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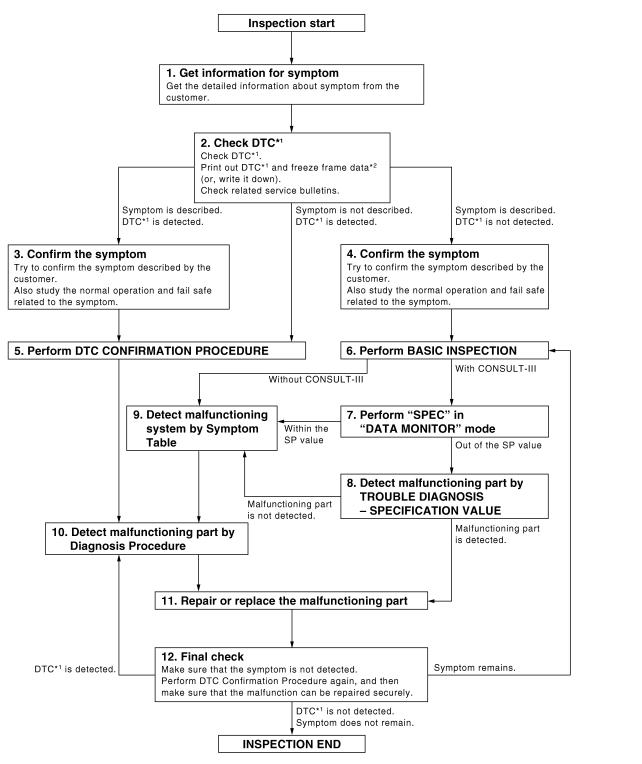
< BASIC INSPECTION > [QR25DE]

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

< BASIC INSPECTION > [QR25DE]

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 <u>EC-13</u>, "<u>Diagnostic Work Sheet</u>".)

>> 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.)
- Erase DTC. (Refer to EC-95, "Diagnosis Description".)
- Study the relationship between the cause detected by DTC and the symptom described by the customer. (Symptom Table is useful. Refer to EC-311, "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-315</u>, "<u>Description</u>" and <u>EC-284</u>, "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 <u>EC-315, "Description"</u> and <u>EC-284, "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-286, "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-42, "Intermittent Incident".

6.PERFORM BASIC INSPECTION

Perform EC-15, "BASIC INSPECTION: Special Repair Requirement".

Do you have CONSULT-III?

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >	[QR25DE]
YES >> GO TO 7. NO >> GO TO 9.	Α
7. PERFORM SPEC IN DATA MONITOR MODE	<i>p</i> -
(a) With CONSULT-III Make sure that "MAS A/F SE-B1", "B/FUEL SCHDL" and "A/F ALPHA-B1" are within the SP value SULT-III in "SPEC" of "DATA MONITOR" mode. Refer to EC-107, "Component Function Check" Is the measurement value within the SP value?	
YES >> GO TO 9. NO >> GO TO 8.	C
8. DETECT MALFUNCTIONING PART BY TROUBLE DIAGNOSIS - SPECIFICATION VALUE	Г
Detect malfunctioning part according to EC-108, "Diagnosis Procedure".	
Is malfunctioning part detected? YES >> GO TO 11. NO >> GO TO 9.	Е
9. DETECT MALFUNCTIONING SYSTEM BY SYMPTOM TABLE	=
Detect malfunctioning system according to <u>EC-311</u> , "Symptom Table" based on the confirme step 4, and determine the trouble diagnosis order based on possible causes and symptom.	
>> GO TO 10.	G
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 is also required for the circuit check in the Diagnosis Procedure. For details, refer to Circuit Inspection."	cuit inspection
Is malfunctioning part detected?	
YES >> GO TO 11. NO >> Monitor input data from related sensors or check the voltage of related ECM termina SULT-III. Refer to EC-274, "Reference Value".	lls using CON-
11. REPAIR OR REPLACE THE MALFUNCTIONING PART	K
 Repair or replace the malfunctioning part. Reconnect parts or connectors disconnected during Diagnosis Procedure again after repairment. 	r and replace-
3. Check DTC. If DTC is displayed, erase it. Refer to <u>EC-95, "Diagnosis Description"</u> .	
>> GO TO 12.	N
12. FINAL CHECK	
When DTC was detected in step 2, perform DTC CONFIRMATION PROCEDURE or Compo 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, a that the symptom is not detected.	and make sure
Is DTC detected and does symptom remain? YES-1 >> DTC is detected: GO TO 10. YES-2 >> Symptom remains: GO TO 6.	C
NO >> Before returning the vehicle to the customer, make sure to erase unnecessary DT TCM (Transmission Control Module). (Refer to EC-95 , "Diagnosis Description".)	C in ECM and
Diagnostic Work Sheet	INFOID:0000000006391586
DESCRIPTION	

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION > [QR25DE]

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 WORKSHEET SAMPLE in order to organize all the information for troubleshooting.

