed

6. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 14.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

14. CHECK A/F SENSOR 1 HEATER

Refer to EC-1024, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace A/F sensor 1.

15. CHECK MASS AIR FLOW SENSOR

(P)With CONSULT-III

Check "MASS AIR FLOW" in "DATA MONITOR" mode with CONSULT-III.

1.0 - 4.0 g·m/sec : at idling 4.0 - 10.0 g·m/sec : at 2,500 rpm

■With GST

Check mass air flow sensor signal in Service \$01 with GST.

1.0 - 4.0 g·m/sec : at idling 4.0 - 10.0 g·m/sec : at 2,500 rpm

Is the measurement value within the specification?

YES >> GO TO 16.

NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or ground. Refer to EC-1031, "DTC Logic".

16. CHECK SYMPTOM TABLE

Check items on the rough idle symptom in EC-1261, "Symptom Table".

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or replace.

17. ERASE THE 1ST TRIP DTC

Some tests may cause a 1st trip DTC to be set.

P0300, P0301, P0302, P0303, P0304 MISFIRE

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Erase the 1st trip DTC from the ECM memory after performing the tests. Refer to EC-983, "Diagnosis Description".

Α >> GO TO 18. 18. CHECK INTERMITTENT INCIDENT EC Refer to GI-41, "Intermittent Incident". С >> INSPECTION END D Е F G Н J K L M Ν 0 Р

P0327, P0328 KS

Description INFOID:0000000022994481

The knock sensor is attached to the cylinder block. It senses engine knocking using a piezoelectric element. A knocking vibration from the cylinder block is sensed as vibrational pressure. This pressure is converted into a voltage signal and sent to the ECM.

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detected condition	Possible cause	
P0327	Knock sensor circuit low input	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)	
P0328	Knock sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	Knock sensor	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and run it for at least 5 seconds at idle speed.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1110, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994483

${f 1}$.CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK KNOCK SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect knock sensor harness connector and disconnect ECM harness connector.
- Check the continuity between knock sensor harness connector and ECM harness connector.

Knock	sensor	E	Continuity	
Connector	Connector Terminal		Terminal	Continuity
F16	2	F8	67	Existed

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

[FOR MEXICO]

${f 3.}$ CHECK KNOCK SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between knock sensor harness connector and ECM harness connector.

Knock	sensor	E	Continuity	
Connector Terminal		Connector	Terminal	Continuity
F16	1	F8	61	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK KNOCK SENSOR

Refer to EC-1111, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace knock sensor.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK KNOCK SENSOR

- Turn ignition switch OFF.
- Disconnect knock sensor harness connector.
- 3. Check resistance between knock sensor terminals as follows.

NOTE:

It is necessary to use an ohmmeter which can measure more than 10 $\text{M}\Omega.$

Terminals	Resistance
1 and 2	Approx. 532 - 588 kΩ [at 20°C (68°F)]

CAUTION:

Do not use any knock sensors that have been dropped or physically damaged. Use only new ones.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace knock sensor.

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P0335 CKP SENSOR (POS)

Description

The crankshaft position sensor (POS) is located on the oil pan facing the gear teeth (cogs) of the signal plate. It detects the fluctuation of the engine revolution.

The sensor consists of a permanent magnet and Hall IC.

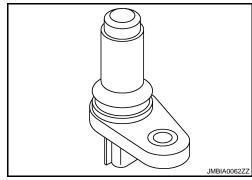
When the engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

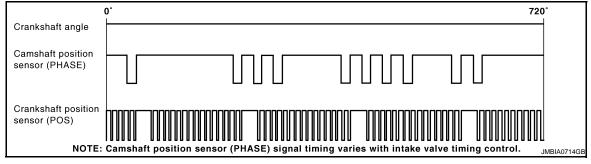
The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor changes.

The ECM receives the voltage signal and detects the fluctuation of the engine revolution.

ECM receives the signals as shown in the figure.





DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0335	Crankshaft position sensor (POS) circuit	 The crankshaft position sensor (POS) signal is not detected by the ECM during the first few seconds of engine cranking. The proper pulse signal from the crankshaft position sensor (POS) is not sent to ECM while the engine is running. The crankshaft position sensor (POS) signal is not in the normal pattern during engine running. 	Harness or connectors [Crankshaft position sensor (POS) circuit is open or shorted.] (Refrigerant pressure sensor circuit is shorted.) (Accelerator pedal position sensor circuit is shorted.) Crankshaft position sensor (POS) Refrigerant pressure sensor Accelerator pedal position sensor Signal plate

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V with ignition switch ON.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for at least 5 seconds. If engine does not start, crank engine for at least 2 seconds.
- Check 1st trip DTC.

P0335 CKP SENSOR (POS)

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Is 1st trip DTC detected?

YES >> Go to EC-1113, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

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1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

>> GO TO 2. YES

NO >> Repair or replace ground connection.

2.CHECK CRANKSHAFT POSITION (CKP) SENSOR (POS) POWER SUPPLY CIRCUIT-I

- Disconnect crankshaft position (CKP) sensor (POS) harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between CKP sensor (POS) harness connector and ground.

CKP sen	sor (POS)	Ground	Voltage	
Connector	Terminal	Ground		
F20	1	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 3.

3.check crankshaft position (ckp) sensor (pos) power supply circuit-ii

- Turn ignition switch ON.
- Disconnect ECM harness connector. 2.
- Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

CKP sen	sor (POS)	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F20	1	F8	76	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit.

4.CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
F8	72	Refrigerant pressure sensor	E49	3	
10	76	CKP sensor (POS)	F20	1	
E16	87	APP sensor	E110	5	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair short to ground or short to power in harness or connectors.

${f 5.}$ CHECK REFRIGERANT PRESSURE SENSOR

Refer to EC-865, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 6.

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< COMPONENT DIAGNOSIS > [FOR MEXICO]

NO >> Replace malfunctioning components.

6. CHECK APP SENSOR

Refer to EC-1181, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 12.

NO >> GO TO 7.

7. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- 2. Go to EC-1181, "Special Repair Requirement".

>> INSPECTION END

8.CHECK CKP SENSOR (POS) GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

CKP sensor (POS)		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F20	2	F8	60	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9.CHECK CKP SENSOR (POS) INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect ECM harness connector.
- 2. Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

CKP sensor (POS)		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F20	3	F8	65	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

10. CHECK CRANKSHAFT POSITION SENSOR (POS)

Refer to EC-1115, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace crankshaft position sensor (POS).

11. CHECK GEAR TOOTH

Visually check for chipping signal plate gear tooth.

Is the inspection result normal?

YES >> GO TO 12.

NO >> Replace the signal plate.

12. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0335 CKP SENSOR (POS)

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Component Inspection

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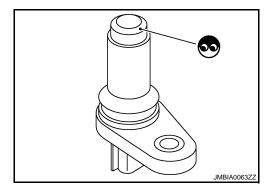
${\bf 1.} {\sf CHECK} \; {\sf CRANKSHAFT} \; {\sf POSITION} \; {\sf SENSOR} \; ({\sf POS}) {\sf -I}$

- 1. Turn ignition switch OFF.
- 2. Loosen the fixing bolt of the sensor.
- 3. Disconnect crankshaft position sensor (POS) harness connector.
- 4. Remove the sensor.
- 5. Visually check the sensor for chipping.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace crankshaft position sensor (POS).



$2.\mathsf{CHECK}$ CRANKSHAFT POSITION SENSOR (POS)-II

Check resistance between crankshaft position sensor (POS) terminals as follows.

Terminals (Polarity)	Resistance Ω [at 25°C (77°F)]
1 (+) - 2 (-)	
1 (+) - 3 (-)	Except 0 or ∞
2 (+) - 3 (-)	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace crankshaft position sensor (POS).

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P0340 CMP SENSOR (PHASE)

Description

The camshaft position sensor (PHASE) senses the retraction of camshaft (INT) to identify a particular cylinder. The camshaft position sensor (PHASE) senses the piston position.

When the crankshaft position sensor (POS) system becomes inoperative, the camshaft position sensor (PHASE) provides various controls of engine parts instead, utilizing timing of cylinder identification signals.

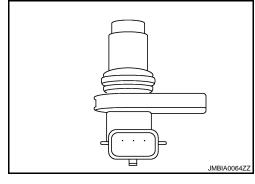
The sensor consists of a permanent magnet and Hall IC.

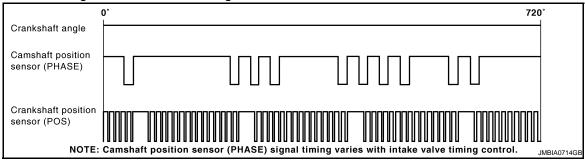
When engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor changes.

ECM receives the signals as shown in the figure.





DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0340 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-1139, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0340	Camshaft position sensor (PHASE) circuit	 The cylinder No. signal is not sent to ECM for the first few seconds during engine cranking. The cylinder No. signal is not sent to ECM during engine running. The cylinder No. signal is not in the normal pattern during engine running. 	Harness or connectors (The sensor circuit is open or shorted) Camshaft position sensor (PHASE) Camshaft (INT) Starter motor (Refer to STR-5, "System Diagram".) Starting system circuit (Refer to STR-5, "System Diagram".) Dead (Weak) battery

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5V with ignition switch ON.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE-I

1. Start engine and let it idle for at least 5 seconds.

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P0340 CMP SENSOR (PHASE)

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

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If engine does not start, crank engine for at least 2 seconds.

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1117, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform dtc confirmation procedure-i

Maintaining engine speed at more than 800 rpm for at least 5 seconds.

2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1117, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

CHECK STARTING SYSTEM

Turn ignition switch to START position.

Does the engine turn over? Does the starter motor operate?

YES >> GO TO 2.

NO >> Check starting system.

2.CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace ground connection.

3.check camshaft position (cmp) sensor (phase) power supply circuit

- Disconnect camshaft position (CMP) sensor (PHASE) harness connector.
- Turn ignition switch ON. 2.
- Check the voltage between CMP sensor (PHASE) harness connector and ground.

CMP senso	r (PHASE)	Ground	Voltage	
Connector Terminal		Giodila	vollage	
F26	1	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

f 4.CHECK CMP SENSOR (PHASE) GROUND CIRCUIT FOR OPEN AND SHORT

Turn ignition switch OFF.

Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

CMP senso	CMP sensor (PHASE)		ECM	
Connector	Terminal	Connector Terminal		Continuity
F26	2	F8	64	Existed

Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK CMP SENSOR (PHASE) INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect ECM harness connector.
- Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

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CMP senso	CMP sensor (PHASE)		ECM	
Connector	Terminal	Connector Terminal		Continuity
F268	3	F13	69	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-1118, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace camshaft position sensor (PHASE).

7.CHECK CAMSHAFT (INT)

Check the following.

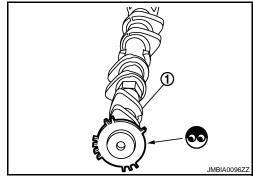
- Accumulation of debris to the signal plate of camshaft (1) rear end
- · Chipping signal plate of camshaft rear end

Is the inspection result normal?

YES >> GO TO 8.

NO

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft.



8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002994492

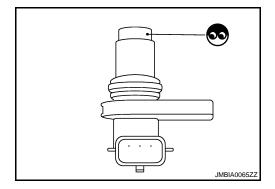
1. CHECK CAMSHAFT POSITION SENSOR (PHASE)-I

- Turn ignition switch OFF.
- 2. Loosen the fixing bolt of the sensor.
- 3. Disconnect camshaft position sensor (PHASE) harness connector.
- 4. Remove the sensor.
- 5. Visually check the sensor for chipping.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace camshaft position sensor (PHASE).



2. CHECK CAMSHAFT POSITION SENSOR (PHASE)-II

Check resistance camshaft position sensor (PHASE) terminals as follows.

P0340 CMP SENSOR (PHASE)

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Terminals (Polarity)	Resistance
1 (+) - 2 (-)	
1 (+) - 3 (-)	Except 0 or ∞ Ω [at 25°C (77°F)]
2 (+) - 3 (-)	

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Is the inspection result normal?

YES >> INSPECTION END)
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NO >> Replace camshaft position sensor (PHASE).

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P0420 THREE WAY CATALYST FUNCTION

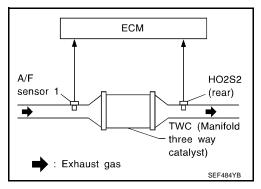
DTC Logic

DTC DETECTION LOGIC

The ECM monitors the switching frequency ratio of air fuel ratio (A/F) sensor 1 and heated oxygen sensor 2.

A three way catalyst (manifold) with high oxygen storage capacity will indicate a low switching frequency of heated oxygen sensor 2. As oxygen storage capacity decreases, the heated oxygen sensor 2 switching frequency will increase.

When the frequency ratio of A/F sensor 1 and heated oxygen sensor 2 approaches a specified limit value, the three way catalyst (manifold) malfunction is diagnosed.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0420	Catalyst system efficiency below threshold	 Three way catalyst (manifold) does not operate properly. Three way catalyst (manifold) does not have enough oxygen storage capacity. 	 Three way catalyst (manifold) Exhaust tube Intake air leaks Fuel injector Fuel injector leaks Spark plug Improper ignition timing

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Do not hold engine speed for more than the specified minutes below.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

CAUTION

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws.

(P)With CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Repeat the following procedure 3 times.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

NOTE

Keep the vehicle speed as steady as possible during the cruising.

- Stop vehicle with engine running.

NOTE:

Never turn ignition switch OFF.

- 3. Select "DTC & SRT CONFIRMATION" then "SRT WORK SUPPORT" mode with CONSULT-III.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more until "INCMP" of "CATALYST" changes to "CMPLT"
 NOTF:
 - Keep the vehicle speed as steady as possible during the cruising.
 - It will take at most 3 minutes until "INCMP" of "CATALYST" changes to "CMPLT".
- 5. Check 1 st trip DTC.

With GST

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Repeat the following procedure 3 times.
- Drive vehicle at a speed of 80 km/h (50 MPH) or more for at least 3 consecutive minutes.

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

NOTE:

Keep the vehicle speed as steady as possible during the cruising.

Stop vehicle with engine running.

NOTE:

Never turn ignition switch OFF.

3. Check 1 st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-261, "Diagnosis Procedure".

>> INSPECTION END NO

Component Function Check

INFOID:0000000002994494

1. PERFORM COMPONENT FUNCTION CHECK

Without CONSULT-III

- Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- Open engine hood.
- Check the voltage between ECM harness connector terminals under the following condition.

E	ECM		СМ	Condition	Voltage	
Connector	Terminal	Connector	Terminal	Condition	vollage	
F8	33 (HO2S2 signal)	F8	35 (Sensor ground)	Keeping engine speed at 2,500 rpm constant under no load	The voltage fluctuation cycle takes more than 5 seconds. 1 cycle: $0.6 - 1.0 \rightarrow 0 - 0.3 \rightarrow 0.6 - 1.0$	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1121, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000002994495

1. CHECK EXHAUST SYSTEM

Visually check exhaust tubes and muffler for dent.

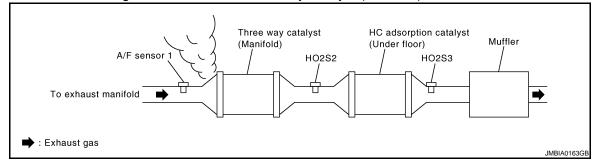
Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace.

2.CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- Listen for an exhaust gas leak before the three way catalyst (manifold).



Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 3.

3. CHECK INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

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Is intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 4.

4. CHECK IGNITION TIMING

Check the following items. Refer to EC-925, "BASIC INSPECTION: Special Repair Requirement".

Items	Specifications
Target idle speed	700 ± 50 rpm (in P or N position)
Ignition timing	$15\pm5^{\circ}$ BTDC (in P or N position)

Is the inspection result normal?

YES >> GO TO 5.

NO >> Follow the EC-925, "BASIC INSPECTION: Special Repair Requirement".

5. CHECK FUEL INJECTOR

- 1. Stop engine and then turn ignition switch ON.
- 2. Check the voltage between ECM harness connector and ground.

ECM		Ground	Voltage
Connector	Terminal	Oround	voltage
F7	29		Battery voltage
	30	Ground	
	31	Giodila	
	32		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Perform <u>EC-1209</u>, "<u>Diagnosis Procedure</u>".

6. CHECK FUNCTION OF IGNITION COIL-I

CAUTION:

Do the following procedure in the place where ventilation is good without the combustible.

- 1. Turn ignition switch OFF.
- 2. Remove fuel pump fuse in IPDM E/R to release fuel pressure.

NOTE:

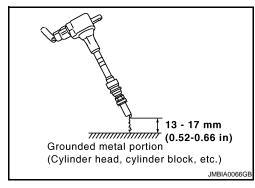
Do not use CONSULT-III to release fuel pressure, or fuel pressure applies again during the following procedure.

- Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.
- 6. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 7. Remove ignition coil and spark plug of the cylinder to be checked.
- 8. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 9. Connect spark plug and harness connector to ignition coil.
- 10. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- 11. Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

CAUTION:

 Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.



[FOR MEXICO]

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

 It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken. NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 7.

7.CHECK FUNCTION OF IGNITION COIL-II

- Turn ignition switch OFF.
- 2. Disconnect spark plug and connect a known-good spark plug.
- Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Check ignition coil, power transistor and their circuits. Refer to EC-1215, "Diagnosis Procedure".

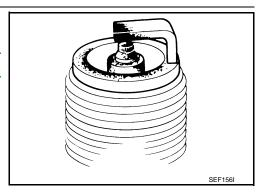
8.CHECK SPARK PLUG

Check the initial spark plug for fouling, etc.

Is the inspection result normal?

YES >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-18, "Removal and Installa-

NO >> Repair or clean spark plug. Then GO TO 9.



9. CHECK FUNCTION OF IGNITION COIL-III

- Reconnect the initial spark plugs.
- 2. Crank engine for about three seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

Spark should be generated.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-18, "Removal and Installation".

10. CHECK FUEL INJECTOR

- Turn ignition switch OFF.
- Remove fuel injector assembly.

Refer to EM-42, "Removal and Installation".

Keep fuel hose and all fuel injectors connected to fuel tube.

- 3. Disconnect all ignition coil harness connectors.
- Reconnect all fuel injector harness connectors disconnected.
- 5. Turn ignition switch ON.

Does fuel drip from fuel injector?

YES >> GO TO 11.

NO >> Replace the fuel injector(s) from which fuel is dripping.

11. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the trouble fixed?

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[FOR MEXICO]

YES >> INSPECTION END

NO >> Replace three way catalyst assembly.

P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID

< COMPONENT DIAGNOSIS >

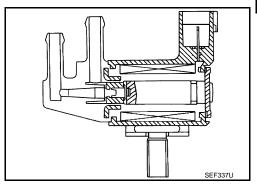
[FOR MEXICO]

INFOID:0000000002994506

P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID **VALVE**

Description

The EVAP canister purge volume control solenoid valve uses a ON/ OFF duty to control the flow rate of fuel vapor from the EVAP canister. The EVAP canister purge volume control solenoid valve is moved by ON/OFF pulses from the ECM. The longer the ON pulse, the greater the amount of fuel vapor that will flow through the valve.



DTC Logic INFOID:00000000002994507

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0444	EVAP canister purge volume control solenoid valve circuit open	An excessively low voltage signal is sent to ECM through the valve	Harness or connectors (The solenoid valve circuit is open or shorted.) EVAP canister purge volume control solenoid valve
P0445	EVAP canister purge volume control solenoid valve circuit shorted	An excessively high voltage signal is sent to ECM through the valve	Harness or connectors (The solenoid valve circuit is shorted.) EVAP canister purge volume control solenoid valve

DTC CONFIRMATION PROCEDURE

1.CONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm battery voltage is more than 11V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for at least 13 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1125, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- Turn ignition switch ON.
- Check the voltage between EVAP canister purge volume control solenoid valve harness connector and ground.

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EC-1125 Revision: 2008 January 2008 Rogue

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INFOID:0000000002994508

P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

EVAP canister purge volume control solenoid valve		Ground	Voltage
Connector Terminal			
F32	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between EVAP canister purge volume control solenoid valve and IPDM E/R
- Harness for open or short between EVAP canister purge volume control solenoid valve and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP canister purge volume control solenoid valve harness connector and ECM harness connector.

EVAP canister purge volume control solenoid valve		ECM		Continuity
Connector	Terminal	Connector Terminal		
F32	2	F7	25	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES-1 >> With CONSULT-III: GO TO 4.

YES-2 >> Without CONSULT-III: GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

(P)With CONSULT-III

- 1. Reconnect all harness connectors disconnected.
- Start engine.
- Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III. Check that engine speed varies according to the valve opening.

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-1127, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace EVAP canister purge volume control solenoid valve.

6.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Component Inspection

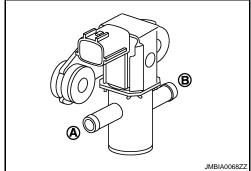
INFOID:0000000002994509

1.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

(P) With CONSULT-III

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- Turn ignition switch ON.
- Select "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT-III.
- Touch "Qd" and "Qu" on CONSULT-III screen to adjust "PURG VOL CONT/V" opening and check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition (PURG VOL CONT/V value)	Air passage continuity between (A) and (B)	
100%	Existed	
0%	Not existed	



Without CONSULT-III

- Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition	Air passage continuity between (A) and (B)
12V direct current supply between terminals 1 and 2	Existed
No supply	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister purge volume control solenoid valve

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P0500 VSS

Description INFOID:000000002994547

The vehicle speed signal is sent to the combination meter from the "ABS actuator and electric unit (control unit)" by CAN communication line. The combination meter then sends a signal to the ECM by CAN communication line.

DTC Logic

DTC DETECTION LOGIC

NOTE:

- If DTC P0500 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-1017, "DTC Logic".
- If DTC P0500 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-1138</u>, "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0500	Vehicle speed sensor	The almost 0 km/h (0 MPH) signal from vehicle speed sensor is sent to ECM even when vehicle is being driven.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (The vehicle speed signal circuit is open or shorted) Vehicle speed sensor Combination meter ABS actuator and electric unit (control unit)	

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 5.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 3.

${f 3}$.check vehicle speed sensor function

NOTE

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

(P)With CONSULT-III

- 1. Start engine.
- Read "VHCL SPEED SE" in "DATA MONITOR" mode with CONSULT-III. The vehicle speed on CON-SULT-III should exceed 10 km/h (6 mph) when rotating wheels with suitable gear position.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Go to EC-1129, "Diagnosis Procedure".

4. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Select "DATA MONITOR" mode with CONSULT-III.
- 2. Warm engine up to normal operating temperature.
- Maintain the following conditions for at least 50 consecutive seconds. CAUTION:

V OOMI ONLINI DIMON	J010 /	<u> </u>
Always drive vehicle	at a safe speed.	
ENG SPEED	1,350 - 6,000 rpm	
COOLAN TEMP/S	More than 70°C (158°F)	
B/FUEL SCHDL	5.5 - 31.8 msec	E
Shift lever	Except P or N position	_
PW/ST SIGNAL	OFF	(
4. Check 1st trip DTC.		
Is 1st trip DTC detected?		
NO >> INSPECTION		
PERFORM COMPONE	:NT FUNCTION CHECK	r
Perform Component Func	tion Check. Refer to EC-1129, "Component Fur	
check, a 1st trip DTC migh	Check to check the overall function of the veh at not be confirmed.	
Is the inspection result nor		F
YES >> INSPECTION		
NO >> Go to <u>EC-112</u>	9, "Diagnosis Procedure".	
Component Functior	ı Check	INFOID:000000002994549
1.PERFORM COMPONE	ENT FUNCTION CHECK	ŀ
With GST		
Lift up drive wheels. Start anging.		
 Start engine. Read vehicle speed se 	ensor signal in Service \$01 with GST.	'
The vehicle speed ser	nsor on GST should be able to exceed 10 km/h	n (6 MPH) when rotating wheels with
suitable gear position.		
Is the inspection result nor		
YES >> INSPECTION NO >> Go to EC-1129	END 9. "Diagnosis Procedure".	
		ŀ
Diagnosis Procedure	}	INFOID:000000002994550
1.CHECK DTC WITH "AE	BS ACTUATOR AND ELECTRIC UNIT (CONTR	ROL UNIT)"
	<u>JLT-III Function"</u> (ABS models), <u>BRC-94, "CON</u>	SULT-III Function" (VDC models).
<u>Is the inspection result nor</u>	mal?	Ŋ
YES >> GO TO 2.		
NO >> Repair or replace		
2.CHECK COMBINATIO		
Refer to MWI-33, "CONSU	JLT-III Function (METER/M&A)".	
. INODECTION	END	
>> INSPECTION	EINU	
		F

P0506 ISC SYSTEM

Description

The ECM controls the engine idle speed to a specified level through the fine adjustment of the air, which is let into the intake manifold, by operating the electric throttle control actuator. The operating of the throttle valve is varied to allow for optimum control of the engine idling speed. The crankshaft position sensor (POS) detects the actual engine speed and sends a signal to the ECM.

The ECM controls the electric throttle control actuator so that the engine speed coincides with the target value memorized in the ECM. The target engine speed is the lowest speed at which the engine can operate steadily. The optimum value stored in the ECM is determined by taking into consideration various engine conditions, such as during warming up, deceleration, and engine load (air conditioner, power steering and cooling fan operation, etc.).

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0506 is displayed with other DTC, first perform the trouble diagnosis for the other DTC.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0506	Idle speed control system RPM lower than expected	The idle speed is less than the target idle speed by 100 rpm or more.	Electric throttle control actuator Intake air leak

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

If the target idle speed is out of the specified value, perform <u>EC-930, "IDLE AIR VOLUME LEARNING : Special Repair Requirement"</u>, before conducting DTC CONFIRMATION PROCEDURE.

TESTING CONDITION:

- Before performing the following procedure, confirm that battery voltage is more than 11V at idle.
- Always perform the test at a temperature above –10°C (14°F).

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and run it for at least 1 minute at idle speed.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1130, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994553

1. CHECK INTAKE AIR LEAK

- 1. Start engine and let it idle.
- Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> Discover air leak location and repair.

NO >> GO TO 2.

2.REPLACE ECM

- 1. Stop engine.
- Replace ECM.

P0506 ISC SYSTEM

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

3. Go to EC-928, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement".

>> INSPECTION END

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P0507 ISC SYSTEM

Description INFOID:000000002994554

The ECM controls the engine idle speed to a specified level through the fine adjustment of the air, which is let into the intake manifold, by operating the electric throttle control actuator. The operating of the throttle valve is varied to allow for optimum control of the engine idling speed. The crankshaft position sensor (POS) detects the actual engine speed and sends a signal to the ECM.