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 nar	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.		
	☐ 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 ☐ F☐ Others [ligh idle ☐ Low idle		
	☐ Driveability	☐ Stumble ☐ Surge ☐ Knock☐ Intake backfire ☐ Exhaust backfi☐ Others [☐ Intake backfire ☐ Exhaust backfire		
	☐ Engine stall	□ At the time of start □ While idling □ While accelerating □ While decelerating □ Just after stopping □ While loading			
Incident occur	Incident 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		
Engine conditions Cold During warm-up After warm-up Engine speed 0 2,000 4,000 6,000 8,000		· 			
Road conditions		☐ In town ☐ In suburbs ☐ Hig	hway 🔲 Off road (up/down)		
□ Not affected □ At starting □ While idling □ At racing □ While accelerating □ While cruising □ While decelerating □ While turning (RH/LH)		ing			
		Vehicle speed	30 40 50 60 MPH		
Malfunction in	ndicator lamp	☐ Turned on ☐ Not turned on			

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[QR25DE] < BASIC INSPECTION >

INSPECTION AND ADJUSTMENT BASIC INSPECTION

BASIC INSPECTION: Special Repair Requirement

INFOID:0000000006391587

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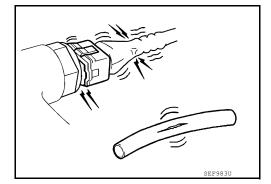
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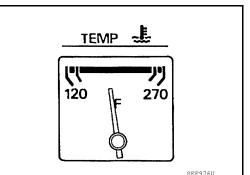
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1.INSPECTION START

- 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.





- 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 ECM [Diagnostic Test Mode II (self-diagnostic results)].

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 Diagnostic Procedure.

>> GO TO 3

3.CHECK TARGET IDLE SPEED

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

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< BASIC INSPECTION > [QR25DE]

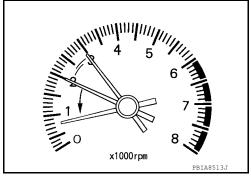
2. Rev engine (2,000 to 3,000 rpm) two or three times under no load, then run engine at idle speed for about 1 minute.

Check idle speed.

For procedure, refer to <u>EC-19</u>, "IDLE <u>SPEED</u>: <u>Special Repair Requirement</u>". For specification, refer to <u>EC-326</u>, "Idle <u>Speed</u>".

Is the inspection result normal?

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



4. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

- Stop engine.
- 2. Perform <u>EC-19</u>, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 5.

5. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 6.

6. PERFORM IDLE AIR VOLUME LEARNING

Perform EC-20, "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

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

For procedure, refer to EC-19, "IDLE SPEED: Special Repair Requirement".

For specification, refer to EC-326, "Idle Speed".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 8.

$oldsymbol{8}.$ DETECT MALFUNCTIONING PART

Check the Following.

- Check camshaft position sensor (PHASE) and circuit. Refer to EC-148, "DTC Logic".
- Check crankshaft position sensor (POS) and circuit. Refer to <u>EC-144, "DTC Logic"</u>.

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 <u>SEC-227</u>. "ECM RE-COMMUNICATING FUNCTION: Special Repair Requirement".

>> GO TO 4.

10. CHECK IGNITION TIMING

Run engine at idle.

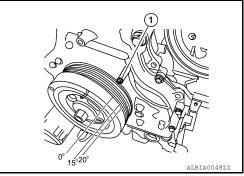
[QR25DE] < BASIC INSPECTION >

Check ignition timing with a timing light. For procedure, refer to EC-19, "IGNITION TIMING: Special Repair Requirement". For specification, refer to EC-326, "Ignition Timing".

1 : Timing indicator

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-19, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 12.

12.perform throttle valve closed position learning

Perform EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 13.

13. PERFORM IDLE AIR VOLUME LEARNING

Perform EC-20, "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

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

For procedure, refer to EC-19, "IDLE SPEED: Special Repair Requirement". For specification, refer to EC-326, "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-19, "IGNITION TIMING: Special Repair Requirement". For specification, refer to EC-326, "Ignition Timing".

1 : Timing indicator

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-53, "Removal and Installation".

Is the inspection result normal?

YES >> GO TO 17.

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

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< BASIC INSPECTION > [QR25DE]

17. DETECT MALFUNCTIONING PART

Check the following.

- Check camshaft position sensor (PHASE) and circuit. Refer to EC-148, "DTC Logic".
- Check crankshaft position sensor (POS) and circuit. Refer to EC-144, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 18.

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

18. 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 <u>SEC-227</u>, <u>"ECM RE-COMMUNICATING FUNCTION: Special Repair Requirement"</u>.

>> GO TO 4.

19. INSPECTION END

If ECM is replaced during this BASIC INSPECTION procedure, go to <u>EC-18</u>, "ADDITIONAL SERVICE WHEN <u>REPLACING CONTROL UNIT : Special Repair Requirement"</u>.

>> INSPECTION END

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Description

INFOID:0000000006391588

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 SEC-227, "ECM RE-COMMUNICATING FUNCTION: Special Repair Requirement".

>> GO TO 2.

2.PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-19, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3.perform throttle valve closed position learning

Refer to EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 4.

4. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-20, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END

IDLE SPEED

IDLE SPEED: Description

INFOID:0000000006391590

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

< BASIC INSPECTION > [QR25DE]

IDLE SPEED: Special Repair Requirement

INFOID:0000000006391591

INFOID:0000000006391592

INFOID:0000000006391593

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1. CHECK IDLE SPEED

(P)With CONSULT-III

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

Without CONSULT-III

Check engine speed by installing the pulse type tachometer clamp on the loop wire.

>> INSPECTION END

IGNITION TIMING

IGNITION TIMING: Description

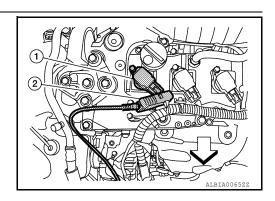
This describes how to check the ignition timing. For the actual procedure, follow the instructions in "BASIC INSPECTION".

IGNITION TIMING: Special Repair Requirement

1. CHECK IGNITION TIMING

1. Attach timing light to No. 1 ignition coil (1) wire as shown.

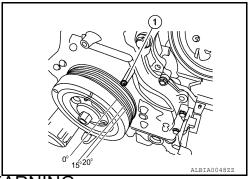
2 : Timing light ⟨□ : Vehicle front



2. Check ignition timing.

1 : Timing indicator

>> INSPECTION END



ACCELERATOR PEDAL RELEASED POSITION LEARNING

ACCELERATOR PEDAL RELEASED POSITION LEARNING: Description INFOID:0000000008391594

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.

EC-19

ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement

1.START

Revision: June 2012

- 1. Make sure that accelerator pedal is fully released.
- Turn ignition switch ON and wait at least 2 seconds.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

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< BASIC INSPECTION > [QR25DE]

- 4. 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

THROTTLE VALVE CLOSED POSITION LEARNING: Description

INFOID:0000000006391596

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:0000000006391597

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:0000000006391598

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:0000000006391599

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)
- Selector lever: P or N (CVT), Neutral (M/T)
- · Electric load switch: OFF

(Air conditioner, headlamp, rear window defogger)

- Steering wheel: Neutral (Straight-ahead position)
- · Vehicle speed: Stopped
- Transmission: Warmed-up
- CVT models
- 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.
- M/T models
- 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-19</u>. "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

[QR25DE] < BASIC INSPECTION >

- Perform Throttle Valve Closed Position Learning. Refer to EC-20. "THROTTLE VALVE CLOSED POSI-TION LEARNING: Special Repair Requirement".
- Start engine and warm it up to normal operating temperature. 3.
- Select "IDLE AIR VOL LEARN" in "WORK SUPPORT" mode.
- Touch "START" and wait 20 seconds.

Is "CMPLT" displayed on CONSULT-III screen?

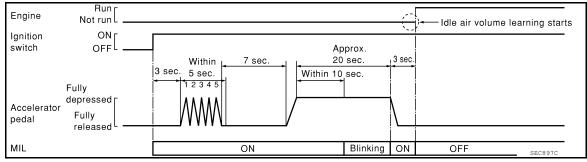
YES >> GO TO 4. NO >> GO TO 5.

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 EC-19. "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement"
- Perform Throttle Valve Closed Position Learning. Refer to EC-20, "THROTTLE VALVE CLOSED POSI-TION LEARNING: Special Repair Requirement".
- Start engine and warm it up to normal operating temperature. 3.
- Turn ignition switch OFF and wait at least 10 seconds.
- Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- Repeat the following procedure quickly five times within 5 seconds.
- Fully depress the accelerator pedal.
- Fully release the accelerator pedal.
- 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.
- 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	CVT: 650 ± 50 rpm (in P or N position) M/T: 650 ± 50 rpm (in Neutral position)
Ignition timing	CVT: $15 \pm 5^{\circ}$ (in P or N position) M/T: $15 \pm 5^{\circ}$ (in Neutral position)

Is the inspection result normal?