The ECM controls the electric throttle control actuator so that the engine speed coincides with the target value memorized in the ECM. The target engine speed is the lowest speed at which the engine can operate steadily. The optimum value stored in the ECM is determined by taking into consideration various engine conditions, such as during warming up, deceleration, and engine load (air conditioner, power steering and cooling fan operation, etc.).

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0507 is displayed with other DTC, first perform the trouble diagnosis for the other DTC.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0507	Idle speed control sys- tem RPM higher than expected	The idle speed is more than the target idle speed by 200 rpm or more.	Electric throttle control actuator Intake air leak PCV system

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

If the target idle speed is out of the specified value, perform <u>EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"</u>, before conducting DTC CONFIRMATION PROCEDURE.

TESTING CONDITION:

- Before performing the following procedure, confirm that battery voltage is more than 11V at idle.
- Always perform the test at a temperature above –10°C (14°F).

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and run it for at least 1 minute at idle speed.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1132, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994556

1. CHECK PCV HOSE CONNECTION

Confirm that PCV hose is connected correctly.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace.

2. CHECK INTAKE AIR LEAK

- 1. Start engine and let it idle.
- 2. Listen for an intake air leak after the mass air flow sensor.

P0507 ISC SYSTEM	
< COMPONENT DIAGNOSIS > [FOR MEXICO]	
Is intake air leak detected? YES >> Discover air leak location and repair. NO >> GO TO 3.	А
3.REPLACE ECM	EC
 Stop engine. Replace ECM. Go to <u>EC-928</u>, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement". 	С
>> INSPECTION END	D
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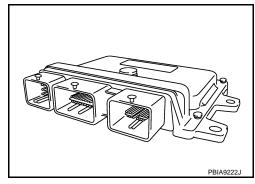
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P0603 ECM POWER SUPPLY

Description

Battery voltage is supplied to the ECM even when the ignition switch is turned OFF for the ECM memory function of the DTC memory, the air-fuel ratio feedback compensation value memory, the idle air volume learning value memory, etc.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0603	ECM power supply circuit	ECM back-up RAM system does not function properly.	Harness or connectors [ECM power supply (back-up) circuit is open or shorted.] ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure

- 1. Turn ignition switch ON and wait at least 1 second.
- 2. Start engine and let it idle for 1 second.
- 3. Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- 4. Repeat steps 2 and 3 for four times.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1134, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994559

1. CHECK ECM POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the voltage between ECM harness connector and ground.

EC	М	Ground	Voltage
Connector	Terminal		
F8	77	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

P0603 ECM POWER SUPPLY

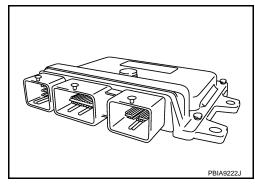
P0603 ECM POWER SUPPLY	
< COMPONENT DIAGNOSIS >	[FOR MEXICO]
2. DETECT MALFUNCTIONING PART	А
Check the following. • Harness connectors E8, F122 • 20A fuse (No. 62) • IPDM E/R harness connector E15	EC
Harness for open or short between ECM and battery	
>> Repair or replace harness or connectors.	С
3. CHECK INTERMITTENT INCIDENT	
Refer to GI-41, "Intermittent Incident".	
Is the inspection result normal?	
YES >> GO TO 4.	E
NO >> Repair or replace harness or connectors. 4.PERFORM DTC CONFIRMATION PROCEDURE	
 Erase DTC. Perform DTC CONFIRMATION PROCEDURE. See <u>EC-1134</u>, "DTC Logic". 	F
Is the 1st trip DTC P0603 displayed again? YES >> GO TO 5.	G
NO >> INSPECTION END	
5.REPLACE ECM	Н
1. Replace ECM.	
 Go to EC-928, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: S ment". 	pecial Repair Require-
more .	ı
>> INSPECTION END	
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Revision: 2008 January EC-1135 2008 Rogue

P0605 ECM

Description INFOID:000000002994560

The ECM consists of a microcomputer and connectors for signal input and output and for power supply. The ECM controls the engine.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
		A)	ECM calculation function is malfunctioning.	
P0605	Engine control module	B)	ECM EEP-ROM system is malfunctioning.	• ECM
		C)	ECM self shut-off function is malfunctioning.	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

- 1. Turn ignition switch ON.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1137, "Diagnosis Procedure".

NO >> GO TO 3.

${f 3.}$ PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B

- 1. wait at least 1 second.
- 2. Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1137, "Diagnosis Procedure".

NO >> GO TO 4.

f 4. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION C

- 1. wait at least 1 second.
- 2. Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- 3. Repeat step 2 for 32 times.
- 4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1137, "Diagnosis Procedure".

NO >> INSPECTION END

P0605 ECM [FOR MEXICO] < COMPONENT DIAGNOSIS > **Diagnosis Procedure** INFOID:0000000002994562 Α 1.INSPECTION START Erase DTC. EC Perform DTC CONFIRMATION PROCEDURE. See EC-1136, "DTC Logic". Is the 1st trip DTC P0605 displayed again? YES >> GO TO 2. NO >> INSPECTION END 2.REPLACE ECM D Replace ECM. 2. Go to EC-928, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement". Е >> INSPECTION END F Н

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Revision: 2008 January EC-1137 2008 Rogue

P0607 ECM

Description INFOID:000000002994563

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0607	CAN communication bus	When detecting error during the initial diagnosis of CAN controller of ECM.	• ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-1138, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994565

1.INSPECTION START

- 1. Erase DTC.
- Perform DTC CONFIRMATION PROCEDURE. See EC-1138, "DTC Logic".

Is the DTC P0607 displayed again?

YES >> GO TO 2.

NO >> INSPECTION END

2.REPLACE ECM

- Replace ECM.
- 2. Go to EC-928, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> INSPECTION END

P0643 SENSOR POWER SUPPLY

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

P0643 SENSOR POWER SUPPLY

DTC Logic

DTC DETECTION LOGIC

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DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0643	Sensor power supply circuit short	ECM detects a voltage of power source for sensor is excessively low or high.	Harness or connectors (APP sensor 1 circuit is shorted.) (TP sensor circuit is shorted.) [Camshaft position sensor (PHASE) circuit is shorted.] Accelerator pedal position sensor Throttle position sensor Camshaft position sensor (PHASE)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- 2. Check DTC.

Is DTC detected?

YES >> Go to EC-1139, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994567

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK ACCELERATOR PEDAL POSITION SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Disconnect accelerator pedal position (APP) sensor harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

APP s	sensor	Ground	Voltage	
Connector	Terminal	Oround		
E110	4	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 3.

3. CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

< COMPONENT DIAGNOSIS >

ECM		Sensor		
Connector	Terminal Name		Connector	Terminal
F8	47	Electric throttle control actuator	F29	1
	59	CMP sensor (PHASE)	F26	1
E16 83		APP sensor	E110	4

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair short to ground or short to power in harness or connectors.

4. CHECK COMPONENT

Check the following.

Camshaft position sensor (PHASE) (Refer to <u>EC-1118, "Component Inspection"</u>.)

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace malfunctioning component.

5. CHECK TP SENSOR

Refer to EC-1051, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 6.

6. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace electric throttle control actuator.
- 2. Go to EC-929, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> INSPECTION END

7. CHECK APP SENSOR

Refer to EC-1181, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 8.

8.replace accelerator pedal assembly

- Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- Go to EC-1181, "Special Repair Requirement".

>> INSPECTION END

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P0850 PNP SWITCH

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

P0850 PNP SWITCH

Description INFOID:000000002994568

When the shift lever position is P or N, park/neutral position (PNP) switch is ON. ECM detects the position because the continuity of the line (the ON signal) exists.

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DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0850	Park/neutral position switch	The signal of the park/neutral position (PNP) switch is not changed in the process of engine starting and driving.	 Harness or connectors [The park/neutral position (PNP) switch circuit is open or shorted.] Park/neutral position (PNP) switch

DTC CONFIRMATION PROCEDURE

1. INSPECTION START

Do you have CONSULT-III?

Do you have CONSULT-III?

YES >> GO TO 2.

NO >> GO TO 5.

2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 3.

3. CHECK PNP SWITCH FUNCTION

(II) With CONSULT-III

1. Turn ignition switch ON.

2. Select "P/N POSI SW" in "DATA MONITOR" mode with CONSULT-III. Then check the "P/N POSI SW" signal under the following conditions.

Position (Shift lever)	Known-good signal
N or P position	ON
Except above position	OFF

Is the inspection result normal?

YES >> GO TO 4.

NO >> Go to EC-1142, "Diagnosis Procedure".

4. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Maintain the following conditions for at least 50 consecutive seconds.

CAUTION:

Always drive vehicle at a safe speed.

ENG SPEED	1,300 - 6,375 rpm
COOLAN TEMP/S	More than 70°C (158°F)
B/FUEL SCHDL	3.0 - 31.8 msec

P0850 PNP SWITCH

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

VHCL SPEED SE	More than 64 km/h (40 mph)
Shift lever	Suitable position

4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1142, "Diagnosis Procedure".

NO >> INSPECTION END

5. PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-1142, "Component Function Check".

NOTE:

Use Component Function Check to check the overall function of the park/neutral position (PNP) switch circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1142, "Diagnosis Procedure".

Component Function Check

INFOID:0000000002994570

1. PERFORM COMPONENT FUNCTION CHECK

- Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector and ground.

ECM		Ground	Condition		Voltage	
Connector	Terminal		Condition		voltage	
E16	102	Ground	Shift lever	BATTERY VOLTAGE		
	(PNP switch signal)	Giodila		Except above	Approx. 0V	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1142, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000002994571

1. CHECK PNP SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect Park/neutral position (PNP) switch harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between PNP switch harness connector and ground.

PNP	switch	Ground	Voltage	
Connector	Terminal			
F21	1	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E15
- 10A fuse (No. 58)
- Harness for open or short between PNP switch and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

P0850 PNP SWITCH

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

$\overline{3.}$ CHECK PNP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT-I

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between PNP switch harness connector and ECM harness connector.

PNP	switch	E	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F21	2	E16	102	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- Harness for open or short between PNP switch and ECM

>> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK PNP SWITCH

Refer to TM-53, "Component Inspection (Park/Neutral Position Switch)".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace PNP switch.

O.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

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P1148 CLOSED LOOP CONTROL

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

P1148 CLOSED LOOP CONTROL

DTC Logic

DTC DETECTION LOGIC

NOTE:

DTC P1148 is displayed with another DTC for A/F sensor 1. Perform the trouble diagnosis for the corresponding DTC.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1148	Closed loop control	The closed loop control function for bank 1 does not operate even when vehicle is driving in the specified condition.	Harness or connectors (The A/F sensor 1 circuit is open or shorted.)
	function	The closed loop control function for bank 2 does not operate even when vehicle is driving in the specified condition.	A/F sensor 1 A/F sensor 1 heater

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

P1217 ENGINE OVER TEMPERATURE

DTC Logic INFOID:0000000002994576

DTC DETECTION LOGIC

NOTE:

- If DTC P1217 is displayed with DTC U1000 or U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-1017, "DTC Logic".
- If DTC P1217 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-1138, "DTC Logic".

If the cooling fan or another component in the cooling system malfunctions, engine coolant temperature will

When the engine coolant temperature reaches an abnormally high temperature condition, a malfunction is indicated.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P1217	Engine over tempera- ture (Overheat)	 Cooling fan does not operate properly (Overheat). Cooling fan system does not operate properly (Overheat). Engine coolant was not added to the system using the proper filling method. Engine coolant is not within the specified range. 	Harness or connectors (The cooling fan circuit is open or shorted.) IPDM E/R (Cooling fan relay-1) Cooling fan relays-2 and -3 Cooling fan motor Radiator hose Radiator Radiator cap Reservoir tank Water pump Thermostat Water control valve	F

CAUTION:

When a malfunction is indicated, be sure to replace the coolant. Refer to CO-9, "Draining" and CO-10, "Refilling". Also, replace the engine oil. Refer to LU-6, "Draining" and LU-7, "Refilling".

- Fill radiator with coolant up to specified level with a filling speed of 2 liters per minute. Be sure to use coolant with the proper mixture ratio. Refer to MA-18, "FOR NORTH AMERICA: Anti-Freeze Coolant Mixture Ratio".
- 2. After refilling coolant, run engine to ensure that no water-flow noise is emitted.

DTC CONFIRMATION PROCEDURE

$oldsymbol{1}$ -PERFORM COMPONENT FUNCTION CHECK

Perform Component Function Check. Refer to EC-1145, "Component Function Check".

NOTE:

Use Component Function Check to check the overall function of the cooling fan. During this check, a DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

>> Go to EC-1146, "Diagnosis Procedure". NO

Component Function Check

1.PERFORM COMPONENT FUNCTION CHECK-I

WARNING:

Never remove the radiator cap when the engine is hot. Serious burns could be caused by high pressure fluid escaping from the radiator.

Wrap a thick cloth around cap. Carefully remove the cap by turning it a quarter turn to allow built-up pressure to escape. Then turn the cap all the way off.

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[FOR MEXICO]

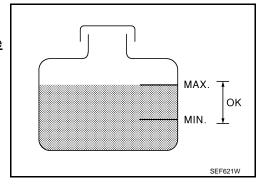
Check the coolant level in the reservoir tank and radiator.

Allow engine to cool before checking coolant level.

<u>Is the coolant level in the reservoir tank and/or radiator below the proper range?</u>

YES >> Go to EC-1146, "Diagnosis Procedure".

NO >> GO TO 2.



2. PERFORM COMPONENT FUNCTION CHECK-II

Confirm whether customer filled the coolant or not.

Did customer fill the coolant?

YES >> Go to EC-1146, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform component function check-iii

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Perform "COOLING FAN" in "ACTIVE TEST" mode with CONSULT-III.
- 3. Make sure that cooling fan motors-1 and -2 operate at each speed (LOW/HI).

®Without CONSULT-III

Perform IPDM E/R auto active test and check cooling fan motors operation, refer to <u>PCS-8</u>, "<u>Diagnosis</u> <u>Description</u>".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1146, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000002994578

1. CHECK COOLING FAN OPERATION

(III) With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Perform "COOLING FAN" in "ACTIVE TEST" mode with CONSULT-III.
- Make sure that cooling fan motors-1 and -2 operate at each speed (LOW/HI).

Without CONSULT-III

- Perform IPDM E/R auto active test and check cooling fan motors operation, refer to <u>PCS-8</u>, "<u>Diagnosis Description</u>".
- Make sure that cooling fan motors-1 and -2 operate at each speed (Low/High).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-1201, "Diagnosis Procedure".

2.CHECK COOLING SYSTEM FOR LEAK-I

Check cooling system for leak. Refer to CO-9, "Inspection".

Is leakage detected?

YES >> GO TO 3.

NO >> GO TO 4.

3.CHECK COOLING SYSTEM FOR LEAK-II

Check the following for leak.

- Hose
- Radiator
- Water pump

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

>> Repair or replace malfunctioning part.

4. CHECK RADIATOR CAP

Check radiator cap. Refer to CO-13, "RADIATOR CAP: Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace radiator cap.

5. CHECK THERMOSTAT

Check thermostat. Refer to CO-26, "Inspection".

Is the inspection result normal?

>> GO TO 6. YES

NO >> Replace thermostat.

6. CHECK WATER CONTROL VALVE

Check water control valve. Refer to CO-26, "Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace water control valve

7.check engine coolant temperature sensor

Refer to EC-1047, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace engine coolant temperature sensor.

8. CHECK MAIN 13 CAUSES

If the cause cannot be isolated, check the following.

Engine	Step	Inspection item	Equipment	Standard	Reference page
OFF	1	Blocked radiator Blocked condenser Blocked radiator grille Blocked bumper	Visual	No blocking	_
	2	Coolant mixture	Coolant tester	50 - 50% coolant mixture	MA-18, "FOR NORTH AMERICA : Anti-Freeze Coolant Mixture Ratio"
	3	Coolant level	Visual	Coolant up to MAX level in reservoir tank and radiator filler neck	CO-9, "Inspection"
	4	Radiator cap	Pressure tester	59 - 98 kPa (0.6 - 1.0 kg/cm ² , 9 - 14 psi) (Limit)	CO-13, "RADIATOR CAP : Inspection"
ON*2	5	Coolant leaks	Visual	No leaks	CO-9, "Inspection"
ON* ²	6	Thermostat	Touch the upper and lower radiator hoses	Both hoses should be hot	CO-26, "Inspection"
ON* ¹	7	Cooling fan motor	CONSULT-III	Operating	EC-1200, "Component Function Check"
OFF	8	Combustion gas leak	Color checker chemical tester 4 Gas analyzer	Negative	_
ON* ³	9	Coolant temperature gauge	Visual	Gauge less than 3/4 when driving	_
		Coolant overflow to reservoir tank	Visual	No overflow during driving and idling	CO-9, "Inspection"
OFF*4	10	Coolant return from reservoir tank to radiator	Visual	Should be initial level in reservoir tank	CO-9, "Inspection"

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< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Engine	Step	Inspection item	Equipment	Standard	Reference page
OFF	11	Water control valve	Remove and inspect the valve	Within the specified value	CO-26, "Inspection"
OFF	12	Cylinder head	Straight gauge feeler gauge	0.1 mm (0.004 in) Maximum distortion (warping)	EM-83, "Inspection"
	13	Cylinder block and pistons	Visual	No scuffing on cylinder walls or piston	EM-94, "Inspection"

^{*1:} Turn the ignition switch ON.

For more information, refer to CO-4, "Troubleshooting Chart".

>> INSPECTION END

^{*2:} Engine running at 3,000 rpm for 10 minutes.

^{*3:} Drive at 90 km/h (56 MPH) for 30 minutes and then let idle for 10 minutes.

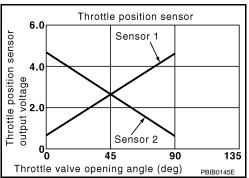
^{*4:} After 60 minutes of cool down time.

P1225 TP SENSOR

Description

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1225	Closed throttle position learning performance	Closed throttle position learning value is excessively low.	Electric throttle control actuator (TP sensor 1 and 2)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1149. "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- Turn ignition switch OFF.
- Remove the intake air duct.

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P1225 TP SENSOR

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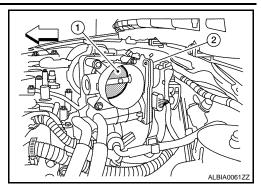
- Check if foreign matter is caught between the throttle valve (1) and the housing.
 - 2. Electric throttle control actuator

Is the inspection result normal?

YES >> GO TO 2.

NO >> Remove

>> Remove the foreign matter and clean the electric throttle control actuator inside.



2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- 2. Go to EC-1150, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002994582

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

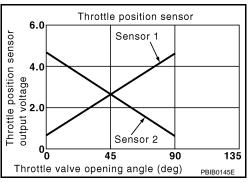
>> END

P1226 TP SENSOR

Description

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1226	Closed throttle position learning performance	Closed throttle position learning is not performed successfully, repeatedly.	Electric throttle control actuator (TP sensor 1 and 2)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10V at idle.

>> GO TO 2.

2.perform dtc confirmation procedure

- 1. Turn ignition switch ON.
- 2. Turn ignition switch OFF, wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Repeat steps 2 and 3 for 32 times.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1151, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- 1. Turn ignition switch OFF.
- 2. Remove the intake air duct.

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P1226 TP SENSOR

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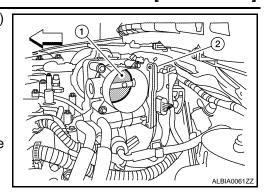
[FOR MEXICO]

- 3. Check if foreign matter is caught between the throttle valve (1) and the housing.
 - 2. Electric throttle control actuator

Is the inspection result normal?

YES >> GO TO 2.

NO >> Remove the foreign matter and clean the electric throttle control actuator inside.



2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- 2. Go to EC-1152, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002994586

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

P1421 COLD START CONTROL

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

P1421 COLD START CONTROL

Description INFOID:0000000002994587

ECM controls ignition timing and engine idle speed when engine is started with prewarming up condition. This control promotes the activation of three way catalyst by heating the catalyst and reduces emissions.

INFOID:0000000002994588

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P1421 is displayed with other DTC, first perform the trouble diagnosis for other DTC.

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DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1421	Cold start emission reduction strategy monitoring	ECM does not control ignition timing and engine idle speed properly when engine is started with prewarming up condition.	Lack of intake air volumeFuel injection systemECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT-III.
- Check that the "COOLAN TEMP/S" indication is between 4°C (39°F) and 36°C (97°F). If "COOLAN TEMP/S" indication is within the specified value, go to the following step. If "COOLANT TEMP/S" indication is out of the specified value, cool engine down or warm engine up and go to step 1.
- 5. Start engine and let it idle for 5 minutes.
- 6. Check 1st trip DTC.

Follow the procedure "With CONSULT-III" above.

Is 1st trip DTC detected?

YES >> Go to EC-1153, "Diagnosis Procedure".

>> INSPECTION END NO

INFOID:0000000002994589

Diagnosis Procedure

${f 1}$.PERFORM IDLE AIR VOLUME LEARNING

Perform EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 2.

NO >> Follow the instruction of Idle Air Volume Learning.

2.CHECK INTAKE SYSTEM

Check for the cause of intake air volume lacking. Refer to the following.

- Crushed intake air passage
- Intake air passage clogging

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P1421 COLD START CONTROL

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning part

3.check fuel injection system function

Perform DTC CONFIRMATION PROCEDURE for DTC P0171. Refer to EC-1093. "DTC Logic".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Go to EC-1094, "Diagnosis Procedure" for DTC P0171.

4. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Select "SELF DIAG RESULTS" mode with CONSULT-III.
- 3. Touch "ERASE".
- 4. Perform DTC CONFIRMATION PROCEDURE.

See EC-1153, "DTC Logic".

With GST

- 1. Turn ignition switch ON.
- 2. Select Service \$04 with GST.
- 3. Perform DTC CONFIRMATION PROCEDURE. See EC-1153, "DTC Logic".

Is the 1st trip DTC P1421 displayed again?

YES >> GO TO 5.

NO >> INSPECTION END

5. REPLACE ECM

- 1. Replace ECM.
- Go to <u>EC-928</u>, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> INSPECTION END

P1564 ASCD STEERING SWITCH

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

P1564 ASCD STEERING SWITCH

Description INFOID:0000000002994590

ASCD steering switch has variant values of electrical resistance for each button. ECM reads voltage variation of switch, and determines which button is operated.

Refer to EC-958, "System Description" for the ASCD function.

DTC Logic INFOID:0000000002994591

DTC DETECTION LOGIC

If DTC P1564 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-1136, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1564	ASCD steering switch	 An excessively high voltage signal from the ASCD steering switch is sent to ECM. ECM detects that input signal from the ASCD steering switch is out of the specified range. ECM detects that the ASCD steering switch is stuck ON. 	Harness or connectors (The switch circuit is open or shorted.) ASCD steering switch ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure

- Turn ignition switch ON.
- Wait at least 10 seconds. 2.
- Press MAIN switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press CANCEL switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press RESUME/ACCELERATE switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press SET/COAST switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1155, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YS >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK ASCD STEERING SWITCH CIRCUIT

(P) With CONSULT-III

Turn ignition switch ON.

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INFOID:00000000002994592

< COMPONENT DIAGNOSIS >

- Select "MAIN SW", "CANCEL SW", "RESUME/ACC SW" and "SET SW" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check each item indication under the following conditions.

Monitor item	Condition		Indication
MAIN SW	MAIN switch	Pressed	ON
MAIN OW	WAIN SWIGH	Released	OFF
CANCEL SW	CANCEL switch	Pressed	ON
CANCLL 3W	CANCLE SWILLIN	Released	OFF
RESUME/ACC SW	RESUME/ACCELERATE switch	Pressed	ON
KLGOWIL/ACC GW	RESONIE/ACCELENATE SWITCH	Released	OFF
SFT SW	SET/COAST switch	Pressed	ON
<u></u>	OL 1/OOAO 1 SWIIGH	Released	OFF

⋈ Without CONSULT-III

- 1. Turn ignition switch ON.
- 2. Check the voltage between ECM harness connectors.

	ECM		CM	Condition	Voltage
Connector	Terminal	Connector	Terminal	Condition	Voltage
				MAIN switch: Pressed	Approx. 0V
	85 (ASCD steering switch signal)		ground)	CANSEL switch: Pressed	Approx. 1V
E16		,		SET/COAST switch: Pressed	Approx. 2V
				RESUME/ACCELERATE switch: Pressed	Approx. 3V
				All ASCD steering switches: Released	Approx. 4V

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 3.

${f 3.}$ CHECK ASCD STEERING SWITCH GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Disconnect combination switch harness connector M352.
- Check the continuity between combination switch and ECM harness connector.

Combinat	tion switch	E	Continuity	
Connector	Connector Terminal		Terminal	Continuity
M352	18	E16	92	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M77, E105
- Combination switch (spiral cable)
- Harness for open and short between ECM and combination switch

>> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK ASCD STEERING SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

P1564 ASCD STEERING SWITCH

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Check the continuity between ECM harness connector and combination switch.

Combina	tion switch	E	СМ	Continuity
Connector Terminal		Connector	Terminal	Continuity
M352	21	E10	85	Existed

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Also check harness for short to ground and short to power.

Is the inspection result normal?

>> GO TO 7. YES NO >> GO TO 6.

6.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M77, E105
- Combination switch (spiral cable)
- Harness for open and short between ECM and combination switch

>> Repair open circuit or short to ground or short to power in harness or connectors.

.CHECK ASCD STEERING SWITCH

Refer to EC-1157, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace ASCD steering switch.

8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002994593

1. CHECK ASCD STEERING SWITCH

- Disconnect combination switch (spiral cable) harness connector M352.
- Check the continuity between combination switch harness connector terminals under following conditions.

Combination meter		Condition	Resistance	
Connector	Terminals	Gondinon	Nesisianice	
	18 and 21	MAIN switch: Pressed	Approx. 0 Ω	
		CANCEL switch: Pressed	Approx. 250 Ω	
M352		SET/COAST switch: Pressed	Approx. 660 Ω	
		RESUME/ACCELERATE switch: Pressed	Approx. 1,480 Ω	
		All ASCD steering switches: Released	Approx. 4,000 Ω	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD steering switch

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[FOR MEXICO]

P1572 ASCD BRAKE SWITCH

Description INFOID:0000000022994594

When the brake pedal is depressed, ASCD brake switch is turned OFF and stop lamp switch is turned ON. ECM detects the state of the brake pedal by this input of two kinds (ON/OFF signal). Refer to EC-958, "System Description" for the ASCD function.

DTC Logic

DTC DETECTION LOGIC

NOTE:

- If DTC P1572 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-1136, "DTC Logic".
- This self-diagnosis has the one trip detection logic. When malfunction A is detected, DTC is not stored in ECM memory. And in that case, 1st trip DTC and 1st trip freeze frame data are displayed.
 1st trip DTC is erased when ignition switch OFF. And even when malfunction A is detected in two consecutive trips, DTC is not stored in ECM memory.

DTC No.	Trouble diagnosis name		DTC detecting condition	Possible cause
P1572		A)	When the vehicle speed is above 30 km/h (19 MPH), ON signals from the stop lamp switch and the ASCD brake switch are sent to the ECM at the same time.	Harness or connectors (The stop lamp switch circuit is shorted.) Harness or connectors (The ASCD brake switch circuit is shorted.)
	ASCD brake switch	B)	ASCD brake switch signal is not sent to ECM for extremely long time while the vehicle is driving.	 Stop lamp switch ASCD brake switch Incorrect stop lamp switch installation Incorrect ASCD brake switch installation ECM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

NOTE:

Procedure for malfunction B is not described here. It takes extremely long time to complete procedure for malfunction B. By performing procedure for malfunction A, the incident that causes malfunction B can be detected.

>> GO TO 2.

2.perform dtc confirmation procedure for malfunction a

- 1. Start engine.
- Press MAIN switch and make sure that CRUISE indicator is displayed in combination meter.
- 3. Drive the vehicle for at least 5 consecutive seconds under the following conditions.

CAUTION:

Always drive vehicle at a safe speed.

NOTÉ:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

Vehicle speed	More than 30 km/h (19 mph)
Shift lever	Suitable position

4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1159, "Diagnosis Procedure".

NO >> GO TO 3.

P1572 ASCD BRAKE SWITCH

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

3.perform dtc confirmation procedure for malfunction b

Drive the vehicle for at least 5 consecutive seconds under the following conditions.

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

Vehicle speed	More than 30 km/h (19 mph)
Selector lever	Suitable position
Driving location	Depress the brake pedal for more than five seconds so as not to come off from the above-mentioned vehicle speed.

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1159, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994596

1.CHECK OVERALL FUNCTION-I

(P) With CONSULT-III

- Turn ignition switch ON.
- Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "BRAKE SW1" indication under the following conditions.

Monitor item	Co	Indication	
BRAKE SW1	Brake pedal	Slightly depressed	OFF
	Brake pedar	Fully released	ON

Without CONSULT-III

- Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

ECM Connector Terminal		Ground	Con	dition	Voltage
		Ground	Condition		voltage
E16	110	Ground	Brake pedal	Slightly depressed	Approx. 0V
LIO	(ASCD brake switch signal)	Giodila	Brake pedar	Fully released	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK OVERALL FUNCTION-II

(P) With CONSULT-III

Select "BRAKE SW2" and check indication in "DATA MONITOR" mode.

Monitor item	Co	ndition	Indication
BRAKE SW2	Brake pedal	Slightly depressed	ON
DIVINE OWE	Brake pedar	Fully released	OFF

₩ Without CONSULT-III

Check the voltage between ECM harness connector and ground.

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< COMPONENT DIAGNOSIS >

ECM		Ground	Condition		Voltago	
Connector	Terminal	Giodila	nd Condition		Voltage	
E16	106	Ground	Brake pedal	Slightly depressed	Battery voltage	
LIU	(Stop lamp switch signal)	Giodila	Brake pedar	Fully released	Approx. 0V	

Is the inspection result normal?

YES >> GO TO 11. NO >> GO TO 7.

3.check ascd brake switch power supply circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between ASCD brake switch harness connector and ground.

ASCD bi	ake switch	Ground	Voltage
Connector	Terminal	Ground	voltage
E112	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 4.

4.DETECT MALFUNCTIONING PART

Check the following.

- Junction block connector E105, M77
- 10A fuse (No.1)
- · Harness for open or short between ASCD brake switch and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between ASCD brake switch harness connector and ECM harness connector.

ASCD brake switch		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E112	2	E16	110	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK ASCD BRAKE SWITCH

Refer to EC-1161, "Component Inspection (ASCD Brake Switch)".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace ASCD brake switch.

7. CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect stop lamp switch harness connector.
- Check the voltage between stop lamp switch harness connector and ground.

COMPO	INLINI DIA		•		[. 0
Stop la	mp switch	Ground	\/oltogra		
Connector	Terminal	Ground	Voltage		
E115	1	Ground	Battery volta	ige	
the insp	ection result	normal?	1		
	> GO TO 9.				
	> GO TO 8.				
.DETEC	T MALFUN	CTIONING	PART		
	following.				
Harness 10A fuse	connectors	E105, M7	<i>(</i>		
	for open or	short betw	een stop la	mp switch	and battery
	•			•	•
>	> Repair ope	en circuit c	r short to g	round or sh	ort to power in harness or connectors.
.CHECK	STOP LAM	1P SWITC	H INPUT SI	GNAL CIR	CUIT FOR OPEN AND SHORT
	nect ECM h				
				ness conne	ctor and stop lamp switch harness connector.
E	CM	Stop la	mp switch	Continuity	
connector	Terminal	Connector	Terminal	Continuity	
E16	106	E115	2	Existed	
Also c	heck harnes	s for short	to ground a	and short t	power.
the insp	ection result	normal?			
	> GO TO 10				
_				round or sr	ort to power in harness or connectors.
	CK STOP LA				
	<u>C-1162, "Co</u>	•	nspection (S	Stop Lamp	<u>Switch)"</u> .
	ection result	<u> </u>			
	> GO TO 11 > Replace s		witch		
4	> Neplace s CK INTERM				
erer to <u>G</u>	I-41, "Interm	nittent Incid	<u>ient"</u> .		
_	> INSPECT	ION END			
			000.5		\
ompon	ent Inspe	ection (A	SCD Bra	ke Switc	n) INFOID:000000002994597
.CHECk	ASCD BRA	AKE SWIT	CH-I		
	gnition switc nnect ASCD		tch harness	connector	
					erminals under the following conditions.
Torminala	Co	ndition	Cont	nuity.	

Terminals	C	Continuity	
1 and 2	Brake pedal	Fully released	Existed
1 and 2	Бтаке ресат	Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK ASCD BRAKE SWITCH-II

P1572 ASCD BRAKE SWITCH

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

- Adjust ASCD brake switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Existed
T dild 2	Drake pedar	Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD brake switch.

Component Inspection (Stop Lamp Switch)

INFOID:0000000002994598

1. CHECK STOP LAMP SWITCH-I

- Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check the continuity between stop lamp switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2 Brake pedal	Fully released	Not existed	
1 and 2	brake pedar	Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK STOP LAMP SWITCH-II

- Adjust stop lamp switch installation. Refer to <u>BR-9</u>, "Inspection and Adjustment".
- 2. Check the continuity between stop lamp switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	1 and 2 Brake pedal	Fully released	Not existed
1 and 2		Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch.

[FOR MEXICO]

INFOID:0000000002994600

P1574 ASCD VEHICLE SPEED SENSOR

Description INFOID:0000000002994599

The ECM receives two vehicle speed sensor signals via CAN communication line. One is sent from combination meter, and the other is from TCM (Transmission control module). The ECM uses these signals for ASCD control. Refer to EC-958, "System Description" for ASCD functions.

DTC Logic

DTC DETECTION LOGIC

- If DTC P1574 is displayed with DTC U1000, U1001, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-1017, "DTC Logic".
- If DTC P1574 is displayed with DTC P0500, first perform the trouble diagnosis for DTC P0500. Refer to EC-1128, "DTC Logic"
- If DTC P1574 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-1136, "DTC Logic"
- If DTC P1574 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-1138, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	G
P1574	ASCD vehicle speed sensor	ECM detects a difference between two vehicle speed signals is out of the specified range.	Harness or connectors (The CAN communication line is open or shorted.) (Combination meter circuit is open or shorted.) Combination meter ABS actuator and electric unit (control unit) Wheel sensor TCM ECM	Н

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine.
- Drive the vehicle at more than 40 km/h (25 MPH).

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

3. Check DTC.

Is DTC detected?

YES >> Go to EC-1163, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994601

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-43, "CONSULT-III Function (TRANSMISSION)".

Is the inspection result normal?

YES >> GO TO 2.

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P1574 ASCD VEHICLE SPEED SENSOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

NO >> Perform trouble shooting relevant to DTC indicated.

 $2.\mathsf{CHECK}$ DTC WITH "ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)"

Refer to <u>BRC-15</u>, "CONSULT-III Function" (ABS models), <u>BRC-94</u>, "CONSULT-III Function" (VDC models).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace.

3. CHECK COMBINATION METER

Check combination meter function.

Refer to MWI-33, "CONSULT-III Function (METER/M&A)".

>> INSPECTION END

P1715 INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

< COMPONENT DIAGNOSIS >

IFOR MEXICO

P1715 INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

Description INFOID:0000000002994602

ECM receives primary speed sensor signal from TCM through CAN communication line. ECM uses this signal for engine control.

INFOID:0000000002994603

DTC Logic

DTC DETECTION LOGIC

NOTE:

- If DTC P1715 is displayed with DTC U1000, U1001 first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-1017, "DTC Logic".
- If DTC P1715 is displayed with DTC P0335, first perform the trouble diagnosis for DTC P0335. Refer to EC-1112, "DTC Logic".
- If DTC P1715 is displayed with DTC P0340, first perform the trouble diagnosis for DTC P0340. Refer to EC-1116, "DTC Logic".
- If DTC P1715 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-1136, "DTC Logic".
- If DTC P1715 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-1138, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1715	Input speed sensor (Primary speed sensor) (TCM output)	Primary speed sensor signal is different from the theoretical value calculated by ECM from secondary speed sensor signal and engine rpm signal.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (Primary speed sensor circuit is open or shorted) TCM

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

Start engine and drive the vehicle at more than 50 km/h (31 MPH) for at least 5 seconds.

CAUTION:

Always drive vehicle at a safe speed.

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1165, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-43, "CONSULT-III Function (TRANSMISSION)".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble shooting relevant to DTC indicated.

2.REPLACE TCM

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Replace TCM.

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P1715 INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

< COMPONENT DIAGNOSIS > [FOR MEXICO]

>> INSPECTION END

[FOR MEXICO]

P1805 BRAKE SWITCH

Description

Brake switch signal is applied to the ECM through the stop lamp switch when the brake pedal is depressed. This signal is used mainly to decrease the engine speed when the vehicle is driving.

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DTC Logic

INFOID:0000000002994606

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1805	Brake switch	A brake switch signal is not sent to ECM for extremely long time while the vehicle is driving.	Harness or connectors (Stop lamp switch circuit is open or shorted.) Stop lamp switch

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Fully depress the brake pedal for at least 5 seconds.
- 3. Erase the DTC with CONSULT-III.
- 4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-1167, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994607

1. CHECK STOP LAMP SWITCH CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Check the stop lamp when depressing and releasing the brake pedal.

Brake pedal	Stop lamp
Fully released	Not illuminated
Slightly depressed	Illuminated

Is 1st trip DTC detected?

YES >> GO TO 4. NO >> GO TO 2.

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2.CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- Check the voltage between stop lamp switch harness connector and ground.

Stop lan	Stop lamp switch		Voltage	
Connector	Terminal	Ground	voltage	
E115	1	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.

Harness connectors E105, M77

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[FOR MEXICO]

< COMPONENT DIAGNOSIS >

- 10A fuse (No. 11)
- Harness for open or short between stop lamp switch and battery
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Disconnect ECM harness connector.
- 2. Check the continuity between ECM harness connector and stop lamp switch harness connector.

ECM		Stop lamp switch		Continuity
Connector	Terminal	Connector Terminal		Continuity
E16	106	E115	2	Existed

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK STOP LAMP SWITCH

Refer to EC-1168, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace stop lamp switch.

6.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection (Stop Lamp Switch)

INFOID:0000000002994608

1. CHECK STOP LAMP SWITCH-I

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check the continuity between stop lamp switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	2 Brake pedal	Fully released	Not existed
r and 2 brake pedar	Slightly depressed	Existed	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK STOP LAMP SWITCH-II

- 1. Adjust stop lamp switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between stop lamp switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Not existed
i and z	Diake pedai	Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch.

P2100, P2103 THROTTLE CONTROL MOTOR RELAY

< COMPONENT DIAGNOSIS >

IFOR MEXICO

P2100, P2103 THROTTLE CONTROL MOTOR RELAY

Description INFOID:0000000002994609

Power supply for the throttle control motor is provided to the ECM via throttle control motor relay. The throttle control motor relay is ON/OFF controlled by the ECM. When the ignition switch is turned ON, the ECM sends an ON signal to throttle control motor relay and battery voltage is provided to the ECM. When the ignition switch is turned OFF, the ECM sends an OFF signal to throttle control motor relay and battery voltage is not provided to the ECM.

INFOID:0000000002994610

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2100	Throttle control motor relay circuit open	ECM detects a voltage of power source for throttle control motor is excessively low.	Harness or connectors (Throttle control motor relay circuit is open) Throttle control motor relay
P2103	Throttle control motor relay circuit short	ECM detect the throttle control motor relay is stuck ON.	Harness or connectors (Throttle control motor relay circuit is shorted) Throttle control motor relay

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V.

Witch DTC is detected?

P2100 >> GO TO 2.

P2103 >> GO TO 3.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P2100

- Turn ignition switch ON and wait at least 2 seconds.
- Start engine and let it idle for 5 seconds.
- Check DTC.

Is DTC detected?

YFS >> Go to EC-1169, "Diagnosis Procedure".

NO >> INSPECTION END

3.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P2103

- Turn ignition switch ON and wait at least 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1169, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

${f 1}$.CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Disconnect IPDM E/R harness connector. 3.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

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INFOID:0000000002994611

P2100, P2103 THROTTLE CONTROL MOTOR RELAY

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

ECM		IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		Continuity
F7	15	E13	32	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2.DETECT MALFUNCTION PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between ECM and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT

1. Check the continuity between ECM harness connector and IPDM E/R harness connector.

ECM		IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		Continuity
F7	2	E15	52	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 4.

4. DETECT MALFUNCTION PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between ECM and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK FUSE

- 1. Disconnect 20A fuse (No. 61) from IPDM E/R.
- 2. Check 20A fuse for blown.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace 20A fuse.

6. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connectors.

< COMPONENT DIAGNOSIS >

IFOR MEXICO

P2101 ELECTRIC THROTTLE CONTROL FUNCTION

Description INFOID:0000000002994612

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The current opening angle of the throttle valve is detected by the throttle position sensor and it provides feedback to the ECM to control the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

DTC Logic INFOID:0000000002994613

DTC DETECTION LOGIC

NOTE:

If DTC P2101 is displayed with DTC P2100 or P2119, first perform the trouble diagnosis for DTC P2100 or P2119. Refer to EC-1169, "DTC Logic" or EC-1177, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2101	Electric throttle control performance	Electric throttle control function does not operate properly.	Harness or connectors (Throttle control motor circuit is open or shorted) Electric throttle control actuator

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V when engine is running.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 2 seconds.
- Start engine and let it idle for 5 seconds. 2.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1171, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-I

Check the voltage between ECM harness connector and ground.

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< COMPONENT DIAGNOSIS >

[FOR MEXICO]

E	СМ	Ground	Condition	Voltage	
Connector	Terminal	Glodila	Condition	voltage	
F14	2	Ground	Ignition switch OFF	Approx. 0V	
1 14	2	Giodila	Ignition switch ON	Battery voltage	

Is the inspection result normal?

YES >> GO TO 9. NO >> GO TO 3.

3.check throttle control motor relay power supply circuit

- 1. Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector.
- 3. Check the continuity between ECM harness connector and IPDM E/R harness connector.

IPDM E/R		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E13	32	F7	15	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 4.

4.DETECT MALFUNCTION PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between ECM and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-II

1. Check the continuity between ECM harness connector and IPDM E/R harness connector.

IPDM E/R		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E15	52	F7	2	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 6.

6. DETECT MALFUNCTION PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between ECM and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK FUSE

- 1. Disconnect 20A fuse (No. 61) from IPDM E/R.
- 2. Check 20A fuse for blown.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace 20A fuse.

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

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8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connectors.

9.CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT FOR OPEN OR SHORT

- Turn ignition switch OFF.
- Disconnect electric throttle control actuator harness connector.
- Disconnect ECM harness connector.
- 4. Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle control actuator		ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
F29	5	F7	5	Not existed	
			6	Existed	
			5	Existed	
			6	Not existed	

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YFS >> GO TO 10.

>> Repair or replace. NO

10.CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- Remove the intake air duct.
- 2. Check if foreign matter is caught between the throttle valve (1) and the housing.
- ⟨
 ⇒: Vehicle front
- Electric throttle control actuator (2)

Is the inspection result normal?

YES >> GO TO 11.

NO >> Remove the foreign matter and clean the electric throttle control actuator inside.

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11. CHECK THROTTLE CONTROL MOTOR

Refer to EC-1174, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 12. NO >> GO TO 13.

12. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or replace harness or connectors.

13. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace malfunction electric throttle control actuator.
- Go to EC-1174, "Special Repair Requirement".

>> INSPECTION END

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< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Component Inspection

INFOID:0000000002994615

1. CHECK THROTTLE CONTROL MOTOR

- 1. Disconnect electric throttle control actuator harness connector.
- 2. Check resistance between electric throttle control actuator terminals as follows.

Terminals	Resistance
5 and 6	Approx. 1 - 15 Ω [at 25 °C (77°F)]

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- 2. Go to EC-1174, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002994616

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

P2118 THROTTLE CONTROL MOTOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

P2118 THROTTLE CONTROL MOTOR

Description INFOID:0000000002994617

The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The current opening angle of the throttle valve is detected by the throttle position sensor and it provides feedback to the ECM to control the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

DTC Logic INFOID:0000000002994618

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2118	Throttle control motor circuit short	ECM detects short in both circuits between ECM and throttle control motor.	Harness or connectors (Throttle control motor circuit is shorted.) Electric throttle control actuator (Throttle control motor)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure

- Turn ignition switch ON and wait at least 2 seconds.
- Start engine and let it idle for 5 seconds.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1175, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Disconnect electric throttle control actuator harness connector.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	5	E		Not existed
F29	6	F7	6	Existed
			5	Existed
	0		6	Not existed

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P2118 THROTTLE CONTROL MOTOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace.

3. CHECK THROTTLE CONTROL MOTOR

Refer to EC-1176, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 5.

4. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace harness or connectors.

5. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- 2. Go to EC-1176, "Special Repair Requirement".

>> INSPECTION END

Component Inspection

INFOID:0000000002994620

1. CHECK THROTTLE CONTROL MOTOR

- Disconnect electric throttle control actuator harness connector.
- Check resistance between electric throttle control actuator terminals as follows.

Terminals	Resistance
5 and 6	Approx. 1 - 15 Ω [at 25 °C (77°F)]

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.replace electric throttle control actuator

- 1. Replace electric throttle control actuator.
- 2. Go to EC-1176, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002994621

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${f 1}$. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

Description INFOID:0000000002994622

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc.

The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The throttle position sensor detects the throttle valve position, and the opening and closing speed of the throttle valve and feeds the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

DTC Logic INFOID:0000000002994623

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible cause
	Electric throttle control	A)	Electric throttle control actuator does not function properly due to the return spring malfunction.	
P2119	actuator	B)	Throttle valve opening angle in fail-safe mode is not in specified range.	Electric throttle control actuator
		C)	ECM detect the throttle valve is stuck open.	

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

>> GO TO 2.

2.perform dtc confirmation procedure for malfunction a and b

- Turn ignition switch ON and wait at least 1 second.
- 2. Set shift lever to D position and wait at least 3 seconds.
- 3. Set shift lever to P position.
- Turn ignition switch OFF and wait at least 10 seconds.
- 5. Turn ignition switch ON and wait at least 1 second.
- 6. Set shift lever to D position and wait at least 3 seconds.
- Set shift lever to P position.
- Turn ignition switch OFF, wait at least 10 seconds, and then turn ON.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1177, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform dtc confirmation procedure for malfunction ${ t c}$

- Turn ignition switch ON and wait at least 1 second.
- 2. Set shift lever to D position and wait at least 3 seconds.
- Set shift lever to N, P position.
- 4. Start engine and let it idle for 3 seconds.
- 5. Check DTC.

Is DTC detected?

YES >> Go to EC-1177, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

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P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

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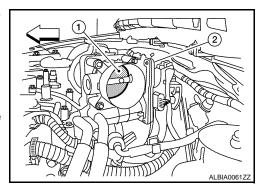
- 1. Turn ignition switch OFF.
- 2. Remove the intake air duct.
- 3. Check if foreign matter is caught between the throttle valve (1) and the housing.
- <a>□: Vehicle front
- Electric throttle control actuator (2)

Is the inspection result normal?

YES >> GO TO 2.

NO >> Remove

>> Remove the foreign matter and clean the electric throttle control actuator inside.



2.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator.
- 2. Go to EC-1178, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002994625

[FOR MEXICO]

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

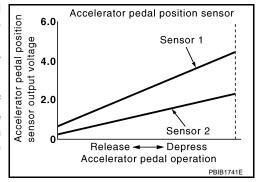
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P2122, P2123 APP SENSOR

Description

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.

Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals.



Idle position of the accelerator pedal is determined by the ECM

receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P2122 or P2123 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-1139, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2122	Accelerator pedal position sensor 1 circuit low input	An excessively low voltage from the APP sensor 1 is sent to ECM.	Harness or connectors (APP sensor 1 circuit is open or shorted.)
P2123	Accelerator pedal position sensor 1 circuit high input	An excessively high voltage from the APP sensor 1 is sent to ECM.	Accelerator pedal position sensor (APP sensor 1)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1179, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44. "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

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2.CHECK APP SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Disconnect accelerator pedal position (APP) sensor harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between APP sensor harness connector and ground.

APP	sensor	Ground	Voltage
Connector	Terminal	Ground	vollage
E110	4	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3.CHECK APP SENSOR 1 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

APP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E110	2	E16	84	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK APP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between APP sensor harness connector and ECM harness connector.

APP	APP sensor		СМ	Continuity
Connector	Terminal	Connector Terminal		Continuity
E110	3	E16	81	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

5.CHECK APP SENSOR

Refer to EC-1181, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 6.

6.REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Go to EC-1181, "Special Repair Requirement".

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

P2122, P2123 APP SENSOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Component Inspection

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1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- 1. Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Check the voltage between ECM harness connector terminals.

ECM							
+		-		Condition		Voltage	
Connector	Terminal	Connector Terminal					
	81		84		Fully released	0.5 - 1.0V	
E16	(APP sensor 1 signal)	F46	E16		Accelerator pedal	Fully depressed	4.2 - 4.8V
82	82	LIU	100	Accelerator pedar	Fully released	0.25 - 0.5V	
	(APP sensor 2 signal)		(Sensor ground)		Fully depressed	2.0 - 2.5V	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Go to EC-1181, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002994630

1. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-929, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 2.

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2.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3.perform idle air volume learning

Refer to EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END

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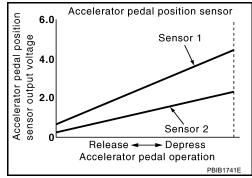
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P2127, P2128 APP SENSOR

Description INFOID:000000002994631

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.

Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals.



Idle position of the accelerator pedal is determined by the ECM receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2127	Accelerator pedal position sensor 2 circuit low input	An excessively low voltage from the APP sensor 2 is sent to ECM.	Harness or connectors (APP sensor 2 circuit is open or shorted.) [Crankshaft position sensor (POS) circuit
P2128	Accelerator pedal position sensor 2 circuit high input	An excessively high voltage from the APP sensor 2 is sent to ECM.	is shorted.] (Refrigerant pressure sensor circuit is shorted.) • Accelerator pedal position sensor (APP sensor 2) • Crankshaft position sensor (POS) • Refrigerant pressure sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1182, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994633

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

P2127, P2128 APP SENSOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

NO >> Repair or replace ground connection.

2.CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-I

Disconnect accelerator pedal position (APP) sensor harness connector.

- Turn ignition switch ON.

Check the voltage between APP sensor harness connector and ground.

APP sensor		Ground	Voltage	
Connector	Connector Terminal		voltage	
E110	5	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 3.

3.CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-II

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector. 2.
- Check the continuity between APP sensor harness connector and ECM harness connector.

APP sensor		ECM		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
E110	5	E16	87	Existed	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

f 4.CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

EC	M	Sensor		
Connector	Terminal	Name	Connector	Terminal
F8	72	72 Refrigerant pressure sensor		3
10	76	CKP sensor (POS)	F20	1
E16	87	APP sensor	E110	5

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair short to ground or short to power in harness or connectors.

5.CHECK COMPONENT

Check the following.

- Crankshaft position sensor (POS) (Refer to <u>EC-1115, "Component Inspection"</u>.)
- Refrigerant pressure sensor (Refer to EC-865, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace malfunctioning component.

$\mathsf{6}.$ CHECK APP SENSOR 2 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between APP sensor harness connector and ECM harness connector.

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APP sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E110	1	E16	100	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

7.CHECK APP SENSOR 2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between APP sensor harness connector and ECM harness connector.

APP sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E110	2	E16	82	Existed

2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK APP SENSOR

Refer to EC-1184, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 9.

9. REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- 2. Go to EC-1185, "Special Repair Requirement".

>> INSPECTION END

10. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002994634

1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- Reconnect all harness connectors disconnected.
- Turn ignition switch ON.
- 3. Check the voltage between ECM harness connector terminals.

	ECM															
+ -		-	Condition		Voltage											
Connector	Terminal	Connector	Terminal													
	81		84		Fully released	0.5 - 1.0V										
E16	(APP sensor 1 signal)		E16	F16	F16	F16	F16	F16	E16	F16	F16	E16	(Sensor ground)	Accelerator pedal	Fully depressed	4.2 - 4.8V
82	82	LIO	100	Accelerator pedar	Fully released	0.25 - 0.5V										
	(APP sensor 2 signal)		(Sensor ground)		Fully depressed	2.0 - 2.5V										

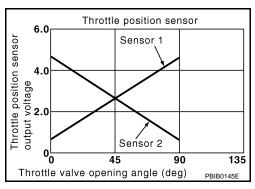
P2127, P2128 APP SENSOR	
< COMPONENT DIAGNOSIS > [FOR MEXICO]	
YES >> INSPECTION END NO >> GO TO 2.	А
2. REPLACE ACCELERATOR PEDAL ASSEMBLY	
 Replace accelerator pedal assembly. Go to <u>EC-1185</u>, "Special Repair Requirement". 	EC
>> INSPECTION END	С
Special Repair Requirement	C
1.PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING	D
Refer to EC-929, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".	
ment.	Е
>> GO TO 2.	
2.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING	F
Refer to EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".	
>> GO TO 3.	G
3. PERFORM IDLE AIR VOLUME LEARNING	
Refer to EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".	Н
>> END	
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P2135 TP SENSOR

Description INFOID:000000002994636

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P2135 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to <u>EC-1139</u>, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2135	Throttle position sensor circuit range/performance	Rationally incorrect voltage is sent to ECM compared with the signals from TP sensor 1 and TP sensor 2.	Harness or connector (TP sensor 1 and 2 circuit is open or shorted.) Electric throttle control actuator (TP sensor 1 and 2)

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1186, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994638

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT-I

1. Disconnect electric throttle control actuator harness connector.

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

- 2. Turn ignition switch ON.
- 3. Check the voltage between electric throttle control actuator harness connector and ground.