YES >> INSPECTION END

5. DETECT MALFUNCTIONING PART

Check the following

Revision: June 2012

Check that throttle valve is fully closed.

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< BASIC INSPECTION > [QR25DE]

- 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 <u>EC-107</u>, "<u>Description</u>". 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

INFOID:0000000006391600

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:0000000006391601

1.START

(I) With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. Select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CONSULT-III.
- 3. Clear mixture ratio self-learning value by touching "CLEAR".

®Without CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 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. Turn ignition switch ON.
- 7. Check DTC and confirm that DTC P0102 is detected.
- 8. Erase the DTC P0102.

>> END

[QR25DE]

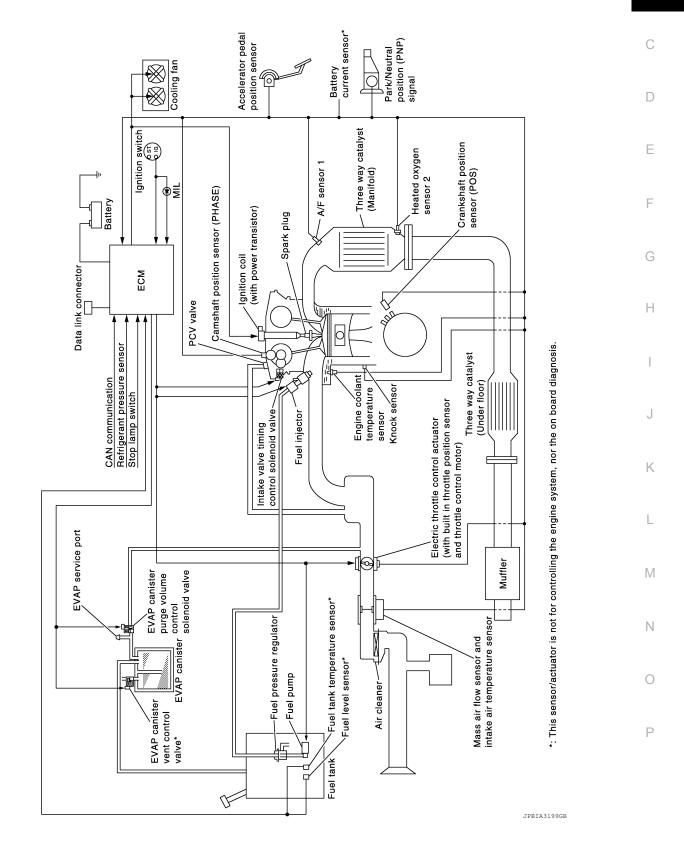
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SYSTEM DESCRIPTION

ENGINE CONTROL SYSTEM

System Diagram



[QR25DE]

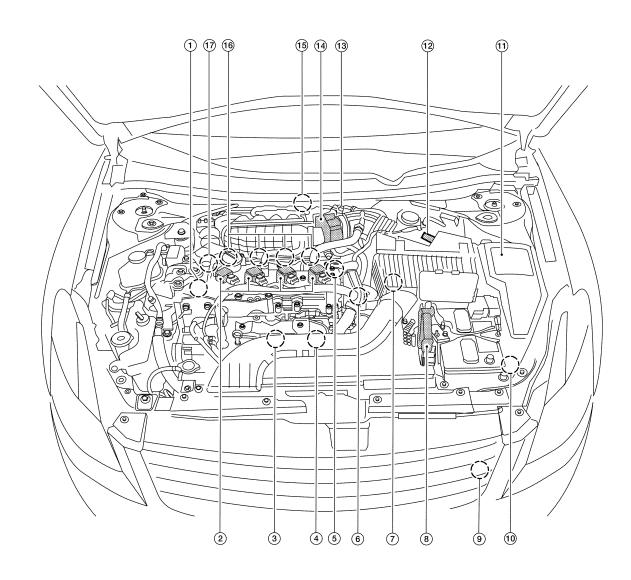
System Description

INFOID:0000000006391603

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

Component Parts Location

INFOID:0000000006391604



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- Intake valve timing control solenoid valve
- 4. Air fuel ratio (A/F) sensor 1
- Transmission range switch (CVT models)
 Park/neutral position (PNP) switch (M/T models)
- 10. Battery current sensor