Electric throttle of	control actuator	Ground	Voltage
Connector	Terminal	Ground	Voltage
F29	1	Ground	Approx. 5V

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Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.CHECK THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT-II

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- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between electric throttle control actuator harness connector and ground.

Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F29	1	F8	47	Existed

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Is the inspection result normal?

YES >> GO TO 4.

NO

>> Repair open circuit.

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4.CHECK THROTTLE POSITION SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between electric throttle control actuator harness connector and ground.

Electric throttle of	ctric throttle control actuator		or ECM	
Connector	Terminal	Connector Terminal		Continuity
F57	4	F8	36	Existed

4. Also check harness for short to ground and short to power.

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Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK THROTTLE POSITION SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between electric throttle control actuator harness connector and ground.

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Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F29	2	F8	37	Existed
3		10	38	LAISIEU

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2. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK THROTTLE POSITION SENSOR

Refer to EC-1188, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 7.

[FOR MEXICO]

7.replace electric throttle control actuator

- 1. Replace electric throttle control actuator.
- 2. Go to EC-1188, "Special Repair Requirement".

>> INSPECTION END

8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000002994639

1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set shift lever to D position.
- 6. Check the voltage between ECM harness connector terminals.

ECM						
+		_		Condition		Voltage
Connector	Terminal	Connector	Terminal			
F8	37 (TP sensor 1 signal)	- F8	36 (Sensor ground)	Accelerator pedal	Fully released	More than 0.36V
					Fully depressed	Less than 4.75V
	38 (TP sensor 2 signal)				Fully released	Less than 4.75V
					Fully depressed	More than 0.36V

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.replace electric throttle control actuator

- Replace electric throttle control actuator.
- Go to <u>EC-1188</u>, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002994640

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

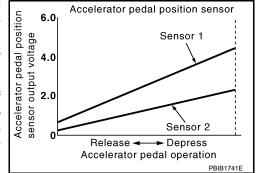
>> END

P2138 APP SENSOR

Description INFOID:0000000002994641

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.

Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these



Idle position of the accelerator pedal is determined by the ECM

receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.

DTC Logic INFOID:0000000002994642

DTC DETECTION LOGIC

NOTE:

If DTC P2138 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-1139, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2138	Accelerator pedal position sensor circuit range/performance	Rationally incorrect voltage is sent to ECM compared with the signals from APP sensor 1 and APP sensor 2.	Harness or connector (APP sensor 1 and 2 circuit is open or shorted.) [Crankshaft position sensor (POS) circuit is shorted.) (Refrigerant pressure sensor circuit is shorted.) (Tumble control valve position sensor circuit is shorted.) Accelerator pedal position sensor (APP sensor 1 and 2) Crankshaft position sensor (POS) Refrigerant pressure sensor

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 8V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-1190, "Diagnosis Procedure".

NO >> INSPECTION END Accelerator pedal position sensor

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EC-1189 Revision: 2008 January 2008 Rogue

< COMPONENT DIAGNOSIS >

Diagnosis Procedure

INFOID:0000000002994643

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK APP SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Disconnect accelerator pedal position (APP) sensor harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between APP sensor harness connector and ground.

APP	sensor	Ground	Voltage
Connector Terminal		Ground	voltage
E110	4	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or shot to power in harness or connectors.

3.CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch ON.
- 2. Check the voltage between APP sensor harness connector and ground.

APF	sensor	Ground	Voltage
Connector Terminal		Ground	voltage
E110	5	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 4.

NO >> GO 10 4.

4.CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-II

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

APP	sensor		Continuity	
Connector Terminal		Connector	Terminal	Continuity
E110	5	E16	87	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or shot to power in harness or connectors.

${f 5.}$ CHECK SENSOR POWER SUPPLY CIRCUIT

Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
F8	72	Refrigerant pressure sensor	E49	3	
10	76	CKP sensor (POS)	F20	1	
E16 87 APP sensor		E110	5		
	I	ı			

P2138 APP SENSOR

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

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Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair short to ground or short to power in harness or connectors.

6. CHECK COMPONENT

Check the following.

- Crankshaft position sensor (POS) (Refer to <u>EC-1115, "Component Inspection"</u>.)
- Refrigerant pressure sensor (Refer to EC-1222, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace malfunctioning component.

7.CHECK APP SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector as follows.

APP sensor		ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
E110	2	E16	84	Existed	
LIIU	1	L 10	100	LAISIEU	

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to ground or shot to power in harness or connectors.

8.CHECK APP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between APP sensor harness connector and ECM harness connector as follows.

APP	sensor	ECM		Continuity	
Connector Terminal		Connector	Terminal	Continuity	
E110	6	E16	82	Existed	
L110	3	L10	81	LAISIEU	

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or shot to power in harness or connectors.

9. CHECK APP SENSOR

Refer to EC-1192, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> GO TO 10.

Revision: 2008 January

10.REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly. Refer to ACC-3, "Removal and Installation".
- 2. Go to EC-1192, "Special Repair Requirement".

>> INSPECTION END

11. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

EC-1191

Component Inspection

INFOID:0000000002994644

1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- 1. Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Check the voltage between ECM harness connector terminals.

	ECM						
+		-		Condition		Voltage	
Connector	Terminal	Connector	Terminal				
	81	E16	E16 84 (Sensor ground) 100 (Sensor ground)		Fully released	0.5 - 1.0V	
E16	(APP sensor 1 signal)			Accelerator pedal	Fully depressed	4.2 - 4.8V	
	82	LIU		Accelerator pedar	Fully released	0.25 - 0.5V	
	(APP sensor 2 signal)				Fully depressed	2.0 - 2.5V	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Go to EC-1192, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000002994645

1. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-929. "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 2.

2.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-930, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-930, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END

P2A00 A/F SENSOR 1

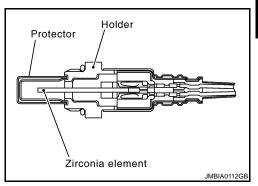
Description

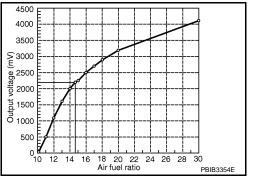
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.

Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of about 800° C (1,472°F).





DTC Logic

DTC DETECTION LOGIC

To judge the malfunction, the A/F signal computed by ECM from the A/F sensor 1 signal is monitored not to be shifted to LEAN side or RICH side.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P2A00	Air fuel ratio (A/F) sensor 1 circuit range/performance	 The output voltage computed by ECM from the A/F sensor 1 signal is shifted to the lean side for a specified period. The A/F signal computed by ECM from the A/F sensor 1 signal is shifted to the rich side for a specified period. 	 A/F sensor 1 A/F sensor 1 heater Fuel pressure Fuel injector Intake air leaks

DTC CONFIRMATION PROCEDURE

1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Clear the mixture ratio self-learning value. Refer to EC-932, "MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Special Repair Requirement".
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Keep engine speed between 2,500 and 3,000 rpm for 20 minutes.
- 6. Check 1st trip DTC\$.

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< COMPONENT DIAGNOSIS >

Is 1st trip DTC detected?

YES >> Go to EC-1194, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000002994648

[FOR MEXICO]

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. RETIGHTEN A/F SENSOR 1

1. Loosen and retighten the A/F sensor 1. Refer to EM-32, "Removal and Installation".

>> GO TO 3.

3.CHECK FOR INTAKE AIR LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an intake air leak after the mass air flow sensor.

Is intake air leak detected?

YES >> GO TO 4.

NO >> Repair or replace.

4. CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to <u>EC-932</u>, "MIXTURE RATIO SELF-LEARNING VALUE <u>CLEAR</u>: Special Repair Requirement".
- 2. Run engine for at least 10 minutes at idle speed.

Is the 1st trip DTC P0171 or P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171or P0172. Refer to <u>EC-1093, "DTC Logic"</u> or <u>EC-1097, "DTC Logic"</u>.

NO >> GO TO 5.

5. CHECK HARNESS CONNECTOR

- 1. Turn ignition switch OFF.
- Disconnect A/F sensor 1 harness connector.
- 3. Check harness connector for water.

Water should not exit.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace harness connector.

O.CHECK A/F SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Turn ignition switch ON.
- Check the voltage between A/F sensor 1 harness connector and ground.

A/F s	ensor 1	Ground	Voltage
Connector Terminal		Ground	Voltage
F27	4	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

7.DETECT MALFUNCTIONING PART

[FOR MEXICO] < COMPONENT DIAGNOSIS >

Check the following.

- Harness connectors E6, F123
- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between A/F sensor 1 and fuse

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>> Repair or replace harness or connectors.

8.check a/f sensor 1 input signal circuit for open and short

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F	sensor 1	ECM		Continuity
Connector Terminal		Connector Terminal		Continuity
F27	1	F8	45	Existed
1 21	2	1-0	49	LAISIEU

Check the continuity between ECM harness connector or A/F sensor 1 harness connector and ground.

A/F sensor 1		ECM		Ground	Continuity
Connector	Terminal	Connector Terminal		Ground	Continuity
F27	1	F8	45	Ground	Not existed
1 21	2	1.0	49	Giodila	INOL EXISTED

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9. CHECK A/F SENSOR 1 HEATER

Refer to EC-1024, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 11.

10. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace.

11.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1.

CAUTION:

 Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

 Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

Do vou have CONSULT-III?

YES >> GO TO 12.

NO >> GO TO 13.

12.CONFIRM A/F ADJUSTMENT DATA

(P)With CONSULT-III

Turn ignition switch ON.

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P2A00 A/F SENSOR 1

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

- 2. Select "A/F ADJ-B1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Make sure that "0.000" is displayed on CONSULT-III screen.

Is "0.000" displayed?

YES >> INSPECTION END

NO >> GO TO 13.

13.clear the mixture ratio self-learning value

Clear the mixture ratio self-learning value. Refer to <u>EC-932</u>, "MIXTURE RATIO SELF-LEARNING VALUE <u>CLEAR</u>: Special Repair Requirement".

Do you have CONSULT-III?

YES >> GO TO 14.

NO >> INSPECTION END

14. CONFIRM A/F ADJUSTMENT DATA

(P)With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Select "A/F ADJ-B1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Make sure that "0.000" is displayed on CONSULT-III screen.

>> INSPECTION END

ASCD BRAKE SWITCH

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

INFOID:0000000002994650

ASCD BRAKE SWITCH

Description INFOID:0000000002994649

When the brake pedal is depressed, ASCD brake switch is turned OFF and stop lamp switch is turned ON. ECM detects the state of the brake pedal by this input of two kinds (ON/OFF signal).

Refer to EC-958, "System Description" for the ASCD function.

Component Function Check

CHECK FOR ASCD BRAKE SWITCH FUNCTION

(P) With CONSULT-III

- 1. Turn ignition switch ON.
- Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "BRAKE SW1" indication under the following conditions.

Monitor item	Co	Indication	
BRAKE SW1 Brake pedal	Slightly depressed	OFF	
BIVAILE SWI	Бтаке рецаг	Fully released	ON

W Without CONSULT-III

- Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

ECM		- Ground Cor		adition	Voltage
Connector	Terminal	Ground	Condition		voltage
E16	110	Ground	Brake pedal	Slightly depressed	Approx. 0V
LIO	(ASCD brake switch signal)	Orodria	Brake pedai	Fully released	Battery voltage

Is the inspection result normal?

YES >> INSPECTION END.

NO >> Refer to EC-1197, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- Turn ignition switch ON.
- Check the voltage between ASCD brake switch harness connector and ground.

ASCD brake switch		Ground	Voltage
Connector	Terminal	Ground	voilage
E112	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E105, M77
- 10A fuse (No. 1)
- Harness for open or short between ASCD brake switch and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

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< COMPONENT DIAGNOSIS >

${f 3.}$ CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between ASCD brake switch harness connector and ECM harness connector.

ASCD brake switch		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E112	2	E16	110	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK ASCD BRAKE SWITCH

Refer to EC-1198, "Component Inspection (ASCD Brake Switch)".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace ASCD brake switch.

5.check intermittent incident

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection (ASCD Brake Switch)

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1.CHECK ASCD BRAKE SWITCH-I

- Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.
- 3. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2 Brake pedal	Brake nedal	Fully released	Existed
	Slightly depressed	Not existed	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK ASCD BRAKE SWITCH-II

- Adjust ASCD brake switch installation. Refer to <u>BR-9</u>, "Inspection and Adjustment".
- 2. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Existed
1 and 2 Brake pedal		Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD brake switch.

ASCD INDICATOR

Description

ASCD indicator lamp illuminates to indicate ASCD operation status. Lamp has two indicators, CRUISE and SET, and is integrated in combination meter.

CRUISE lamp illuminates when MAIN switch on ASCD steering switch is turned ON to indicated that ASCD system is ready for operation.

SET lamp illuminates when following conditions are met.

- CRUISE lamp is illuminated.
- SET/COAST switch on ASCD steering switch is turned ON while vehicle speed is within the range of ASCD setting.

SET lamp remains lit during ASCD control.

Refer to EC-958, "System Description" for the ASCD function.

Component Function Check

1. ASCD INDICATOR FUNCTION

Check ASCD indicator under the following conditions.

ASCD INDICATOR	CONDITION		SPECIFICATION
CRUISE LAMP	Ignition switch: ON MAIN switch: Pressed at the 1st time →at the 2nd time		$ON \to OFF$
	MAIN switch: ON	ASCD: Operating	ON
SET LAMP	When vehicle speed: Be- tween 40 km/h (25 MPH) and 144 km/h (89 MPH)	ASCD: Not operating	OFF

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1199, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK DTC

Check that DTC U1000 or U1001 is not displayed.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble diagnosis for DTC U1000, U1001. Refer to <u>EC-1017</u>, "DTC Logic".

2. CHECK COMBINATION METER OPERATION

Refer to MWI-33, "CONSULT-III Function (METER/M&A)".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check combination meter circuit. Refer to MWI-9, "SPEEDOMETER: System Diagram".

3.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

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COOLING FAN

Description

The ECM controls the cooling fan corresponding to the vehicle speed, engine coolant temperature, refrigerant pressure, and air conditioner ON signal. The control system has 3-step control [HIGH/LOW/OFF].

COOLING FAN MOTOR

The cooling fan operates at each speed when the current flows in the cooling fan motor as follows.

Cooling fan speed	Cooling fan motor terminals		
Cooling fair speed	(+)	(-)	
Middle (MID)	1	3 and 4	
	2	3 and 4	
	1 and 2	3	
	1 and 2	4	
High (HI)	1 and 2	3 and 4	

The cooling fan operates at low (LOW) speed when cooling fan motors-1 and -2 are circuited in series under middle speed condition.

Refer to EC-965, "System Description".

Component Function Check

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1. CHECK COOLING FAN LOW SPEED FUNCTION

(II) With CONSULT-III

- Turn ignition switch ON.
- Perform "COOLING FAN" in "ACTIVE TEST" mode with CONSULT-III and touch "LOW" on the CON-SULT-III screen.
- 3. Make sure that cooling fans operates at low speed.

8 Without CONSULT-III

- Start engine and let it idle.
- 2. Turn air conditioner switch and blower fan switch ON.
- 3. Make sure that cooling fan operates at low speed.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Check cooling fan low speed control circuit. Refer to "PROCEDURE A" in <u>EC-1201</u>, "<u>Diagnosis</u> Procedure".

2. CHECK COOLING FAN HIGH SPEED FUNCTION

(III) With CONSULT-III

- 1. Touch "HI" on the CONSULT-III screen.
- 2. Make sure that cooling fans operates at higher speed than low speed.

Without CONSULT-III

- Turn ignition switch OFF.
- 2. Turn air conditioner switch and blower fan switch OFF.
- 3. Disconnect engine coolant temperature sensor harness connector.
- 4. Connect 150Ω resistor to engine coolant temperature sensor harness connector.
- 5. Restart engine and make sure that cooling fan operates at higher speed than low speed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Check cooling fan high speed control circuit. Refer to "PROCEDURE B" in <u>EC-1201</u>, "<u>Diagnosis Procedure"</u>.

Diagnosis Procedure

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PROCEDURE A

1. CHECK GROUND CONNECTION

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- 1. Turn ignition switch OFF.
- Check ground connection E38. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK COOLING FAN MOTORS POWER SUPPLY CIRCUIT-I

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- 1. Disconnect cooling fan motor-2 harness connector.
- 2. Check the voltage between cooling fan motor-2 harness connector and ground.

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Cooling fan motor-2		Ground	Voltage	
Connector	Terminal	Giodila	voltage	
F54	1	Ground	Battery voltage	
LJ4	2	Giodila	Dattery Voltage	

3. Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

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3.DETECT MALFUNCTIONING PART

Check the following.

- 40A fusible link (letter M)
- Harness for open or short between cooling fan motor-2 and battery

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>> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK COOLING FAN MOTORS POWER SUPPLY CIRCUIT-II

- 1. Disconnect cooling fan relay-4.
- Turn ignition switch ON.
- Check the voltage between cooling fan relay-4 harness connector and ground.

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Cooling fan relay-4		Ground	Voltage	
Connector	Terminal	Ground	voltage	
E57	2	Ground	Battery voltage	

4. Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between cooling fan relay-4 and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK COOLING FAN MOTORS GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect cooling fan motor-1 harness connector.

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Check the continuity between cooling fan motor-1 harness connector and ground.

Cooling fan motor-1		Ground	Continuity	
Connector	Terminal	Giodila	Continuity	
E53	3	Ground	Existed	
£33	4	Giouria	LAISIEU	

4. Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK COOLING FAN MOTORS CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect IPDM E/R harness connector E13.
- Check the continuity between cooling fan motor-2 harness connector and cooling fan relay-4 harness connector.

Cooling fan motor-2		Cooling fan relay-4		Continuity
Connector	Terminal	Connector Terminal		Continuity
E54	3	E57	3	Existed

Check the continuity between cooling fan relay-4 harness connector and cooling fan motor-1 harness connector and ground.

Cooling f	Cooling fan relay-4		Cooling fan motor-1	
Connector	Terminal	Connector Terminal		Continuity
E57	5	E53	2	Existed

4. Check the continuity between cooling fan relay-4 harness connector and IPDM E/R harness connector.

Cooling f	an relay-4	IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		Continuity
E57	1	E13	31	Existed

5. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK COOLING FAN RELAY-4

Refer to EC-1206, "Component Inspection (Cooling Fan Relay)".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace cooling fan relay.

$\mathbf{9}.$ CHECK COOLING FAN MOTORS

Refer to EC-1205, "Component Inspection (Cooling Fan Motor)".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace malfunctioning cooling fan motor.

10.check intermittent incident

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connector.

COOLING FAN

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[FOR MEXICO]

PROCEDURE B

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E21, E38. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK IPDM E/R POWER SUPPLY CIRCUIT

- Disconnect IPDM E/R harness connector E10.
- Check the voltage between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Voltage
Connector	Terminal	Giodila	voitage
E10	6	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- 40A fusible link (letter K)
- Harness for open or short between IPDM E/R and battery

>> Repair open circuit or short to ground or short to power in harness or connectors.

f 4 .CHECK IPDM E/R GROUND CIRCUIT FOR OPEN ANF SHORT

- Disconnect IPDM E/R harness connector E11.
- 2. Check the continuity between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Continuity	
Connector	Terminal	Giodila	Continuity	
E11	11	Ground	Existed	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5}$.CHECK COOLING FAN MOTORS POWER SUPPLY CIRCUIT-I

- Disconnect cooling fan motor-2 harness connector.
- Check the voltage between cooling fan motor-2 harness connector and ground.

Cooling fan motor-2		Ground	Voltage	
Connector Terminal		Giodila	voltage	
F54	1	Ground	Battery voltage	
L04	2	Giodila	Battery Voltage	

Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

40A fusible link (letter M)

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- Harness for open or short between cooling fan motor-2 and battery
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

7.CHECK COOLING FAN MOTORS POWER SUPPLY CIRCUIT-II

- 1. Disconnect cooling fan relay-5.
- Turn ignition switch ON.
- Check the voltage between cooling fan relay-5 harness connector and ground.

Cooling fan relay-5		Ground	Voltage
Connector	Terminal	Ground	voltage
E59	2	Ground	Battery voltage

4. Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 8.

8. DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R harness connector E14
- 15A fuse (No. 63)
- Harness for open or short between cooling fan relay-5 and fuse
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

9. CHECK COOLING FAN MOTORS GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect cooling fan motor-1 harness connector.
- 3. Check the continuity between cooling fan motor-1 harness connector and ground.

Cooling fa	an motor-1	Ground	Continuity	
Connector	Connector Terminal		Continuity	
E53	3 4	Ground	Existed	

Check the continuity between cooling fan relay-5 harness connector and ground.

Cooling f	an relay-5	Ground	Continuity
Connector Terminal		Ground	Continuity
E59	5	Ground	Existed

5. Also check harness for short to ground or short to power.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

10.CHECK COOLING FAN MOTORS CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect IPDM E/R harness connector E15.
- Check the continuity between cooling fan motor-2 harness connector and cooling fan relay-5 harness connector.

Cooling fa	an motor-2	Cooling fan relay-5		Continuity
Connector	Terminal	Connector Terminal		Continuity
E54	4	E59	3	Existed

COOLING FAN

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Check the continuity between cooling fan motor-2 harness connector and IPDM E/R harness connector.

Cooling fa	Cooling fan motor-2		IPDM E/R	
Connector	Terminal	Connector Terminal		Continuity
E54	3	E10	7	Existed

Check the continuity between cooling fan relay-5 harness connector and IPDM E/R harness connector.

Cooling f	Cooling fan relay-5		IPDM E/R	
Connector	Terminal	Connector Terminal		Continuity
E59	1	E15	50	Existed

5. Check the continuity between cooling fan motor-1 harness connector and IPDM E/R harness connector.

Cooling fa	an motor-1	IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		Continuity
E53	1	E10	4	Existed
200	2	_ L10	8	LAISIEU

Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

11. CHECK COOLING FAN RELAY-5

Refer to EC-1206, "Component Inspection (Cooling Fan Relay)".

Is the inspection result normal?

YES >> GO TO 12.

NO >> Replace cooling fan relay.

12. CHECK COOLING FAN MOTORS

Refer to EC-1205, "Component Inspection (Cooling Fan Motor)".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace malfunctioning cooling fan motor.

13. CHECK INTERMITTENT INCIDENT

Perform GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

>> Repair or replace harness or connector. NO

Component Inspection (Cooling Fan Motor)

1. CHECK COOLING FAN MOTORS

- Turn ignition switch OFF.
- Disconnect cooling fan motor-1 and -2 harness connectors E53, E54.
- Supply cooling fan motor terminals with battery voltage and check operation.

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Cooling fan r	notor terminals	Operation	
(+)	(-)	— Operation	
1	3 and 4		
2	3 and 4	Cooling fans operates at low speed.	
1 and 2	3	— Cooming fains operates at low speed.	
1 and 2	4		
1 and 2	3 and 4	Cooling fans operates at high speed.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace cooling fan motor.

Component Inspection (Cooling Fan Relay)

1. CHECK COOLING FAN RELAYS

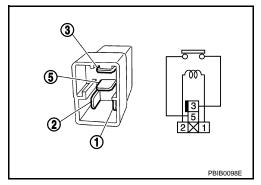
- 1. Turn ignition switch OFF.
- 2. Remove cooling fan relay.
- 3. Check the continuity between cooling fan relay terminals under the following conditions.

Terminals	Conditions	Continuity
3 and 5	12V direct current supply between terminals 1 and 2	Existed
3 and 3	No current supply	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace cooling fan relay.



ELECTRICAL LOAD SIGNAL

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

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ELECTRICAL LOAD SIGNAL

Description INFOID:0000000002994661

The electrical load signal (Headlamp switch signal, rear window defogger switch signal, etc.) is transferred through the CAN communication line from BCM to ECM via IPDM E/R.

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Component Function Check

1. CHECK REAR WINDOW DEFOGGER SWITCH FUNCTION

- Turn ignition switch ON.
- Connect CONSULT-III and select "DATA MONITOR" mode. 2.
- Select "LOAD SIGNAL" and check indication under the following conditions.

Monitor item	Condition		Indication
LOAD SIGNAL	Rear window defogger switch	ON	ON
LOAD SIGNAL	Real willdow delogger switch		OFF

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-1207, "Diagnosis Procedure".

2.CHECK LIGHTING SWITCH FUNCTION

Check "LOAD SIGNAL" indication under the following conditions.

Monitor item	Condition		Condition		Indication
LOAD SIGNAL Lighting switch		ON at 2nd position	ON		
LOAD SIGNAL	Lighting switch	OFF	OFF		

Is the inspection result normal?

YES >> GO TO 3.

NO >> Go to EC-1207, "Diagnosis Procedure".

3.CHECK HEATER FAN CONTROL SWITCH FUNCTION

Select "HEATER FAN SW" and check indication under the following conditions.

Monitor item	Condition		Indication
HEATER FAN SW	Heater fan control switch	ON	ON
TILATER TAN OW	Tieater fair control switch	OFF	OFF

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1207, "Diagnosis Procedure".

Diagnosis Procedure

1.INSPECTION START

Confirm the malfunctioning circuit (rear window defogger, headlamp or heater fan). Refer to EC-1207, "Component Function Check".

Which circuit is related to the incident?

Rear window defogger>>GO TO 2.

Headlamp>>GO TO 3.

Heater fan>>GO TO 4.

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2.CHECK REAR WINDOW DEFOGGER SYSTEM

Refer to DEF-4, "System Diagram".

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ELECTRICAL LOAD SIGNAL

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>> INSPECTION END

3.CHECK HEADLAMP SYSTEM

Refer to EXL-8, "System Diagram" (XENON TYPE) or EXL-136, "System Diagram" (HALOGEN TYPE).

>> INSPECTION END

4. CHECK HEATER FAN CONTROL SYSTEM

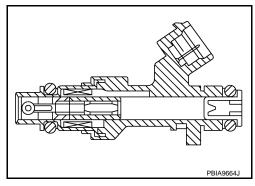
Refer to VTL-3, "System Description".

>> INSPECTION END

FUEL INJECTOR

Description INFOID:0000000002994664

The fuel injector is a small, precise solenoid valve. When the ECM supplies a ground to the fuel injector circuit, the coil in the fuel injector is energized. The energized coil pulls the ball valve back and allows fuel to flow through the fuel injector into the intake manifold. The amount of fuel injected depends upon the injection pulse duration. Pulse duration is the length of time the fuel injector remains open. The ECM controls the injection pulse duration based on engine fuel needs.



Component Function Check

1.INSPECTION START

Turn ignition switch to START.

Is any cylinder ignited?

YES >> GO TO 2.

NO >> Go to EC-1209, "Diagnosis Procedure".

2.CHECK FUEL INJECTOR FUNCTION

(P)With CONSULT-III

- Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- Make sure that each circuit produces a momentary engine speed drop.

Without CONSULT-III

1. Let engine idle.

NO

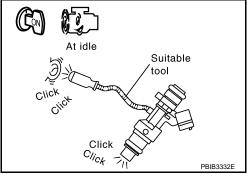
Listen to each fuel injector operating sound.

Clicking noise should be heard.

Is the inspection result normal?

YES >> INSPECTION END

>> Go to EC-1209, "Diagnosis Procedure".



Diagnosis Procedure

1. CHECK FUEL INJECTOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect fuel injector harness connector.
- Turn ignition switch ON.
- Check the voltage between fuel injector harness connector and ground.

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Fuel injector			Ground	Voltago
Cylinder	Connector	Terminal	Giodila	Voltage
1	F37	1		
2	F38	1	Ground	Battery voltage
3	F39	1	Giodila	Battery voltage
4	F40	1		

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- IPDM E/R harness connector E14
- 15A fuse (No. 64)
- · Harness for open or short between fuel injector and fuse

>> Repair open circuit or short to ground or short to power in harness or connectors.

${f 3.}$ CHECK FUEL INJECTOR OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between fuel injector harness connector and ECM harness connector.

	Fuel injector	Fuel injector		ECM	
Cylinder	Connector	Terminal	Connector	Terminal	Continuity
1	F37	2		32	
2	F38	2	F7	31	Existed
3	F39	2	17	30	LAISIEU
4	F40	2		29	

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK FUEL INJECTOR

Refer to EC-1210, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace malfunctioning fuel injector.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

Component Inspection

1. CHECK FUEL INJECTOR

- Turn ignition switch OFF.
- 2. Disconnect fuel injector harness connector.

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FUEL INJECTOR

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[FOR MEXICO]

3. Check resistance between fuel injector terminals as follows.

Terminals		
1 and 2	11.1 - 14.3Ω [at 10 -60°C (50 - 140°F)]	

Is the inspection result normal?

YES	>> INSPECTION END
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NO >> Replace malfunctioning fuel injector.

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FUEL PUMP

Description INFOID:0000000022994668

Sensor	Input signal to ECM	ECM Function	Actuator
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*	Fuel pump control	Fuel pump relay ↓
Battery	Battery voltage*		Fuel pump

^{*:} ECM determines the start signal status by the signals of engine speed and battery voltage.

The ECM activates the fuel pump for several seconds after the ignition switch is turned ON to improve engine startability. If the ECM receives a engine speed signal from the camshaft position sensor (PHASE), it knows that the engine is rotating, and causes the pump to operate. If the engine speed signal is not received when the ignition switch is ON, the engine stalls. The ECM stops pump operation and prevents battery discharging, thereby improving safety. The ECM does not directly drive the fuel pump. It controls the ON/OFF fuel pump relay, which in turn controls the fuel pump.

Condition	Fuel pump operation
Ignition switch is turned to ON.	Operates for 1 second.
Engine running and cranking	Operates.
When engine is stopped	Stops in 1.5 seconds.
Except as shown above	Stops.

Component Function Check

INFOID:0000000002994669

1. CHECK FUEL PUMP FUNCTION

- 1. Turn ignition switch ON.
- 2. Pinch fuel feed hose (1) with two fingers.
- <: Vehicle front

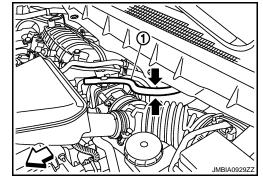
NO

Fuel pressure pulsation should be felt on the fuel feed hose for 1 second after ignition switch is turned ON.

Is the inspection result normal?

YES >> INSPECTION END

>> EC-1212, "Diagnosis Procedure".



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Diagnosis Procedure

1. CHECK FUEL PUMP POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between ECM harness connector and ground.

ECM		Ground	Voltage	
Connector Terminal		Ground	voltage	
F7	14	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 2.

2. CHECK FUEL PUMP POWER SUPPLY CIRCUIT-II

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

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- 1. Turn ignition switch OFF.
- 2. Disconnect IDPDM E/R harness connector E13.
- Check the continuity between IPDM E/R harness connector and ECM harness connector.

E	ECM IF		IPDM E/R	
Connector	Terminal	Connector	Terminal	Continuity
F7	14	E13	33	Existed

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E6, F123
- IPDM E/R connector E13
- Harness for open or short between ECM and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

4.CHECK 15A FUSE

- 1. Disconnect 15A fuse (No. 57) from IPDM E/R.
- 2. Check 15A fuse.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace fuse.

5. CHECK FUEL PUMP POWER SUPPLY CIRCUIT-III

- 1. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 2. Check the continuity between IPDM E/R harness connector and "fuel level sensor unit and fuel pump" and ground.

IPDN	I E/R	Fuel level sensor unit and fuel pump		Continuity
Connector	Terminal	Connector	Terminal	
E14	46	B40	5	Existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E105, M77
- Harness connectors M11, B1
- Harness for open or short between "fuel level sensor unit and fuel pump" and IPDM E/R

>> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK FUEL PUMP GROUND CIRCUIT

1. Check the continuity between "fuel level sensor unit and fuel pump" and ground.

Fuel level s and fue		Ground	Continuity
Connector	Terminal		
B40	3	Ground	Existed

2. Also heck harness for short to power.

FUEL PUMP

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to power in harness or connectors.

8. CHECK FUEL PUMP

Refer to EC-1214, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace fuel pump.

9. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connectors.

Component Inspection

INFOID:0000000002994671

1. CHECK FUEL PUMP

- 1. Turn ignition switch OFF.
- 2. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 3. Check resistance between "fuel level sensor unit and fuel pump" terminals as follows.

Terminals	Resistance
3 and 5	0.2 - 5.0 Ω [at 25°C (77°F)]

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace "fuel level sensor unit and fuel pump".

INFOID:0000000002994673

IGNITION SIGNAL

Description INFOID:000000002994672

The ignition signal from the ECM is sent to and amplified by the power transistor. The power transistor turns ON and OFF the ignition coil primary circuit. This ON/OFF operation induces the proper high voltage in the coil secondary circuit.

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INFOID:0000000002994674

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Component Function Check

1.INSPECTION START

Turn ignition switch OFF, and restart engine.

Does the engine start?

YES-1 >> With CONSULT-III: GO TO 2.

YES-2 >> Without CONSULT-III: GO TO 3.

NO >> Go to EC-1215, "Diagnosis Procedure".

2.IGNITION SIGNAL FUNCTION

(P)With CONSULT-III

- 1. Perform "POWER BALANCE" in "ACTIVE TEST" mode with CONSULT-III.
- 2. Make sure that each circuit produces a momentary engine speed drop.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1215, "Diagnosis Procedure".

${f 3.}$ ignition signal function

(X) Without CONSULT-III

- 1. Let engine idle.
- 2. Read the voltage signal between ECM harness connector and ground.

EC	M	Ground	Voltage signal
Connector	Terminal	Cround	voltage digital
	9		
	10		20mSec/div
-	11	Craund	
F7	21	Ground	2V/div JMBIA0085GB

NOTE:

The pulse cycle changes depending on rpm at idle.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1215, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK IGNITION COIL POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch OFF, wait at least 10 seconds and then turn ON.
- 2. Check the voltage between ECM harness connector and ground.

E	CM	Ground	Voltage
Connector	Terminal	Glound	voltage
E16	105	Ground	Battery voltage

< COMPONENT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-1013, "Diagnosis Procedure".

2.check ignition coil power supply circuit-ii

- Turn ignition switch OFF.
- 2. Disconnect condenser-1 harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between condenser-1 harness connector and ground.

Cond	denser	Ground	Voltage
Connector	Terminal	Ground	voitage
F26	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 3.

3.check ignition coil power supply circuit-iii

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector E15.
- 3. Check the continuity between IPDM E/R harness connector and condenser-1 harness connector.

IPD	M E/R	Conde	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E15	47	F13	1	Existed

4. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> Go to EC-1013, "Diagnosis Procedure".

NO >> GO TO 4.

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E7, F121
- Harness for open or short between IPDM E/R and condenser-1
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK CONDENSER-1 GROUND CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Check the continuity between condenser-1 harness connector and ground.

Cond	enser-1	Ground	Continuity
Connector	Terminal	Ground	Continuity
F13	2	Ground	Existed

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

6.CHECK CONDENSER

Refer to EC-1219, "Component Inspection (Condenser-1)"

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace condenser.

IGNITION SIGNAL

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

7.check ignition coil power supply circuit-iv

- 1. Reconnect all harness connectors disconnected.
- Disconnect ignition coil harness connector.
- Turn ignition switch ON.
- Check the voltage between ignition coil harness connector and ground.

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	Ignition coi	I	Ground	Voltage
Cylinder	Connector	Terminal	Ground	voitage
1	F33	3		
2	F34	3	Ground	Battery voltage
3	F35	3	Ground	Dattery voltage
4	F36	3		

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Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

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8.CHECK IGNITION COIL GROUND CIRCUIT FOR OPEN AND SHORT

Turn ignition switch OFF.

Check the continuity between ignition coil harness connector and ground.

Н

	Ignition coi	l	Ground	Continuity
Cylinder	Connector	Terminal	Ground	Continuity
1	F33	2		
2	F34	2	Ground	Existed
3	F35	2	Giodila	LXISIEU
4	F36	2		

3. Also check harness for short to power.

Is the inspection result normal?

>> GO TO 9. YES

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

9.CHECK IGNITION COIL OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Disconnect ECM harness connector.
- 2. Check the continuity between ECM harness connector and ignition coil harness connector.

Ignition coil		ECM		Continuity			
Cylinder	Connector	Terminal	Connector Terminal				Continuity
1	F33	1		11			
2	F34	1	F7	10	Existed		
_			1 /		LAISIEU		

	Cylinder	Connector	Terminal	Connector	Terminal	Continuity
	1	F33	1	- F7	11	
	2	F34	1		10	Existed
-	3	F35	1		9	Existed
	4	F36	1		21	

3. Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

10.CHECK IGNITION COIL WITH POWER TRANSISTOR

Refer to EC-1218, "Component Inspection (Ignition Coil with Power Transistor)".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace malfunctioning ignition coil with power transistor.

EC-1217 Revision: 2008 January 2008 Rogue

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11. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

>> INSPECTION END

Component Inspection (Ignition Coil with Power Transistor)

INFOID:0000000002994675

1. CHECK IGNITION COIL WITH POWER TRANSISTOR-I

- 1. Turn ignition switch OFF.
- 2. Disconnect ignition coil harness connector.
- 3. Check resistance between ignition coil terminals as follows.

Terminals	Resistance Ω [at 25°C (77°F)]	
1 and 2	Except 0 or ∞	
1 and 3	Except 0	
2 and 3		

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace malfunctioning ignition coil with power transistor.

2.CHECK IGNITION COIL WITH POWER TRANSISTOR-II

CAUTION:

Do the following procedure in the place where ventilation is good without the combustible.

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Remove fuel pump fuse in IPDM E/R to release fuel pressure.

NOTE:

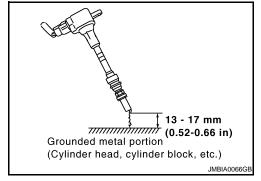
Do not use CONSULT-III to release fuel pressure, or fuel pressure applies again during the following procedure.

- 4. Start engine.
- 5. After engine stalls, crank it two or three times to release all fuel pressure.
- 6. Turn ignition switch OFF.
- 7. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 8. Remove ignition coil and spark plug of the cylinder to be checked.
- 9. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 10. Connect spark plug and harness connector to ignition coil.
- 11. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- 12. Crank engine for about three seconds, and check whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

CAUTION:

 Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.



• It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken. NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace malfunctioning ignition coil with power transistor.

IGNITION SIGNAL

< COMPONENT DIAGNOSIS >

[FOR MEXICO]

Component Inspection (Condenser-1)

INFOID:0000000002994676

1. CHECK CONDENSER-1

- 1. Turn ignition switch OFF.
- 2. Disconnect condenser-1 harness connector.
- 3. Check resistance between condenser-1 terminals as follows.

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Terminals	Resistance		
1 and 2	Above 1 MΩ [at 25°C (77°F)]		

Is the inspection result normal?

YES >> INSPECTION END NO >> Replace condenser-1.

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MALFUNCTION INDICATOR LAMP

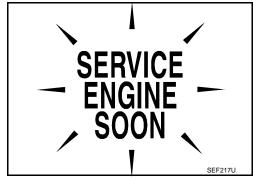
Description

The Malfunction Indicator Lamp (MIL) is located on the combination meter.

The MIL will light up when the ignition switch is turned ON without the engine running. This is a bulb check.

When the engine is started, the MIL should go off. If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.

For details, refer to EC-1220, "Diagnosis Procedure".



Component Function Check

INFOID:0000000002994678

1. CHECK MIL FUNCTION

- 1. Turn ignition switch ON.
- 2. Make sure that MIL lights up.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1220, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000002994679

1. CHECK DTC

Check that DTC U1000 or U1001 is not displayed.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble diagnosis for DTC U1000, U1001. Refer to EC-1017, "Diagnosis Procedure".

2. CHECK DTC WITH METER

Refer to MWI-33, "CONSULT-III Function (METER/M&A)".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace.

3.CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

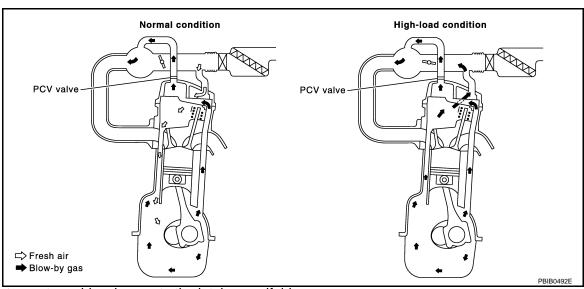
Is the inspection result normal?

YES >> Replace combination meter.

NO >> Repair or replace.

POSITIVE CRANKCASE VENTILATION

Description INFOID:000000002994684



This system returns blow-by gas to the intake manifold.

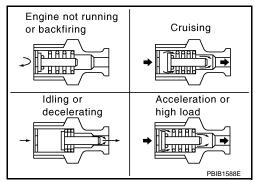
The positive crankcase ventilation (PCV) valve is provided to conduct crankcase blow-by gas to the intake manifold.

During partial throttle operation of the engine, the intake manifold sucks the blow-by gas through the PCV valve.

Normally, the capacity of the valve is sufficient to handle any blow-by and a small amount of ventilating air. The ventilating air is drawn from the air inlet tubes into the crankcase. In this process the air passes through the hose connecting air inlet tubes to rocker cover.

Under full-throttle condition, the manifold vacuum is insufficient to draw the blow-by flow through the valve. The flow goes through the hose connection in the reverse direction.

On vehicles with an excessively high blow-by, the valve does not meet the requirement. This is because some of the flow will go through the hose connection to the air inlet tubes under all conditions.



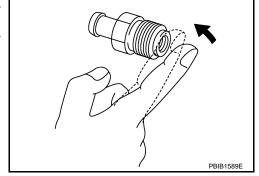
Component Inspection

1. CHECK PCV VALVE

With engine running at idle, remove PCV valve from rocker cover. A properly working valve makes a hissing noise as air passes through it. A strong vacuum should be felt immediately when a finger is placed over valve inlet.

Is the inspection result normal?

YES >> INSPECTION END NO >> Replace PCV valve.



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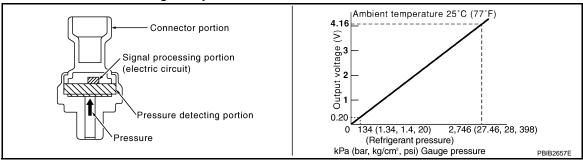
INFOID:0000000002994685

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REFRIGERANT PRESSURE SENSOR

Description

The refrigerant pressure sensor is installed at the condenser of the air conditioner system. The sensor uses an electrostatic volume pressure transducer to convert refrigerant pressure to voltage. The voltage signal is sent to ECM, and ECM controls cooling fan system.



Component Function Check

INFOID:0000000002994687

1. CHECK REFRIGERANT PRESSURE SENSOR OVERALL FUNCTION

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn A/C switch and blower fan switch ON.
- 3. Check the voltage between ECM harness connector terminals.

	+	-	Voltage
Connector	Terminal	Terminal	
F8	39 (Refrigerant pressure sensor signal)	40 (Sensor ground)	1.0 - 4.0V

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-1222, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000002994688

1. CHECK GROUND CONNECTION

- 1. Turn A/C switch and blower fan switch OFF.
- Stop engine.
- Turn ignition switch OFF.
- 4. Check ground connection E21. Refer to Ground Inspection in GI-44, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK REFRIGERANT PRESSURE SENSOR POWER SUPPLY CIRCUIT

- Disconnect refrigerant pressure sensor harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between refrigerant pressure sensor harness connector and ground.

Refrigerant pre	essure sensor	Ground	Voltage	
Connector	Terminal	Glodila	voltage	
E49	3	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 4.

REFRIGERANT PRESSURE SENSOR [FOR MEXICO] < COMPONENT DIAGNOSIS > NO >> GO TO 3. ${f 3.}$ DETECT MALFUNCTIONING PART Α Check the following. Harness connectors F123, E6 EC Harness for open or short between ECM and refrigerant pressure sensor >> Repair open circuit or short to ground or short to power in harness or connectors. f 4.CHECK REFRIGERANT PRESSURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT Turn ignition switch OFF. Disconnect ECM harness connector. D Check the continuity between refrigerant pressure sensor harness connector and ECM harness connector. Е **ECM** Refrigerant pressure sensor Continuity Connector Terminal Connector Terminal E49 F8 40 Existed 4. Also check harness for short to ground and short to power. Is the inspection result normal? YES >> GO TO 6. NO >> GO TO 5. 5. DETECT MALFUNCTIONING PART Check the following. • Harness connectors F123, E6 Harness for open or short between ECM and refrigerant pressure sensor >> Repair open circuit or short to ground or short to power in harness or connectors. $\mathsf{6}.$ CHECK REFRIGERANT PRESSURE SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT Check the continuity between ECM harness connector and refrigerant pressure sensor harness connector. **FCM** Refrigerant pressure sensor Continuity **Terminal** Connector **Terminal** Connector E49 2 Existed Also check harness for short to ground and short to power. Is the inspection result normal? >> GO TO 8. YES NO >> GO TO 7. N .DETECT MALFUNCTIONING PART Check the following. Harness connectors F123, E6 · Harness for open or short between ECM and refrigerant pressure sensor >> Repair open circuit or short to ground or short to power in harness or connectors. Р 8. CHECK INTERMITTENT INCIDENT

Refer to GI-41, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace refrigerant pressure sensor.

NO >> Repair or replace.

ECU DIAGNOSIS

ECM

Reference Value

VALUES ON THE DIAGNOSIS TOOL

Remarks:

- 1 Specification data are reference values.
- 1 Specification data are output/input values which are detected or supplied by the ECM at the connector.
 - * Specification data may not be directly related to their components signals/values/operations.

Le. Adjust ignition timing with a timing light before monitoring IGN TIMING, because the monitor may show the specification data in spite of the ignition timing not being adjusted to the specification data. this IGN TIMING monitors the data calculated by the ECM according to the signals input from the camshaft position sensor and other ignition timing related sensors.

Monitor Item	Condition		Values/Status
ENG SPEED	Run engine and compare CONSU	Almost the same speed as the tachometer indication.	
MAS A/F SE-B1	See EC-1006, "Diagnosis Procedure	<u>3"</u> .	
B/FUEL SCHDL	See EC-1006, "Diagnosis Procedure	<u>3"</u> .	
A/F ALPHA-B1	See EC-1006, "Diagnosis Procedure	<u>3"</u> .	
COOLAN TEMP/S	Engine: After warming up		More than 70°C (158°F)
A/F SEN1 (B1)	Engine: After warming up	Maintaining engine speed at 2,000 rpm	Fluctuates around 2.2 V
HO2S2 (B1)	 Revving engine from idle up to 3,000 rpm quickly after the following conditions are met. Engine: After warming up After keeping engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 		0 - 0.3V ←→ Approx. 0.6 - 1.0V
HO2S2 MNTR (B1)	 Revving engine from idle up to 3,000 rpm quickly after the following conditions are met. Engine: After warming up After keeping engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 		LEAN ←→ RICH
VHCL SPEED SE	Turn drive wheels and compare CONSULT-III value with the speedometer indication.		Almost the same speed as speedometer indication
BATTERY VOLT	Ignition switch: ON (Engine stopped)	ed)	11 - 14V
ACCEL SEN 1	Ignition switch: ON (Engine stopped)	Accelerator pedal: Fully released	0.5 - 1.0V
ACCLL SLIV I		Accelerator pedal: Fully depressed	4.2 - 4.8V
ACCEL SEN 2*1	Ignition switch: ON (Engine stopped)	Accelerator pedal: Fully released	0.5 - 1.0V
ACCEL SEN 2		Accelerator pedal: Fully depressed	4.2 - 4.8V
TD 05N 4 D4	Ignition switch: ON (Engine stopped) Shift lever: D	Accelerator pedal: Fully released	More than 0.36V
TP SEN 1-B1		Accelerator pedal: Fully depressed	Less than 4.75V
	Ignition switch: ON (Engine stopped) Shift lever: D	Accelerator pedal: Fully released	More than 0.36V
TP SEN 2-B1*1		Accelerator pedal: Fully depressed	Less than 4.75V
INT/A TEMP SE	Ignition switch: ON		Indicates intake air temperature
START SIGNAL	• Ignition switch: $ON \rightarrow START \rightarrow ON$		$OFF \to ON \to OFF$
CLSD THL POS	Ignition switch: ON	Accelerator pedal: Fully released	ON
OLOD THE POO	(Engine stopped)	Accelerator pedal: Slightly depressed	OFF
	Engine: After warming up, idle the	Air conditioner switch: OFF	OFF
AIR COND SIG	engine: After warming up, fale the	Air conditioner switch: ON (Compressor operates.)	ON

Monitor Item	C	ondition	Values/Status	
D/M D001 0/M	1 22 21 01	Shift lever: P or N	ON	_ A
P/N POSI SW	Ignition switch: ON	Selector lever: Except above	OFF	
DW//CT CICNIAI	Engine: After warming up, idle the	Steering wheel: Not being turned	OFF	EC
PW/ST SIGNAL	engine	Steering wheel: Being turned	ON	
a		Rear window defogger switch: ON and/or Lighting switch: 2nd position	ON	C
LOAD SIGNAL	Ignition switch: ON	Rear window defogger switch and lighting switch: OFF	OFF	
IGNITION SW	• Ignition switch: $ON \rightarrow OFF \rightarrow ON$		$ON \to OFF \to ON$	D
HEATER FAN SW	Engine: After warming up, idle the	Heater fan switch: ON	ON	_
HEATER FAIN SW	engine	Heater fan switch: OFF	OFF	_ _ E
BRAKE SW	Ignition switch: ON	Brake pedal: Fully released	OFF	
DRAKE SW	• Ignition switch. ON	Brake pedal: Slightly depressed	ON	_
	Engine: After warming up	Idle	2.0 - 3.0 msec	F
INJ PULSE-B1	Shift lever: P or N Air conditioner switch: OFF No load	2,000 rpm	1.9 - 2.9 msec	
	Engine: After warming up	Idle	10° - 20° BTDC	_ G
IGN TIMING	Shift lever: P or N Air conditioner switch: OFF No load	2,000 rpm	25° - 45° BTDC	— Н
	Engine: After warming up	Idle	10% - 35%	_ '
CAL/LD VALUE	Shift lever: P or N Air conditioner switch: OFF No load	2,500 rpm	10% - 35%	-
	Engine: After warming up	Idle	1.0 - 4.0 g·m/s	_
MASS AIRFLOW	Shift lever: P or NAir conditioner switch: OFFNo load	2,500 rpm	4.0 - 10.0 g⋅m/s	J
PURG VOL C/V	Engine: After warming up Shift lever: P or N Air conditioner switch: OFF	Idle (Accelerator pedal: Not depressed even slightly, after engine starting.)	0%	_ K
	No load	2,000 rpm	20% - 90%	_
	Engine: After warming up	Idle	–5° - 5°CA	L
INT/V TIM (B1)	Shift lever: P or NAir conditioner switch: OFFNo load	2,000 rpm	Approx. 0° - 20°CA	_
	Engine: After warming up	Idle	0%	- IV
INT/V SOL (B1)	Shift lever: P or N Air conditioner switch: OFF No load	2,000 rpm	Approx. 0% - 60%	_ N
		Air conditioner switch: OFF	OFF	
AIR COND RLY	Engine: After warming up, idle the engine	Air conditioner switch: ON (Compressor operates)	ON	
FUEL PUMP RLY	For 1 seconds after turning ignition Engine running or cranking	n switch: ON	ON	
	Except above		OFF	P
THRTL RELAY	Ignition switch: ON		ON	_
HO2S2 HTR (B1)	 Engine speed: Below 3,600 rpm a Engine: After warming up Keeping the engine speed betwee idle for 1 minute under no load 	fter the following conditions are met. n 3,500 and 4,000 rpm for 1 minute and at	ON	_
	Engine speed: Above 3,600 rpm	OFF	_	

Monitor Item	C	ondition	Values/Status
I/P PULLY SPD	Vehicle speed: More than 20 km/h	(12 MPH)	Almost the same speed as the tachometer indication
VEHICLE SPEED	Turn drive wheels and compare C dication.	ONSULT-III value with the speedometer in-	Almost the same speed as the speedometer indication
	E	Idle air volume learning has not been performed yet.	YET
IDL A/V LEARN	Engine: running	Idle air volume learning has already been performed successfully.	CMPLT
TRVL AFTER MIL	Ignition switch: ON	Vehicle has traveled after MIL has turned ON.	0 - 65,535 km (0 - 40,723 miles)
A/F S1 HTR (B1)	Engine: After warming up, idle the (More than 140 seconds after star)		4 - 100%
AC PRESS SEN	Engine: Idle Both A/C switch and blower fan sw	vitch: ON (Compressor operates)	1.0 - 4.0V
VHCL SPEED SE	Turn drive wheels and compare C dication.	ONSULT-III value with the speedometer in-	Almost the same speed as the speedometer indication
SET VHCL SPD			The preset vehicle speed is displayed
MAAINI CVA/	Ignition switch: ON	MAIN switch: Pressed	ON
MAIN SW		MAIN switch: Released	OFF
CANCEL CW	Ignition switch: ON	CANCEL switch: Pressed	ON
CANCEL SW		CANCEL switch: Released	OFF
DE01145/4.00.0W		RESUME/ACCELERATE switch: Pressed	ON
RESUME/ACC SW	Ignition switch: ON	RESUME/ACCELERATE switch: Released	OFF
OFT OW	1	SET/COAST switch: Pressed	ON
SET SW	Ignition switch: ON	SET/COAST switch: Released	OFF
BRAKE SW1	La Mina de Mala ON	Brake pedal: Fully released	ON
(ASCD brake switch)	Ignition switch: ON	Brake pedal: Slightly depressed	OFF
BRAKE SW2	Lastina suitale ON	Brake pedal: Fully released	OFF
(Stop lamp switch)	Ignition switch: ON	Brake pedal: Slightly depressed	ON
VHCL SPD CUT	Ignition switch: ON		NON
LO SPEED CUT	Ignition switch: ON		NON
AT OD MONITOR	Ignition switch: ON		OFF
AT OD CANCEL	Ignition switch: ON		OFF
CRUISE LAMP	Ignition switch: ON	MAIN switch: Pressed at the 1st time \rightarrow at the 2nd time	$ON \to OFF$
	MAIN switch: ON	ASCD: Operating	ON
SET LAMP	When vehicle speed: Between 40 km/h (25 MPH) and 144 km/h (89 MPH)	ASCD: Not operating	OFF
A/F ADJ-B1	Engine: running	I	-0.330 - 0.330
	Engine. raining		1

^{*1:} Accelerator pedal position sensor 2 signal and throttle position sensor 2 signal are converted by ECM internally. Thus, they differ from ECM terminals voltage signal.

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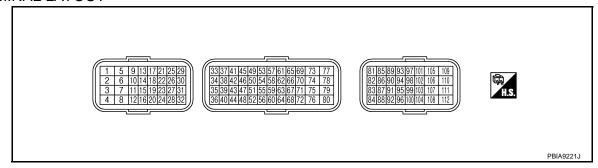
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TERMINAL LAYOUT



PHYSICAL VALUES

NOTE:

- ECM is located behind the passenger side instrument lower panel. For this inspection, remove passenger side instrument lower panel.
- Specification data are reference values and are measured between each terminal and ground.
- Pulse signal is measured by CONSULT-III.

Term	inal No.	Description			Value	
+	_	Signal name	Input/ Output	Condition	(Approx.)	G
2 (P)	112 (B)	Throttle control motor power supply	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)	Н
4 (R)	112 (B)	A/F sensor 1 heater	Output	[Engine is running]Warm-up conditionIdle speed	2.9 - 8.8 V★ 50mSec/div 5V/div JMBIA0082GB	J
5 (GR)	6 (L)	Throttle control motor 1 (Open)	Output	[Ignition switch: ON] • Engine stopped • Shift lever: D • Accelerator pedal: Fully depressed	0 - 14 V★ 1mSec/div 5V/div JMBIA0083GB	K
6 (L)	5 (GR)	Throttle control motor 2 (Close)	Output	[Ignition switch: ON] • Engine stopped • Shift lever: D • Accelerator pedal: Fully released	0 - 14 V★ 1mSec/div 5V/div JMBIA0084GB	M N

Term	inal No.	Description			Value	
+	_	Signal name	Input/ Output	Condition	(Approx.)	
9 (R)		Ignition signal No. 3		 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	0 - 0.1 V★ 50mSec/div 2V/div JMBIA0900GB	
10 (W)	112 (B)	Ignition signal No. 2	Output			
11 (SB)		Ignition signal No. 1			0 - 0.2 V★ 50mSec/div	
21 (G)		Ignition signal No. 4		[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	2V/div JMBIA0901GB	
12 (B) 16 (B)	_	ECM ground	_	_	_	
13 (Y)	112 (B)	Heated oxygen sensor 2 heater	Output	 [Engine is running] Engine speed: Below 3,600 rpm after the following conditions are met Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	10 V★ 50mSec/div 5V/div JMBIA0902GB	
				[Ignition switch: ON] • Engine stopped [Engine is running] • Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14 V)	
14 (GR)	112 (B)	Fuel pump relay	Output	[Ignition switch: ON] • For 1 second after turning ignition switch ON [Engine is running]	0 - 1.0 V	
(GIV)	(6)			[Engine is running]More than 1 second after turning ignition switch ON	BATTERY VOLTAGE (11 - 14 V)	
15 (V)	112 (B)	Throttle control motor relay	Output	[Ignition switch: $ON \rightarrow OFF$]	0 - 1.0 V ↓ BATTERY VOLTAGE (11 - 14 V)	
				[Ignition switch: ON]	0 - 1.0 V	
24 (L)	112 (B)	ECM relay (Self shut-off)	Output	 [Engine is running] [Ignition switch: OFF] A few seconds after turning ignition switch OFF 	0 - 1.0 V	
	(b)		[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14 V)		

Termi	inal No.	Description			Value	
+	_	Signal name	Input/ Output	Condition	Value (Approx.)	А
25	112	EVAR conjeter purgo vol		[Engine is running]Idle speedAccelerator pedal: Not depressed even slightly, after engine starting	BATTERY VOLTAGE (11 - 14 V)★ 50mSec/div 20V/div JMBIA0087GB	C D
(Y)	(B)	EVAP canister purge vol- ume control solenoid valve	Output -	[Engine is running] • Engine speed: About 2,000 rpm	BATTERY VOLTAGE (11 - 14 V) 50mSec/div	Е
				(More than 100 seconds after starting engine.)	20V/div JMBIA0903GB	F
29 (P)		Fuel injector No. 4		[Engine is running] • Warm-up condition	BATTERY VOLTAGE (11 - 14 V)★ 50mSec/div	G H
30 (LG)		Fuel injector No. 3	on rpm at idle Output	NOTE: The pulse cycle changes depending	10V/div JMBIA0089GB	I
31 (BR)	112 (B)	Fuel injector No. 2		BATTERY VOLTAGE (11 - 14 V)★	J	
32 (GR)		Fuel injector No. 1		[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	50mSec/div	K
33 (P)	35 (L)	Heated oxygen sensor 2	Input	 [Engine is running] Revving engine from idle to 3,000 rpm quickly after the following conditions are met Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	10V/div JMBIA0090GB 0 - 1.0 V	M N
35 (L)	_	Sensor ground (Heated oxygen sensor 2)	_	_	_	
36 (R)	_	Sensor ground (Throttle position sensor)	_	_	_	Р

Termi	inal No.	Description			Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
37	36	Throttle position sensor 1	Input	[Ignition switch: ON]Engine stoppedShift lever: DAccelerator pedal: Fully released	More than 0.36 V
(W)	(R)	Throttle position sensor 1	при	[Ignition switch: ON]Engine stoppedShift lever: DAccelerator pedal: Fully depressed	Less than 4.75 V
38	36	Throttle position sensor 2	Input	[Ignition switch: ON] • Engine stopped • Shift lever: D • Accelerator pedal: Fully released	Less than 4.75 V
(G)	(R)	Throttle position sensor 2	три	[Ignition switch: ON]Engine stoppedShift lever: DAccelerator pedal: Fully depressed	More than 0.36 V
39 (Y)	40 (W)	Refrigerant pressure sensor	Input	 [Engine is running] Warm-up condition Both A/C switch and blower fan motor switch: ON (Compressor operates) 	1.0 - 4.0 V
40 (W)	_	Sensor ground (Refrigerant pressure sensor)	_	_	_
45 (V)	49 (LG)	A/F sensor 1 (bank 1)	Input	[Ignition switch: ON]	2.2 V
46 (P)	52 (O)	Engine coolant temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with engin coolant temperature.
47 (B)	36 (R)	Sensor power supply (Throttle position sensor)	_	[Ignition switch: ON]	5 V
49 (LG)	112 (B)	A/F sensor 1	Input	[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	1.8 V Output voltage varies with air fur ratio.
50 (BR)	56 (R)	Intake air temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with intak air temperature.
52 (O)	_	Sensor ground (Engine coolant temperature sensor)	_	_	_
56 (R)	_	Sensor ground (Mass air flow sensor, Intake air temperature sensor)	_	_	_
58	56	Maga air flow conser-	lan::4	[Engine is running]Warm-up conditionIdle speed	0.8 - 1.2 V
(L)	(R)	Mass air flow sensor	Input	[Engine is running]Warm-up conditionEngine speed: 2,500 rpm	1.4 - 1.8 V
59 (V)	64 (Y)	Sensor power supply [Camshaft position sensor (PHASE)]	_	[Ignition switch: ON]	5 V
60 (B)	_	Sensor ground [Crankshaft position sensor (POS)]	_	_	_

Termi	inal No.	Description			Value	,
+	_	Signal name	Input/ Output	Condition	(Approx.)	Α
61 (W)	67 (—)	Knock sensor	Input	[Engine is running] • Idle speed	2.5 V	EC
64 (Y)	_	Sensor ground [Camshaft position sensor (PHASE)]	_	_	_	
65	60	Crankshaft position sensor	Input	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	3.0 V★ 2mSec/div 2V/div JMBIA0514GB	[
(R)	(B)	(POS)	три	[Engine is running] • Engine speed: 2,000 rpm	3.0 V★ 2mSec/div 2V/div JMBIA0515GB	F (
67 (—)	_	Sensor ground (Knock sensor)	_	_	_	
69	64	Camshaft position sensor (PHASE)		 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	1.0 - 4.0 V★ 10mSec/div 2V/div JMBIA0904GB	,
(G)	(Y)		Input	[Engine is running] • Engine speed is 2,000 rpm	1.0 - 4.0 V★ 10mSec/div 2V/div JMBIA0905GB	I
72 (L)	40 (W)	Sensor power supply (Refrigerant pressure sensor)	_	[Ignition switch: ON]	5 V	1
76 (P)	60 (B)	Sensor power supply [Crankshaft position sensor (POS)]	_	[Ignition switch: ON]	5 V	(
77 (R)	112 (B)	Power supply for ECM (Back-up)	Input	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14 V)	F

Termi	nal No.	Description			Value
+	-	Signal name	Input/ Output	Condition	Value (Approx.)
	112 (B)			[Engine is running]Warm-up conditionIdle speed	0 V
78 (O)		Intake valve timing control solenoid valve	Output	[Engine is running]Warm-up conditionEngine speed: 2,000rpm	7 - 10 V★ 2mSec/div 5V/div JMBIA0906GB
81	84	Accelerator pedal position	Input	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully released	0.5 - 1.0 V
(SB)	(Y)	sensor 1	Input	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully depressed	4.2 - 4.8 V
82	100 (W)	Accelerator pedal position sensor 2	lanut.	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully released	0.25 - 0.5 V
(G)			Input	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully depressed	2.0 - 2.5 V
83 (R)	84 (Y)	Sensor power supply (Accelerator pedal position sensor 1)	_	[Ignition switch: ON]	5 V
84 (Y)	_	Sensor ground (Accelerator pedal position sensor 1)	_	_	_
		ASCD steering switch	Input	[Ignition switch: ON] • ASCD steering switch: OFF	4 V
				[Ignition switch: ON] • MAIN switch: Pressed	0 V
85 (R)	92 (W)			[Ignition switch: ON] • CANCEL switch: Pressed	1 V
				[Ignition switch: ON] • RESUME/ACCELERATE switch: Pressed	3 V
				[Ignition switch: ON] • SET/COAST switch: Pressed	2 V
87 (V)	100 (W)	Sensor power supply (Accelerator pedal position sensor 2)	_	[Ignition switch: ON]	5 V
88 (L)	112 (B)	Data link connector	Input/ Output	[Ignition switch: ON] • GST: Disconnected	BATTERY VOLTAGE (11 - 14 V)
92 (W)	_	Sensor ground (ASCD steering switch)	_	_	_
93	112			[Ignition switch: OFF]	0 V
(O)	(B)	Ignition switch	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
97 (P)	_	CAN communication line	_	_	_

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Termi	inal No.	Description			Value	٥
+	_	Signal name	Input/ Output	Condition	(Approx.)	Α
98 (L)	_	CAN communication line	_	_	_	EC
100 (W)	_	Sensor ground (Accelerator pedal position sensor 2)	_	_	_	С
102	112	PNP switch	Input	[Ignition switch: ON] • Shift lever: P or N	BATTERY VOLTAGE (11 - 14 V)	
(LG)	(B)	PINF SWILCTI	Input	[Ignition switch: ON] • Shift lever: Except above	0 V	D
105 (R)	112 (B)	Power supply for ECM	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)	Е
106	112	Stop lamp switch	Input	[Ignition switch: OFF] • Brake pedal: Fully released	0 V	
(Y)	(B)	Stop lamp switch	mpat	[Ignition switch: OFF] • Brake pedal: Slightly depressed	BATTERY VOLTAGE (11 - 14 V)	F
107 (B) 108 (B)	_	ECM ground	_	_	_	G
110	112	ASCD brake switch	Innut	[Ignition switch: ON] • Brake pedal: Slightly depressed	0 V	Н
(GR)	(B)	ASCD DIAKE SWIICH	Input	[Ignition switch: ON] • Brake pedal: Fully released	BATTERY VOLTAGE (11 - 14 V)	
111 (B) 112 (B)	_	ECM ground	_	_	_	J

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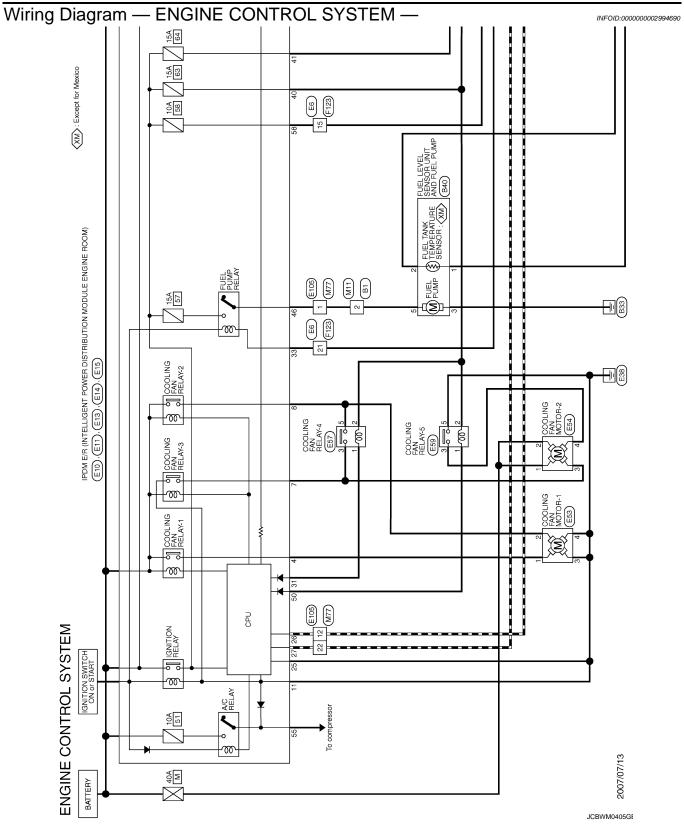
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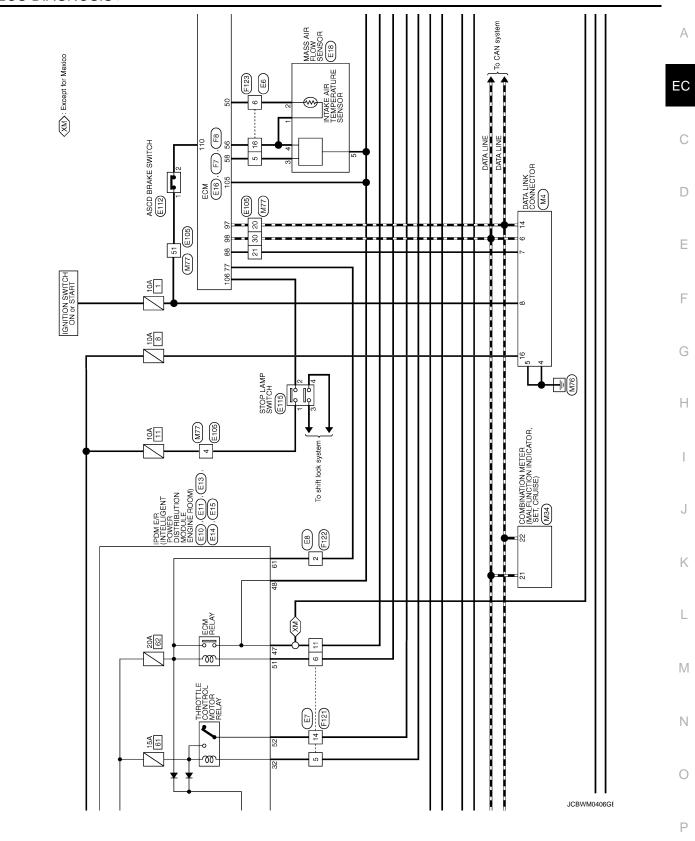
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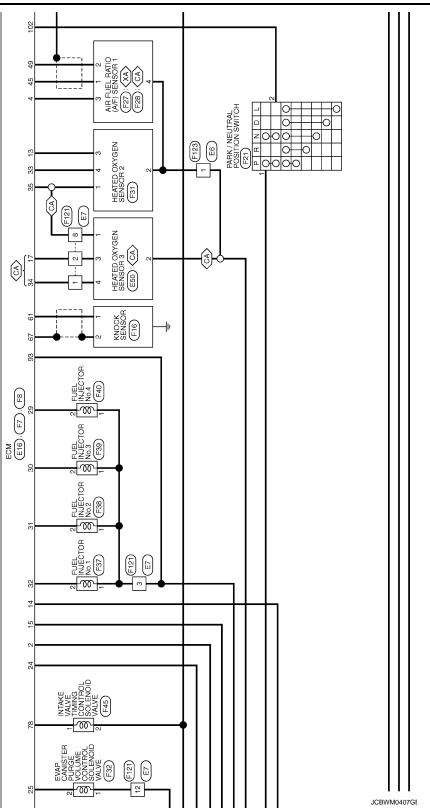
Revision: 2008 January EC-1233 2008 Rogue

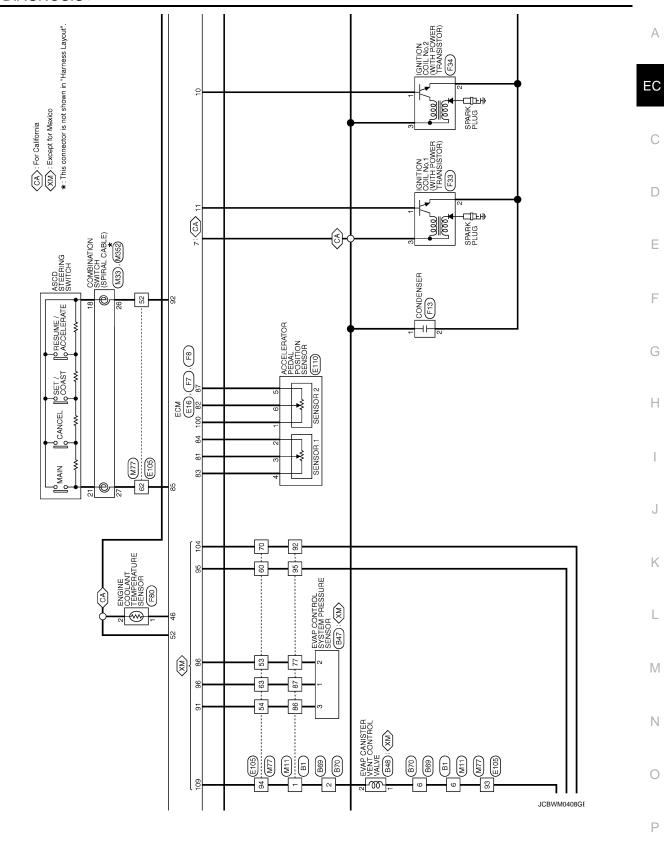
^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

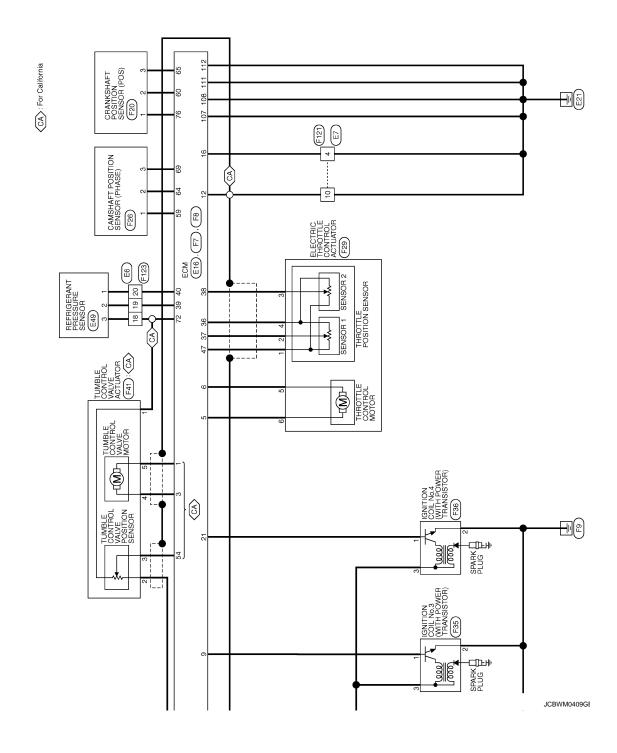






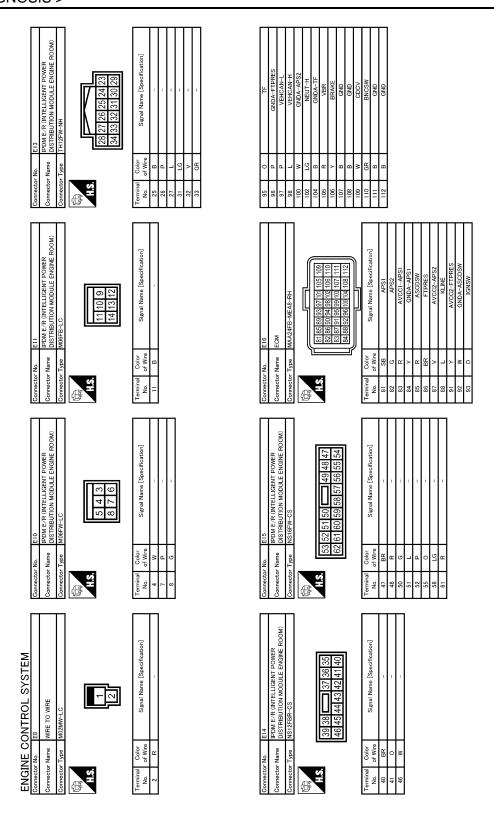






Connector No 1848	9 9	इ	Terminal Color Signal Name [Specification] No. of Wire Signal Name [Specification] 2 W	Connector Nume WIRE TO WIRE Connector Type INSISMW-CS Connector Type INSISMW-CS LLS 1 2 3	Terminal Color Signal Name [Specification]	E	A C C
Connector No. R47	9 e		Color Signal Name Specification	Connector No. E6 Connector Type TRZ-4MW-1V Connector Type TRZ-4MW-1V 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	Terminal Color Signal Name [Specification]		E F G
Connector No B40	Connector Name FUEL LEVEL SENSOR UNIT AND FUEL Connector Type E05FGY-RS		Terminal Color Signal Name [Spacification] Color P P P P P P P P P	Connector Name WIRE TO WIRE Connector Type NSOBMW-CS H.S. 1 1 2 3 4 5 6	Terminal Color No. Signal Name [Specification] 2 W		I J K
ENGINE CONTROL SYSTEM Connector No. 181	Connector Name WIRE TO WIRE Connector Type TH80MW-CS16-TM4	H.S.	Terminal Color Signal Name [Specification]	Connector No. Connector Name WIRE TO WIRE Connector Type NSORFW-CS LLS 2 1	Terminal Color Signal Name [Specification] Color Signal Name [Specification] Color Color	1	M N
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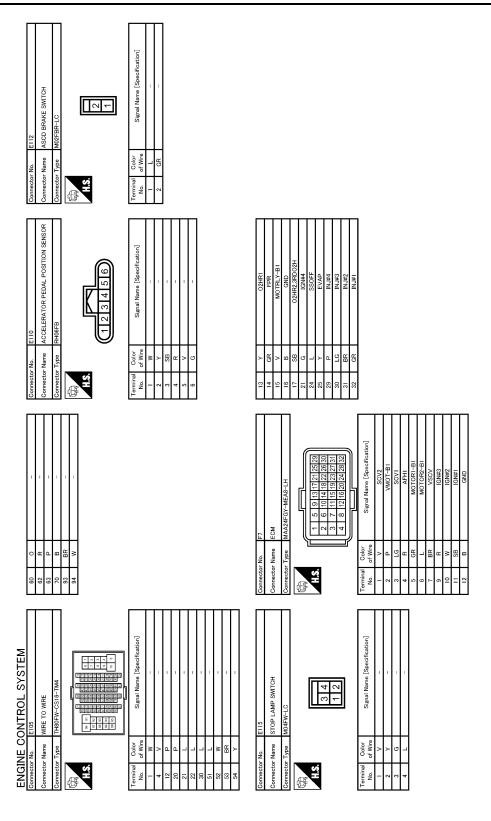
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	ffeation]		А
ES3 COOLING FAN MOTOR-1 RSG4FGV-PR	Signal Name [Specification]		EC
r No. r Type	of Wife B B B		С
Connectc Connectc	Terminal No. 2 2 2 2 2 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4		D
0 N 3	peofication)	peofication]	Е
ESO HEATED OXYGEN SENSOR 3 AFZOAFGY 3 4	Signal Name [Specification]	COOLING FAN RELAY-5 MSGZRL-M2 Signal Name [Specification]	F
e e	of Wire FBR SB V		G
Connector No. Connector Name Connector Type	Terminal No.	Connector No. Connector Name Connector Type H.S. Terminal Color No. of Win. 1 1 2 2 V 3 3 GR	Н
SOR	tion]	[pod]	
RESSURE SEN	Signal Name [Specification]	FAN PELAY-4 M2 2	I
FEFRICERANT PRESSURE SENSOR PROJECT	Signal N	Signal Name (St	J
r No. r Type	of Wire	No.	К
Connectc Connectc	Terminal No.	Connector Connector Connector No. No. 1 2 2 3 3 5 5	L
	ation]	ation	L
SYSTEM W SENSOR	Signal Name [Specification]	F FAN MOTOR-2 -PR Signal Name (Specification)	M
ONTROL SYSTI E18 MASS AIR FLOW SENSOR RHOGFB	Signa	EB4 COOLING FAN MOTOR-2 RSOMFGY-PR Signal Name [Spc	N
ENGINE CONTROL SYSTEM Connector Name MASS AIR FLOW SENSOR Connector Type RHOGES MASS AIR FLOW SENSOR Connector Type RHOGES MASS AIR FLOW SENSOR CONNECTOR TYPE MASS AIR FLOW SENSOR MASS AIR FLOW SENSOR CONNECTOR TYPE MASS AIR FLOW SENSOR CONTROL SYSTEM MASS AIR FLOW SENSOR MAS	of Wire B B B B B C C C C C C C C C C C C C C	N. N	0
Conne	Terminal No. 1 2 2 2 2 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	Connector Connector Connector Terminal No. 1 2 2 3 4	JCBWM0412GE
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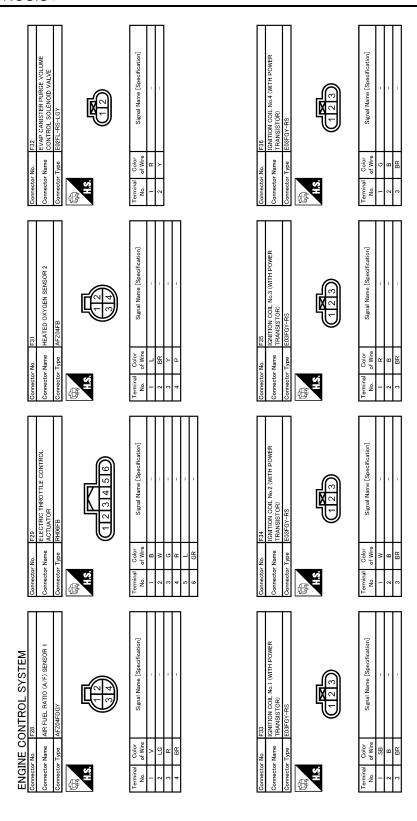
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Connector No. F16 Connector Name KNOCK SENSOR Connector Type E02FG-RS-LGY H.S. Terminal Color Signal Name [Specification] 1 of Wre 1 of Wre 2 SHELD -	Connector Nu. F27 Connector Nume AIR FUEL RATIO (A/F) SENSOR 1 Connector Type AFZ04FGY H.S.	Terminal Color Signal Name [Specification]	EC C
Connector No. F13 Connector Name CONDENSER Connector Type MOZFW-LC Terminal Color No. of Wire Signal Name [Specification] T BR -	Connector Name CAMSHAFT POSITION SENSOR (PHASE) Connector Type RH03FB H.S.	Terminal Color Signal Name Specification	E F G
16 AF-1 50 BR	Connector No. F21 Connector Name PARK / NEUTRAL POSITION SWITCH Connector Type RK08FG H.S.	Terminal Color Signal Mame [Specification]	J K
Connector Name F8 Connector Name COM Connector Name COM Connector Name COM Connector Name COM Connector Type NAA40FBR-NEA8-RH Connector Type NAA40FBR-NEA8-RH Connector Type NAA40FBR-NEA8-RH Connector Type NAA40FBR-NEA8-RH Connector Type C	Connector No. F20 Connector Name GRANKSHAFT POSITION SENSOR(POS) Connector Type RHIGGE H.S.	Terminal Color Signal Name [Specification] 1	M N
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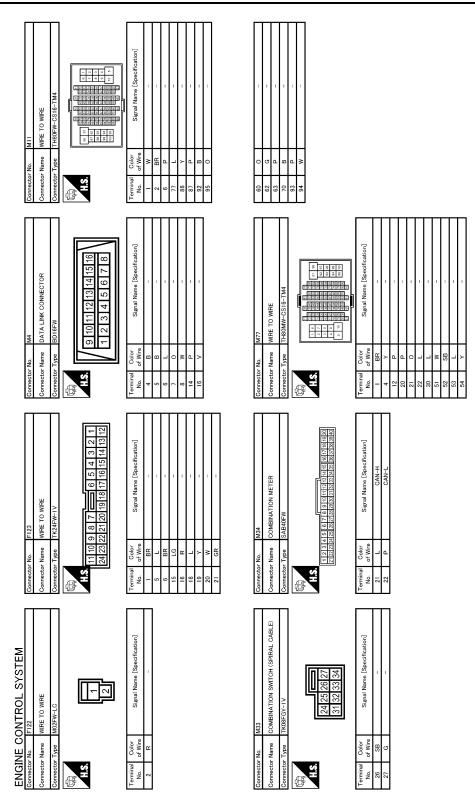


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Connector No. F40 Connector Name FUEL INJECTOR No.4 Connector Type HS02FGY HS A.S.	Terminal Color Signal Name [Specification] Color Col	Connector No. F121 Connector Name WIRE TO WIRE Connector Type NISIGFW-CS The Figure 13 2 1 The Figure 14 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Terminal Color Signal Name [Specification]	A EC C
Connector No. F39 Connector Name FUEL INJECTOR No.3 Connector Type HS02FGY H302FGY	Terminal Color Signal Name [Specification] Color Col	Connector No. F80 Connector Name ENGINE COOLANT TEMPERATURE SENSOR Connector Type F07FGY-RS H.S.	Color No. of Wire Signal Name [Specification] 1 P - 2 0	E F G
Connector No. F:36 Connector Name FUEL INJECTOR No.2 Connector Type HS02FGY	Terminal Color Signal Name [Specification] O O O O O O O O O	Connector No. F45 Connector Name Intrake VALVE TIMING CONTROL Connector Type F02FG-RS-LGY H.S.	Terminal Color No of Wire Signal Name [Specification] 1 O - 2 BR -	J
ENGINE CONTROL SYSTEM Connector No. F37 Connector Name FUEL NAECTOR No.1 Connector Type HS02FGY	Terminal Color Signal Name [Specification] O O O O O O O O O	Connector No. F41 Connector Name TUMBLE CONTROL VALVE ACTUATOR Connector Type HSOSFGV	Terminal Color Signal Name [Specification]	M N
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Fail Safe

NON DTC RELATED ITEM

Engine operating condition in fail-safe mode	Detected items	Remarks	Reference page
Engine speed will not rise more than 2,500 rpm due to the fuel cut	Malfunction indicator lamp circuit	When there is an open circuit on MIL circuit, the ECM cannot warn the driver by lighting up MIL when there is malfunction on engine control system. Therefore, when electrical controlled throttle and part of ECM related diagnoses are continuously detected as NG for 5 trips, ECM warns the driver that engine control system malfunctions and MIL circuit is open by means of operating fail-safe function. The fail-safe function also operates when above diagnoses except MIL circuit are detected and demands the driver to repair the malfunction.	EC-1220

DTC RELATED ITEM

DTC No.	Detected items	Engine opera	ating condition in fail-safe mode			
P0011	Intake valve timing control	The signal is not energized to the in control does not function.	ntake valve timing control solenoid valve and the valve			
P0102 P0103	Mass air flow sensor circuit	Engine speed will not rise more that	an 2,400 rpm due to the fuel cut.			
P0117 P0118	Engine coolant tempera- ture sensor circuit		determined by ECM based on the following conditions. coolant temperature decided by ECM.			
		Condition	Engine coolant temperature decided (CONSULT-III display)			
		Just as ignition switch is turned ON or START	40°C (104°F)			
		Approx. 4 minutes or more after starting engine	80°C (176°F)			
		Except as shown above	40 - 80°C (104 - 176°F) (Depends on the time)			
		When the fail-safe system for engine coolant temperature sensor is activated, the cooling fan operates while engine is running.				
P0122 P0123 P0222 P0223 P2132 P2133 P2135	Throttle position sensor	order for the idle position to be with	tle control actuator in regulating the throttle opening in hin +10 degrees. Heed of the throttle valve to be slower than the normal			
P0500	Vehicle speed sensor	When the fail-safe system for vehic (Highest) while engine is running.	ele speed sensor is activated, the cooling fan operates			
P0643	Sensor power supply	ECM stops the electric throttle cont fixed opening (approx. 5 degrees) I	trol actuator control, throttle valve is maintained at a by the return spring.			
P0605	ECM	(When ECM calculation function is ECM stops the electric throttle cont fixed opening (approx. 5 degrees) I ECM deactivates ASCD operation.	trol actuator control, throttle valve is maintained at a by the return spring.			
P1805	Brake switch	ECM controls the electric throttle or small range. Therefore, acceleration will be poor	ontrol actuator by regulating the throttle opening to a r.			
		Vehicle condition	Driving condition			
		When engine is idling	Normal			
		When accelerating	Poor acceleration			
P2100 P2103	Throttle control motor relay	ECM stops the electric throttle cont fixed opening (approx. 5 degrees) I	trol actuator control, throttle valve is maintained at a by the return spring.			
P2101	Electric throttle control function	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.				

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DTC No.	Detected items	Engine operating condition in fail-safe mode
P2118	Throttle control motor	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.
P2119	Electric throttle control actuator	(When electric throttle control actuator does not function properly due to the return spring malfunction:) ECM controls the electric throttle actuator by regulating the throttle opening around the idle position. The engine speed will not rise more than 2,000 rpm.
		(When throttle valve opening angle in fail-safe mode is not in specified range:) ECM controls the electric throttle control actuator by regulating the throttle opening to 20 degrees or less.
		(When ECM detects the throttle valve is stuck open:) While the vehicle is driving, it slows down gradually by fuel cut. After the vehicle stops, the engine stalls. The engine can restart in N or P (CVT), Neutral (M/T) position, and engine speed will not exceed 1,000 rpm or more.
P2122 P2123 P2127 P2128 P2138	Accelerator pedal position sensor	The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees. The ECM regulates the opening speed of the throttle valve to be slower than the normal condition. So, the acceleration will be poor.

DTC Inspection Priority Chart

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	Detected items (DTC)					
1	 U1000 U1001 CAN communication line P0101 P0102 P0103 Mass air flow sensor P0112 P0113 P0127 Intake air temperature sensor P0117 P0118 P0125 Engine coolant temperature sensor P0122 P0123 P0222 P0223 P1225 P1226 P2135 Throttle position sensor P0128 Thermostat function P0327 P0328 Knock sensor P0335 Crankshaft position sensor (POS) P0340 Camshaft position sensor (PHASE) P0500 Vehicle speed sensor P0605 P0607 ECM P0643 Sensor power supply P0705 P0850 Park/neutral position (PNP) switch P1610 - P1615 NATS P2122 P2123 P2127 P2128 P2138 Accelerator pedal position sensor 					

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Priority	Detected items (DTC)
2	 P0031 P0032 Air fuel ratio (A/F) sensor 1 heater P0037 P0038 Heated oxygen sensor 2 heater P0075 Intake valve timing control solenoid valve P0130 P0131 P0132 P0133 P2A00 Air fuel ratio (A/F) sensor 1 P0137 P0138 P0139 Heated oxygen sensor 2 P0444 P0445 EVAP canister purge volume control solenoid valve P0603 ECM power supply P0710 P0715 P0720 P0740 P0744 P0745 P0746 P0776 P0778 P0840 P0845 P1740 P1777 P1778 CVT related sensors, solenoid valves and switches P1217 Engine over temperature (OVERHEAT) P1805 Brake switch P2100 P2103 Throttle control motor relay P2101 Electric throttle control function P2118 Throttle control motor
3	 P0011 Intake valve timing control P0171 P0172 Fuel injection system function P0300 - P0304 Misfire P0420 Three way catalyst function P0506 P0507 Idle speed control system P1148 Closed loop control P1421 Cold start control P1564 ASCD steering switch P1572 ASCD brake switch P1574 ASCD vehicle speed sensor P1715 Primary speed sensor P2119 Electric throttle control actuator

DTC Index

x:Applicable —: Not applicable

					∧.Applicable	. Not applicable
DTC*1 CONSULT-III		ltems (CONSULT-III screen terms)	SRT code	Trip	MIL	Reference page
GST*2	FOM*3 (CONSULTIN SUICENTENNS)				page	
U1000	1000* ⁴	CAN COMM CIRCUIT	_	1	×	EC-1017
U1001	1001*4	CAN COMM CIRCUIT	_	2	_	EC-1017
P0000	0000	NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	_	_	Flashing* ⁷	_
P0011	0011	INT/V TIM CONT-B1	_	2	×	EC-1018
P0031	0031	A/F SEN1 HTR (B1)	_	2	×	EC-1022
P0032	0032	A/F SEN1 HTR (B1)	_	2	×	EC-1022
P0037	0037	HO2S2 HTR (B1)	_	2	×	EC-1025
P0038	0038	HO2S2 HTR (B1)	_	2	×	EC-1025
P0075	0075	INT/V TIM V/CIR-B1	_	2	×	EC-1028
P0101	0101	MAF SEN/CIRCUIT-B1	_	2	×	EC-1031
P0102	0102	MAF SEN/CIRCUIT-B1	_	1	×	EC-1038
P0103	0103	MAF SEN/CIRCUIT-B1	_	1	×	EC-1038
P0112	0112	IAT SEN/CIRCUIT-B1	_	2	×	EC-1043
P0113	0113	IAT SEN/CIRCUIT-B1	_	2	×	EC-1043
P0117	0117	ECT SEN/CIRC	_	1	×	EC-1046
P0118	0118	ECT SEN/CIRC	_	1	×	EC-1046
P0122	0122	TP SEN 2/CIRC-B1	_	1	×	EC-1049
P0123	0123	TP SEN 2/CIRC-B1	_	1	×	EC-1049
P0125	0125	ECT SENSOR	_	2	×	EC-1052

DTC*	·1	Items				Reference
CONSULT-III GST* ²	ECM*3	(CONSULT-III screen terms)	SRT code	Trip	MIL	page
P0127	0127	IAT SENSOR-B1	_	2	×	EC-1055
P0128	0128	THERMSTAT FNCTN	_	2	×	EC-1057
P0130	0130	A/F SENSOR1 (B1)	_	2	×	EC-1059
P0131	0131	A/F SENSOR1 (B1)	_	2	×	EC-1063
P0132	0132	A/F SENSOR1 (B1)	_	2	×	EC-1066
P0133	0133	A/F SENSOR1 (B1)	×	2	×	EC-1069
P0137	0137	HO2S2 (B1)	×	2	×	EC-1074
P0138	0138	HO2S2 (B1)	×	2	×	EC-1080
P0139	0139	HO2S2 (B1)	×	2	×	EC-1087
P0171	0171	FUEL SYS-LEAN-B1	_	2	×	EC-1093
P0172	0172	FUEL SYS-RICH-B1	_	2	×	EC-1097
P0222	0222	TP SEN 1/CIRC-B1	_	1	×	EC-1101
P0223	0223	TP SEN 1/CIRC-B1	_	1	×	EC-1101
P0300	0300	MULTI CYL MISFIRE	_	2	×	EC-1104
P0301	0301	CYL 1 MISFIRE	_	2	×	EC-1104
P0302	0302	CYL 2 MISFIRE	_	2	×	EC-1104
P0303	0303	CYL 3 MISFIRE	_	2	×	EC-1104
P0304	0304	CYL 4 MISFIRE	_	2	×	EC-1104
P0327	0327	KNOCK SEN/CIRC-B1	_	2	_	EC-1110
P0328	0328	KNOCK SEN/CIRC-B1	_	2	_	EC-1110
P0335	0335	CKP SEN/CIRCUIT	_	2	×	EC-1112
P0340	0340	CMP SEN/CIRC-B1	_	2	×	EC-1116
P0420	0420	TW CATALYST SYS-B1	×	2	×	EC-1120
P0444	0444	PURG VOLUME CONT/V	_	2	×	EC-1125
P0445	0445	PURG VOLUME CONT/V	_	2	×	EC-1125
P0500	0500	VEH SPEED SEN/CIRC*5	_	2	×	EC-1128
P0506	0506	ISC SYSTEM	_	2	×	EC-1130
P0507	0507	ISC SYSTEM	_	2	×	EC-1132
P0603	0603	ECM BACK UP/CIRCUIT	_	2	×	EC-1134
P0605	0605	ECM	_	1 or 2	× or —	EC-1136
P0607	0607	ECM	_	1	×	EC-1138
P0643	0643	SENSOR POWER/CIRC	_	1	×	EC-1139
P0705	0705	PNP SW/CIRC	_	2	×	TM-52
P0710	0710	ATF TEMP SEN/CIRC	_	1	×	<u>TM-55</u>
P0715	0715	INPUT SPD SEN/CIRC	_	2	×	TM-57
P0720	0720	VEH SPD SEN/CIR AT*5	_	2	×	TM-61
				2		
P0740	0740	TCC SOLENOID/CIRC	_		×	TM-67
P0744	0744	A/T TCC S/V FNCTN	_	2	×	TM-69
P0745	0745	L/PRESS SOL/CIRC	_	2	×	TM-71
P0746	0746	PRS CNT SOL/A FCTN	_	1	×	TM-73
P0776	0776	PRS CNT SOL/B FCTN	_	2	×	<u>TM-75</u>
P0778	0778	PRS CNT SOL/B CIRC	_	2	×	<u>TM-78</u>

DTC	·*1					
CONSULT-III GST* ²	ECM* ³	ltems (CONSULT-III screen terms)	SRT code	Trip	MIL	Reference page
P0840	0840	TR PRS SENS/A CIRC	_	2	×	TM-85
P0845	0845	TR PRS SENS/B CIRC	_	2	×	<u>TM-91</u>
P0850	0850	P-N POS SW/CIRCUIT	_	2	×	EC-1141
P1148	1148	CLOSED LOOP-B1	_	1	×	EC-1144
P1217	1217	ENG OVER TEMP	_	1	×	EC-1145
P1225	1225	CTP LEARNING-B1	_	2	_	EC-1149
P1226	1226	CTP LEARNING-B1	_	2	_	EC-1151
P1421	1421	COLD START CONTROL	_	2	×	EC-1153
P1564	1564	ASCD SW	_	1	_	EC-1155
P1572	1572	ASCD BRAKE SW	_	1	_	EC-1158
P1574	1574	ASCD VHL SPD SEN	_	1	_	EC-1163
P1610	1610	LOCK MODE	_	2	_	<u>SEC-33,</u> <u>SEC-181</u>
P1611	1611	ID DISCORD,IMMU-ECM	_	2	_	<u>SEC-34,</u> <u>SEC-182</u>
P1612	1612	CHAIN OF ECM-IMMU	_	2	_	<u>SEC-36,</u> <u>SEC-184</u>
P1614	1614	CHAIN OF IMMU-KEY	_	2	_	<u>SEC-37,</u> <u>SEC-185</u>
P1615	1615	DIFFERENCE OF KEY	_	2	_	<u>SEC-39,</u> <u>SEC-187</u>
P1715	1715	IN PULY SPEED	_	2	_	EC-1165
P1740	1740	LU-SLCT SOL/CIRC	_	2	×	<u>TM-106</u>
P1777	1777	STEP MOTOR CIRC	_	1	×	TM-109
P1778	1778	STEP MOTOR FNCT	_	2	×	<u>TM-112</u>
P1805	1805	BRAKE SW/CIRCUIT	_	2	_	EC-1167
P2100	2100	ETC MOT PWR-B1	_	1	×	EC-1169
P2101	2101	ETC FNCTN/CIRC-B1	_	1	×	EC-1171
P2103	2103	ETC MOT PWR	_	1	×	EC-1169
P2118	2118	ETC MOT-B1	_	1	×	EC-1175
P2119	2119	ETC ACTR-B1	_	1	×	EC-1177
P2122	2122	APP SEN 1/CIRC	_	1	×	EC-1179
P2123	2123	APP SEN 1/CIRC	_	1	×	EC-1179
P2127	2127	APP SEN 2/CIRC	_	1	×	EC-1182
P2128	2128	APP SEN 2/CIRC	_	1	×	EC-1182
P2135	2135	TP SENSOR-B1	_	1	×	EC-1186
P2138	2138	APP SENSOR	_	1	×	EC-1189
P2A00	2A00	A/F SENSOR1 (B1)	_	2	×	EC-1193

^{*1: 1}st trip DTC No. is the same as DTC No.

^{*2:} This number is prescribed by ISO 15031-5.

^{*3:} In Diagnostic Test Mode II (Self-diagnostic results), this number is controlled by NISSAN.

^{*4:} The troubleshooting for this DTC needs CONSULT-III.

^{*5:} When the fail-safe operations for both self-diagnoses occur, the MIL illuminates.

How to Set SRT Code

INFOID:0000000002994882

To set all SRT codes, self-diagnosis for the items indicated above must be performed one or more times. Each diagnosis may require a long period of actual driving under various conditions.

®WITH CONSULT-III

Perform corresponding DTC CONFIRMATION PROCEDURE one by one based on Performance Priority in the table on "SRT Item".

®WITHOUT CONSULT-III

The most efficient driving pattern in which SRT codes can be properly set is explained on the next page. The driving pattern should be performed one or more times to set all SRT codes.

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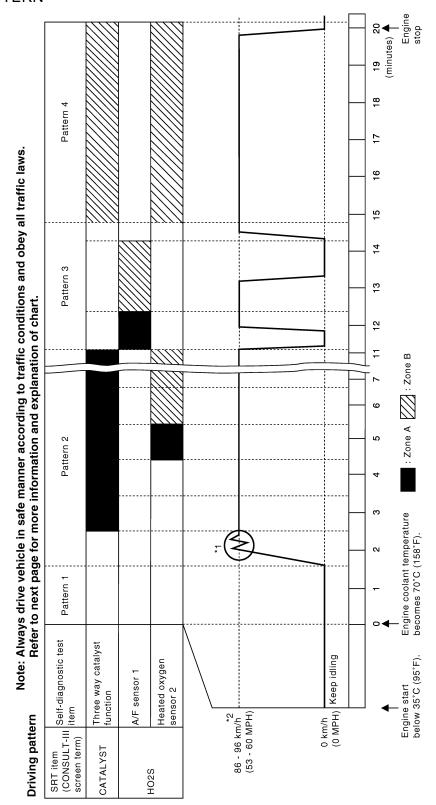
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DRIVING PATTERN



 The time required for each diagnosis varies with road surface conditions, weather, altitude, individual driving habits, etc.

Zone A refers to the range where the time, required for the diagnosis under normal conditions*, is the shortest

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Zone B refers to the range where the diagnosis can still be performed if the diagnosis is not completed within zone A

*: Normal conditions refer to the following:

- Sea level
- Flat road
- Ambient air temperature: 20 30°C (68 86°F)

Diagnosis is performed as quickly as possible under normal conditions.
 Under different conditions [For example: ambient air temperature other than 20 - 30°C (68 - 86°F)], diagnosis may also be performed.

Pattern 1:

- The engine is started at the engine coolant temperature of -10 to 35°C (14 to 95°F)
 [where the voltage between the ECM terminals 46 (Engine coolant temperature sensor signal) and 52
 (Sensor ground) is 3.0 4.3V].
- The engine must be operated at idle speed until the engine coolant temperature is greater than 70°C (158°F) [where the voltage between the ECM terminals 46 (Engine coolant temperature sensor signal) and 52 (Sensor ground) is lower than 1.4V].

Pattern 2:

- When steady-state driving is performed again even after it is interrupted, each diagnosis can be conducted.
 In this case, the time required for diagnosis may be extended.
 Pattern 3:
- Operate vehicle following the driving pattern shown in the figure.
- Release the accelerator pedal during decelerating vehicle speed from 90 km/h (56 MPH) to 0 km/h (0 MPH).

Pattern 4:

- The accelerator pedal must be held very steady during steadystate driving.
- If the accelerator pedal is moved, the test must be conducted all over again.
- *1: Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH), then release the accelerator pedal and keep it released for more than 10 seconds. Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH) again.
- *2: Checking the vehicle speed with GST is advised.

Suggested Transmission Gear Position for CVT Models Set the selector lever in the D position.

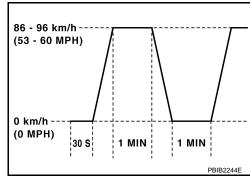


The following is the information specified in Service \$06 of SAE J1979.

The test value is a parameter used to determine whether a system/circuit diagnostic test is OK or NG while being monitored by the ECM during self-diagnosis. The test limit is a reference value which is specified as the maximum or minimum value and is compared with the test value being monitored.

These data (test value and test limit) are specified by On Board Monitor ID (OBDMID), Test ID (TID), Unit and Scaling ID and can be displayed on the GST screen.

The items of the test value and test limit will be displayed with GST screen which items are provided by the ECM. (e.g., if the bank 2 is not applied on this vehicle, only the items of the bank 1 is displayed)



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				Tes	alue and t limit display)	
Item	OBD- MID	Self-diagnostic test item	DTC	TID	Unit and Scaling ID	Description
			P0131	83H	0BH	Minimum sensor output voltage for test cycl
			P0131	84H	0BH	Maximum sensor output voltage for test cyc
			P0130	85H	0BH	Minimum sensor output voltage for test cycl
			P0130	86H	0BH	Maximum sensor output voltage for test cyc
		Air fuel ratio (A/F) sensor 1	P0133	87H	04H	Response rate: Response ratio (Lean to Ric
	01H	(Bank 1)	P0133	88H	04H	Response rate: Response ratio (Rich to Lea
			P2A00	89H	84H	The amount of shift in air fuel ratio
			P2A00	8AH	84H	The amount of shift in air fuel ratio
			P0130	8BH	0BH	Difference in sensor output voltage
HO2S			P0133	8CH	83H	Response gain at the limited frequency
			P0138	07H	0CH	Minimum sensor output voltage for test cyc
	0011	Heated oxygen sensor 2	P0137	08H	0CH	Maximum sensor output voltage for test cyc
	02H	(Bank 1)	P0138	80H	0CH	Sensor output voltage
			P0139	81H	0CH	Difference in sensor output voltage
		Heated oxygen sensor 3 (Bank 1)	P0143	07H	0CH	Minimum sensor output voltage for test cyc
			P0144	08H	0CH	Maximum sensor output voltage for test cyc
	03H		P0146	80H	0CH	Sensor output voltage
			P0145	81H	0CH	Difference in sensor output voltage
			P0151	83H	0BH	Minimum sensor output voltage for test cyc
			P0151	84H	0BH	Maximum sensor output voltage for test cy
			P0150	85H	0BH	Minimum sensor output voltage for test cyc
			P0150	86H	0BH	Maximum sensor output voltage for test cy
	0511	Air fuel ratio (A/F) sensor 1	P0153	87H	04H	Response rate: Response ratio (Lean to Ric
	05H	(Bank 2)	P0153	88H	04H	Response rate: Response ratio (Rich to Lea
			P2A03	89H	84H	The amount of shift in air fuel ratio
			P2A03	8AH	84H	The amount of shift in air fuel ratio
1000			P0150	8BH	0BH	Difference in sensor output voltage
102S			P0153	8CH	83H	Response gain at the limited frequency
			P0158	07H	0CH	Minimum sensor output voltage for test cyc
	0011	Heated oxygen sensor 2	P0157	08H	0CH	Maximum sensor output voltage for test cy
	06H	(Bank 2)	P0158	80H	0CH	Sensor output voltage
			P0159	81H	0CH	Difference in sensor output voltage
			P0163	07H	0CH	Minimum sensor output voltage for test cyc
	:	Heated oxygen sensor 3	P0164	08H	0CH	Maximum sensor output voltage for test cy
	07H	(Bank2)	P0166	80H	0CH	Sensor output voltage
			P0165	81H	0CH	Difference in sensor output voltage

	OBD-			Tes	alue and t limit display)				
Item MID	Self-diagnostic test item	DTC	TID	Unit and Scaling ID	Description				
			P0420	80H	01H	O2 storage index			
	21H	Three way catalyst func-	P0420	82H	01H	Switching time lag engine exhaust index value			
		tion (Bank1)	P2423	83H	0CH	Difference in 3rd O2 sensor output voltage			
CATA-			P2423	84H	84H	O2 storage index in HC trap catalyst			
LYST			P0430	80H	01H	O2 storage index			
	22H	Three way catalyst func-	P0430	82H	01H	Switching time lag engine exhaust index value			
		tion (Bank2)	P2424	83H	0CH	Difference in 3rd O2 sensor output voltage			
			P2424	84H	84H	O2 storage index in HC trap catalyst			
		H EGR function	P0400	80H	96H	Low Flow Faults: EGR temp change rate (short term)			
			P0400	81H	96H	Low Flow Faults: EGR temp change rate (long term)			
EGR SYSTEM	31H		P0400	82H	96H	Low Flow Faults: Difference between max EGR temp and EGR temp under idling condition			
			P0400	83H	96H	Low Flow Faults: Max EGR temp			
			P1402	84H	96H	High Flow Faults: EGR temp increase rate			
	39H	EVAP control system leak (Cap Off)	P0455	80H	0CH	Difference in pressure sensor output voltage before and after pull down			
5) (4.5)	звн	EVAP control system leak (Small leak)	P0442	80H	05H	Leak area index (for more than 0.04inch)			
EVAP SYSTEM		EVAP control system	P0456	80H	05H	Leak area index (for more than 0.02inch)			
	3CH	3CH	3CH	3CH	(Very small leak)	P0456	81H	FDH	Maximum internal pressure of EVAP system during monitoring
	3DH	Purge flow system	P0441	83H	0CH	Difference in pressure sensor output voltage before and after vent control value close			
	41H	A/F sensor 1 heater (Bank 1)	Low Input:P0031 High Input:P0032	81H	0BH	Converted value of Heater electric current to voltage			
	42H	Heated oxygen sensor 2 (Bank 1)	Low Input:P0037 High Input:P0038	80H	0CH	Converted value of Heater electric current to voltage			
O2 SEN- SOR	43H	Heated oxygen sensor 3 (Bank 1)	P0043	80H	0CH	Converted value of Heater electric current to voltage			
HEATER	45H	A/F sensor 1 heater (Bank 2)	Low Input:P0051 High Input:P0052	81H	0BH	Converted value of Heater electric current to voltage			
	46H	Heated oxygen sensor 2 (Bank 2)	Low Input:P0057 High Input:P0058	80H	0CH	Converted value of Heater electric current to voltage			
	47H	Heated oxygen sensor 3 (Bank 2)	P0063	80H	0CH	Converted value of Heater electric current to voltage			

	OBD-			Test value and Test limit (GST display)		Description
Item MID	Self-diagnostic test item	DTC	TID	Unit and Scaling ID		
			P0411	80H	01H	Secondary Air Injection System Incorrect Flow Detected
		IH Secondary Air system	Bank1: P0491 Bank2: P0492	81H	01H	Secondary Air Injection System Insufficient Flow
SEC-			P2445	82H	01H	Secondary Air Injection System Pump Stuck Off
OND-	71H		P2448	83H	01H	Secondary Air Injection System High Airflow
ARY AIR			Bank1: P2440 Bank2: P2442	84H	01H	Secondary Air Injection System Switching Valve Stuck Open
			P2440	85H	01H	Secondary Air Injection System Switching Valve Stuck Open
			P2444	86H	01H	Secondary Air Injection System Pump Stuck On
	81H	Fuel injection system	P0171 or P0172	80H	2FH	Long term fuel trim
FUEL	0111	function (Bank 1)	P0171 or P0172	81H	24H	The number of lambda control clamped
SYSTEM	82H	Fuel injection system	P0174 or P0175	80H	2FH	Long term fuel trim
82	OZΠ	function (Bank 2)	P0174 or P0175	81H	24H	The number of lambda control clamped

ECOD						
	OBD- MID	Self-diagnostic test item	DTC	Test value and Test limit (GST display)		
Item				TID	Unit and Scaling ID	Description
MISFIRE	A1H	Multiple Cylinder Misfire	P0301	80H	24H	Misfiring counter at 1000rev of the first cylinder
			P0302	81H	24H	Misfiring counter at 1000rev of the second cylinder
			P0303	82H	24H	Misfiring counter at 1000rev of the third cylinder
			P0304	83H	24H	Misfiring counter at 1000rev of the fourth cylinder
			P0305	84H	24H	Misfiring counter at 1000rev of the fifth cylinder
			P0306	85H	24H	Misfiring counter at 1000rev of the sixth cylinder
			P0307	86H	24H	Misfiring counter at 1000rev of the seventh cylinder
			P0308	87H	24H	Misfiring counter at 1000rev of the eighth cylinder
			P0300	88H	24H	Misfiring counter at 1000rev of the multiple cylinders
			P0301	89H	24H	Misfiring counter at 200rev of the first cylinder
			P0302	8AH	24H	Misfiring counter at 200rev of the second cylinder
			P0303	8BH	24H	Misfiring counter at 200rev of the third cylinder
			P0304	8CH	24H	Misfiring counter at 200rev of the fourth cylinder
			P0305	8DH	24H	Misfiring counter at 200rev of the fifth cylinder
			P0306	8EH	24H	Misfiring counter at 200rev of the fifth cylinder
			P0307	8FH	24H	Misfiring counter at 200rev of the fifth cylinder
			P0308	90H	24H	Misfiring counter at 200rev of the fifth cylinder
			P0300	91H	24H	Misfiring counter at 1000rev of the single cylinder
			P0300	92H	24H	Misfiring counter at 200rev of the single cylinder
			P0300	93H	24H	Misfiring counter at 200rev of the multiple cylinders

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	OBD- MID	Self-diagnostic test item	DTC	Test value and Test limit (GST display)		
Item				TID	Unit and Scaling ID	Description
	A2H	No.1 Cylinder Misfire	P0301	0BH	24H	EWMA (Exponential Weighted Moving Av age) misfire counts for last 10 driving cycl
			P0301	0CH	24H	Misfire counts for last/current driving cycle
	АЗН	No.2 Cylinder Misfire	P0302	0BH	24H	EWMA (Exponential Weighted Moving Avage) misfire counts for last 10 driving cycl
			P0302	0CH	24H	Misfire counts for last/current driving cycle
	A4H	No.3 Cylinder Misfire	P0303	овн	24H	EWMA (Exponential Weighted Moving Avage) misfire counts for last 10 driving cycle
			P0303	0CH	24H	Misfire counts for last/current driving cycle
	A5H	No.4 Cylinder Misfire	P0304	0BH	24H	EWMA (Exponential Weighted Moving Avage) misfire counts for last 10 driving cycles
ISFIRE			P0304	0CH	24H	Misfire counts for last/current driving cycle
ISFIRE	А6Н	No.5 Cylinder Misfire	P0305	овн	24H	EWMA (Exponential Weighted Moving Avage) misfire counts for last 10 driving cyc
			P0305	0CH	24H	Misfire counts for last/current driving cycle
	А7Н	No.6 Cylinder Misfire	P0306	овн	24H	EWMA (Exponential Weighted Moving Avage) misfire counts for last 10 driving cyc
			P0306	0CH	24H	Misfire counts for last/current driving cycle
	А8Н	No.7 Cylinder Misfire	P0307	0BH	24H	EWMA (Exponential Weighted Moving Avage) misfire counts for last 10 driving cyc
			P0307	0CH	24H	Misfire counts for last/current driving cycle
	А9Н	No.8 Cylinder Misfire	P0308	0BH	24H	EWMA (Exponential Weighted Moving Avage) misfire counts for last 10 driving cyc
			P0308	0CH	24H	Misfire counts for last/current driving cycl

[FOR MEXICO]

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SYMPTOM DIAGNOSIS

ENGINE CONTROL SYSTEM SYMPTOMS

Symptom Table EC

SYSTEM — BASIC ENGINE CONTROL SYSTEM

		SYMPTOM													C	
						NO					HGH					D
		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE H	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page	E F
Warrant	ty symptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	АМ	НА		Н
Fuel	Fuel pump circuit	1	1	2	3	2		2	2			3		2	EC-1212	
	Fuel pressure regulator system	3	3	4	4	4	4	4	4	4		4			EC-1272	
	Fuel injector circuit	1	1	2	3	2		2	2			2			EC-1209	
	Evaporative emission system	3	3	4	4	4	4	4	4	4		4			EC-972	
Air	Positive crankcase ventilation system	3	3	4	4	4	4	4	4	4		4	1		EC-1221	J
	Incorrect idle speed adjustment						1	1	1	1		1			EC-928	K
	Electric throttle control actuator	1	1	2	3	3	2	2	2	2		2		2	EC-1171 EC-1177	IX
Ignition	Incorrect ignition timing adjustment	3	3	1	1	1		1	1			1			EC-929	L
	Ignition circuit	1	1	2	2	2		2	2			2			EC-1215	
Main po	ower supply and ground circuit	2	2	3	3	3		3	3		2	3			EC-1013	
Mass ai	r flow sensor circuit	1			2										EC-1031 EC-1038	M
Engine	coolant temperature sensor circuit						3			3					EC-1046 EC-1052	Ν
Air fuel	ratio (A/F) sensor 1 circuit		1	2	3	2		2	2			2			EC-1059 EC-1063 EC-1066 EC-1069 EC-1193	0
Throttle position sensor circuit							2			2					EC-1049 EC-1101 EC-1149 EC-1151 EC-1186	Р
Accelera	ator pedal position sensor circuit			3	2	1									EC-1179 EC-1182 EC-1189	
	sensor circuit			2								3			EC-1110	

						S	/MPT	ОМ						
	HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty symptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	НА	,
Crankshaft position sensor (POS) circuit	2	2												EC-1112
Camshaft position sensor (PHASE) circuit	3	2												EC-1116
Vehicle speed signal circuit		2	3		3						3			EC-1128
ECM	2	2	3	3	3	3	3	3	3	3	3			EC-1134 EC-1136
Intake valve timing control solenoid valve circuit		3	2		1	3	2	2	3		3			EC-1028
PNP switch circuit			3		3		3	3			3			EC-1141
Refrigerant pressure sensor circuit		2				3			3		4			EC-1222
Electrical load signal circuit							3							EC-1207
Air conditioner circuit	2	2	3	3	3	3	3	3	3		3		2	HAC-9
ABS actuator and electric unit (control unit)			4											BRC-15 BRC-94

^{1 - 6:} The numbers refer to the order of inspection.

SYSTEM — ENGINE MECHANICAL & OTHER

ENGINE CONTROL SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

[FOR MEXICO]

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		Ή¥				RATIC					RE T					EC
		(EXCP. HA)		SPOT		ILER.					ATU	NOL	Z	RGE		
		T (E		AT S	NO NO	4CCE				Щ	IPER	JMPI	IPTIC	CHARGE)		С
		START/RESTART		HESITATION/SURGING/FLAT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION		S S		SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER	Reference	
		T/RE		RGIN	DET(:R/P(HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	NO	JRN.	ATER	EL C	00	N)	page	D
		STAR	.ALL	N/SU)CK/	OWE	LOW	E/H	IDLING VIBRATION	ZETL	.S/W/	FU	OIL	EAD		
		0N	E ST	ATIO	X	OF P	DLE/	⊒	NB VIB	Ñ	1EA1	SSIVE	SSIVE	RY		_
		HARD/NO	ENGINE STALL	SIT/	ARK	Š	E H5	onei	LING	/MO:	ÆRŁ	CES	CES	TE		Е
•	symptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	НА		F
Fuel	Fuel tank	5													FL-17 FL-20	
	Fuel piping			5	5	5	-	5	5	-		5			FL-6	G
	Vapor lock		5												_	
	Valve deposit														_	
	Poor fuel (Heavy weight gasoline, Low octane)	5		5	5	5		5	5			5			_	Н
Air	Air duct														EM-28	
	Air cleaner														EM-28	
	Air leakage from air duct (Mass air flow sensor — electric throttle control actuator)		5	5		5		5	5			5			<u>EM-28</u>	J
	Electric throttle control actuator	5			5		5			5					EM-31	
	Air leakage from intake manifold/ Collector/Gasket														<u>EM-31</u>	K
Cranking	Battery	1	1	1		1		1	1					1	PG-88	
	Generator circuit	'	'	'		'		'	'					'	CHG-18	L
	Starter circuit	3										1			STR-5	
	Signal plate	6													EM-52	
	PNP switch	4													TM-53	M
Engine	Cylinder head	5	5	5	5	5		5	5			5			<u>EM-83</u>	
	Cylinder head gasket		3	J	3	3		J	3		4	3	3		<u>LIVI 00</u>	Ν
	Cylinder block															
	Piston												4			
	Piston ring	6	6	6	6	6		6	6			6			EM-94	0
	Connecting rod															
	Bearing															Р
	Crankshaft															=
Valve mecha-	Timing chain														<u>EM-75</u>	
nism	Camshaft														<u>EM-52</u>	<u> </u>
	Intake valve timing control	5	5	5	5	5		5	5			5			EM-31	-
	Intake valve												3		<u>EM-75</u>	
	Exhaust valve															

							S١	/MPT	OM						
		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty symptom code		AA	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА	
Exhaust	Exhaust manifold/Tube/Muffler/ Gasket	5	5	5	5	5		5	5			5			EM-33 EX-4
	Three way catalyst														<u>LX-4</u>
Lubrica- tion	Oil pan/Oil strainer/Oil pump/Oil filter/Oil gallery/Oil cooler	5	5	5	5	5		5	5			5			EM-36 EM-39 LU-12 LU-8 LU-9
	Oil level (Low)/Filthy oil														<u>LU-5</u>
Cooling	Radiator/Hose/Radiator filler cap														<u>CO-20</u>
	Thermostat									5					<u>CO-26</u>
	Water pump														<u>CO-24</u>
	Water gallery	5	5	5	5	5		5	5		4	5			<u>CO-9</u>
	Cooling fan														<u>CO-22</u>
	Coolant level (Low)/Contaminat- ed coolant									5					<u>CO-9</u>
NVIS (NIS NATS)	SAN Vehicle Immobilizer System —	1	1												<u>SEC-15</u> <u>SEC-169</u>

^{1 - 6:} The numbers refer to the order of inspection.

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS > [FOR MEXICO]

NORMAL OPERATING CONDITION

Description INFOID:000000002994697

FUEL CUT CONTROL (AT NO LOAD AND HIGH ENGINE SPEED)

If the engine speed is above 1,800 rpm under no load (for example, the selector lever position is neutral and engine speed is over 1,800 rpm) fuel will be cut off after some time. The exact time when the fuel is cut off varies based on engine speed.

Fuel cut will be operated until the engine speed reaches 1,500 rpm, then fuel cut will be cancelled. **NOTE:**

This function is different from deceleration control listed under Multiport Fuel Injection (MFI) System, <u>EC-939</u>. "System Description".

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PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

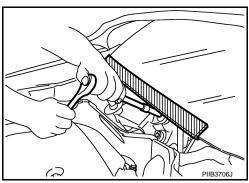
The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the "SRS AIRBAG" and "SEAT BELT" of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SRS AIRBAG".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

Precaution for Procedure without Cowl Top Cover

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



Precautions For Xenon Headlamp Service

WARNING:

Comply with the following warnings to prevent any serious accident.

- Disconnect the battery cable (negative terminal) or the power supply fuse before installing, removing, or touching the xenon headlamp (bulb included). The xenon headlamp contains high-voltage generated parts.
- · Never work with wet hands.
- Check the xenon headlamp ON-OFF status after assembling it to the vehicle. Never turn the xenon headlamp ON in other conditions. Connect the power supply to the vehicle-side connector. (Turning it ON outside the lamp case may cause fire or visual impairments.)
- Never touch the bulb glass immediately after turning it OFF. It is extremely hot.

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

- Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)
- Never perform HID circuit inspection with a tester.
- Never touch the xenon bulb glass with hands. Never put oil and grease on it.
- Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.
- Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).

On Board Diagnostic (OBD) System of Engine and CVT

The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

Revision: 2008 January EC-1266 2008 Rogue

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INFOID:0000000003251708

CAUTION:

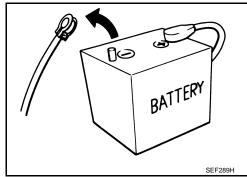
Be sure to turn the ignition switch OFF and disconnect the negative battery cable before any repair
or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will
cause the MIL to light up.

Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will
cause the MIL to light up due to the open circuit. (Be sure the connector is free from water, grease,
dirt, bent terminals, etc.)

- Certain systems and components, especially those related to OBD, may use a new style slide-locking type harness connector. For description and how to disconnect, refer to <u>PG-78</u>, "<u>Description</u>".
- Be sure to route and secure the harnesses properly after work. The interference of the harness with a bracket, etc. may cause the MIL to light up due to the short circuit.
- Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube
 may cause the MIL to light up due to the malfunction of the EVAP system or fuel injection system,
 etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the ECM and TCM (Transmission control module) before returning the vehicle to the customer.

General Precautions

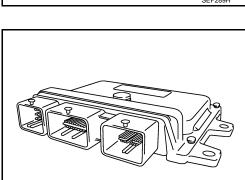
- Always use a 12 volt battery as power source.
- Do not attempt to disconnect battery cables while engine is running.
- Before connecting or disconnecting the ECM harness connector, turn ignition switch OFF and disconnect negative battery cable. Failure to do so may damage the ECM because battery voltage is applied to ECM even if ignition switch is turned OFF.
- Before removing parts, turn ignition switch OFF and then disconnect battery ground cable.

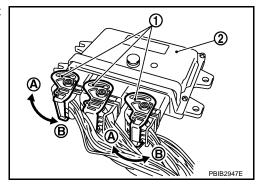


- Do not disassemble ECM.
- If a battery cable is disconnected, the memory will return to the ECM value.

The ECM will now start to self-control at its initial value. Engine operation can vary slightly when the terminal is disconnected. However, this is not an indication of a malfunction. Do not replace parts because of a slight variation.

- If the battery is disconnected, the following emission-related diagnostic information will be lost within 24 hours.
- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- Freeze frame data
- 1st trip freeze frame data
- System readiness test (SRT) codes
- Test values
- When connecting ECM harness connector (1), fasten (B) it securely with a lever as far as it will go as shown in the figure.
 - 2. ECM
 - A. Loosen





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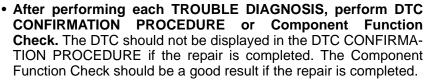
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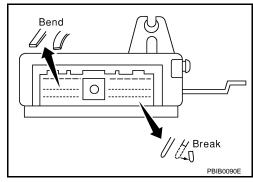
Revision: 2008 January EC-1267 2008 Rogue

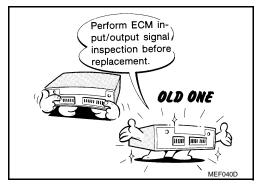
 When connecting or disconnecting pin connectors into or from ECM, take care not to damage pin terminals (bend or break).

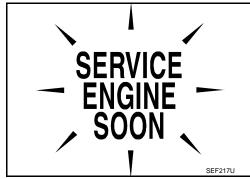
Make sure that there are not any bends or breaks on ECM pin terminal, when connecting pin connectors.

- Securely connect ECM harness connectors.
 A poor connection can cause an extremely high (surge) voltage to develop in coil and condenser, thus resulting in damage to ICs.
- Keep engine control system harness at least 10 cm (4 in) away from adjacent harness, to prevent engine control system malfunctions due to receiving external noise, degraded operation of ICs, etc.
- Keep engine control system parts and harness dry.
- Before replacing ECM, perform ECM Terminals and Reference Value inspection and make sure ECM functions properly. Refer to <u>EC-1224</u>, "<u>Reference Value</u>".
- Handle mass air flow sensor carefully to avoid damage.
- Do not clean mass air flow sensor with any type of detergent.
- Do not disassemble electric throttle control actuator.
- Even a slight leak in the air intake system can cause serious incidents.
- Do not shock or jar the camshaft position sensor (PHASE), crankshaft position sensor (POS).





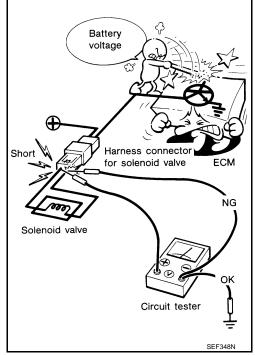




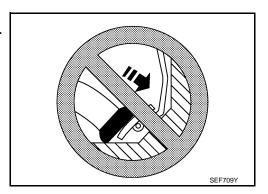
 When measuring ECM signals with a circuit tester, never allow the two tester probes to contact.

Accidental contact of probes will cause a short circuit and damage the ECM power transistor.

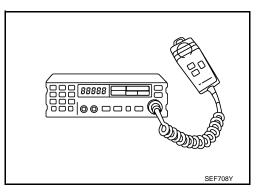
 Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.



- Do not operate fuel pump when there is no fuel in lines.
- Tighten fuel hose clamps to the specified torque.
- Do not depress accelerator pedal when starting.
- Immediately after starting, do not rev up engine unnecessarily.
- Do not rev up engine just prior to shutdown.



- When installing C.B. ham radio or a mobile phone, be sure to observe the following as it may adversely affect electronic control systems depending on installation location.
- Keep the antenna as far as possible from the electronic control units.
- Keep the antenna feeder line more than 20 cm (8 in) away from the harness of electronic controls.
 Do not let them run parallel for a long distance.
- Adjust the antenna and feeder line so that the standing-wave ratio can be kept smaller.
- Be sure to ground the radio to vehicle body.



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PREPARATION

PREPARATION

Special Service Tools

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NOTE:

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name		Description
(J-44321) Fuel pressure gauge kit	LEC642	Checking fuel pressure

Commercial Service Tools

INFOID:0000000002994707

Tool name (Kent-Moore No.)		Description
Leak detector i.e.: (J-41416)	S-NT703	Locating the EVAP leak
EVAP service port adapter i.e.: (J-41413-OBD)	S-NT704	Applying positive pressure through EVAP service port
Fuel filler cap adapter i.e.: (MLR-8382)	S-NT815	Checking fuel tank vacuum relief valve opening pressure
Socket wrench	19 mm (0.75 in) More than 32 mm (1.26 in)	Removing and installing engine coolant temperature sensor

PREPARATION

[FOR MEXICO] < PREPARATION >

Tool name (Kent-Moore No.)		Description	A
Oxygen sensor thread cleaner i.e.: (J-43897-18) (J-43897-12)	a Mating surface shave cylinder	Reconditioning the exhaust system threads before installing a new oxygen sensor. Use with antiseize lubricant shown below. a: 18 mm diameter with pitch 1.5 mm for Zirconia Oxygen Sensor b: 12 mm diameter with pitch 1.25 mm for Titania Oxygen Sensor	EO
Anti-seize lubricant i.e.: (Permatex TM 133AR or equivalent meeting MIL specifica-		Lubricating oxygen sensor thread cleaning tool when reconditioning exhaust system threads.	D
tion MIL-A-907)	S-NT779		E

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ON-VEHICLE MAINTENANCE

FUEL PRESSURE

Inspection INFOID:000000002994708

FUEL PRESSURE RELEASE

(P) With CONSULT-III

- 1. Turn ignition switch ON.
- Perform "FUEL PRESSURE RELEASE" in "WORK SUPPORT" mode with CONSULT-III.
- 3. Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.

With CONSULT-III

- 1. Remove fuel pump fuse located in IPDM E/R.
- 2. Start engine.
- 3. After engine stalls, crank it two or three times to release all fuel pressure.
- 4. Turn ignition switch OFF.
- 5. Reinstall fuel pump fuse after servicing fuel system.

FUEL PRESSURE CHECK

CAUTION:

Before disconnecting fuel line, release fuel pressure from fuel line to eliminate danger. NOTE:

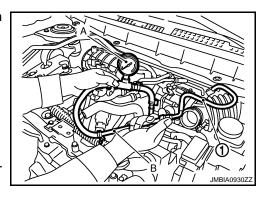
- Prepare pans or saucers under the disconnected fuel line because the fuel may spill out. The fuel pressure cannot be completely released because S35 models do not have fuel return system.
- Use Fuel Pressure Gauge Kit [SST (J-44321)] to check fuel pressure.
- 1. Release fuel pressure to zero.
- 2. Install fuel pressure gauge adapter [SST (J-44321-6)] (B) with fuel pressure gauge (A).
 - Fuel feed hose (1)
- 3. Turn ignition switch ON and check for fuel leakage.
- Start engine and check for fuel leakage.
- 5. Read the indication of fuel pressure gauge.

At idling : Approximately 350 kPa (3.57 kg/cm², 51 psi)

If result is unsatisfactory, check fuel hoses and fuel tubes for clogging.

If OK, Replace "fuel filter and fuel pump assembly".

If NG, Repair or replace.

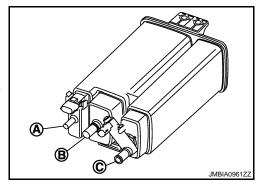


EVAP CANISTER

Inspection INFOID:0000000002994712

Check EVAP canister as follows:

- 1. Block port (B).
- 2. Blow air into port (A) and check that it flows freely out of port (C).
- 3. Release blocked port (B).
- 4. Apply vacuum pressure to port (B) and check that vacuum pressure exists at the ports (A) and (C).
- 5. Block port (A) and (B).
- 6. Apply pressure to port (C) and check that there is no leakage.



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SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[FOR MEXICO]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Idle Speed

Transmission	Condition	Specification
CVT	No load* (in P or N position)	$700 \pm 50 \text{ rpm}$

^{*:} Under the following conditions

- Electric load: OFF (Lights, heater fan & rear window defogger)
- Steering wheel: Kept in straight-ahead position

Ignition Timing

INFOID:0000000002994714

Transmission	Condition	Specification
CVT	No load* (in P or N position)	15 ± 5° BTDC

^{*:} Under the following conditions

- · A/C switch: OFF
- · Electric load: OFF (Lights, heater fan & rear window defogger)
- · Steering wheel: Kept in straight-ahead position

[·] A/C switch: OFF