- Ignition coil (with power transistor) and spark plug
- 5. Camshaft position sensor (PHASE) 6.
- 8. ECM
- 11. IPDM E/R

- Knock sensor, Crankshaft position sensor (POS)
- Engine coolant temperature sensor
- 9. Refrigerant pressure sensor
- 12. Mass air flow sensor (with intake temperature sensor)

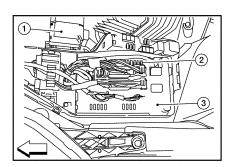
ENGINE CONTROL SYSTEM

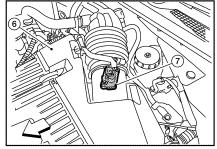
< SYSTEM DESCRIPTION > [QR25DE]

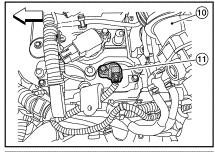
- 13. EVAP service port
- Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 15. EVAP canister purge volume control solenoid valve

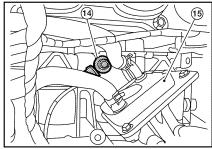
16. Fuel injector

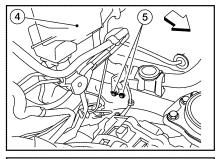
17. Power steering pressure sensor

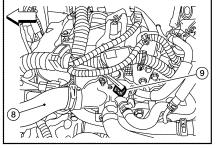


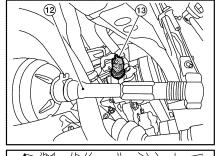


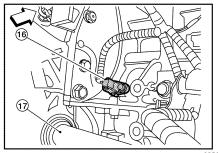












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- 1. Battery
- 4. Brake master cylinder
- Mass air flow sensor (with intake air 8. temperature sensor)
- 10. Intake air duct
- 13. Power steering pressure sensor
- 16. Crankshaft position sensor (POS)
- ∀ : Vehicle front

- 2. Fuel pump fuse (15A)
- 5. Engine ground
- 8. Radiator hose (upper)
- 11. Camshaft position sensor (PHASE)
- 14. Knock sensor
- 17. Drive shaft (RH)

- 3. IPDM E/R
- 6. Air cleaner assembly
- 9. Engine coolant temperature sensor
- 12. Tie rod (RH)
- 15. Engine oil cooler

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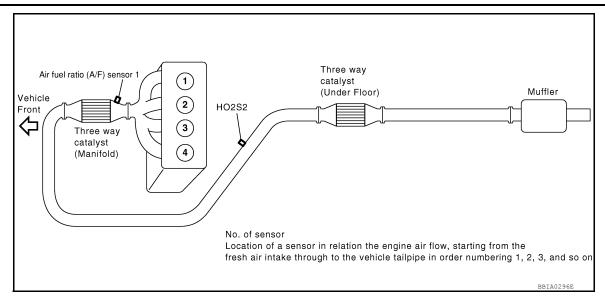
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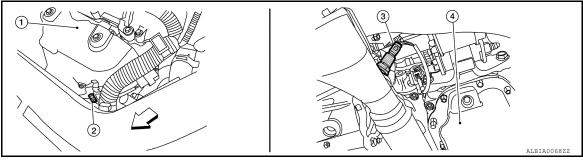
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- 1. Exhaust manifold cover
- 2. Air fuel ratio (A/F) sensor 1
- Heated oxygen sensor 2 (This illustration is a view from under vehicle.)

- 4. Engine oil pan
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 □: Vehicle front

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EVAP canister purge volume control solenoid valve

Park/neutral position (PNP) switch (M/T models) (This illustration is view with air cleaner assembly removed.)

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9. Air fuel ratio (A/F) sensor 1

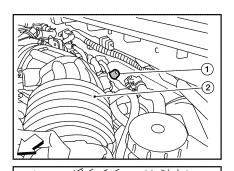
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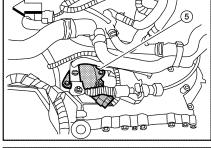
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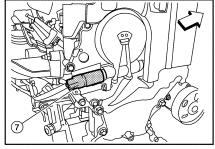
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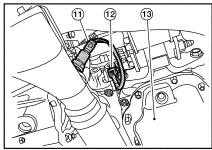
12. Heated oxygen sensor 2 harness connector

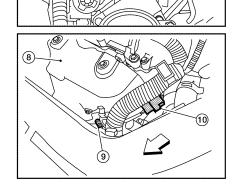
(This illustration is view from under vehicle.)











1. EVAP service port

2. Intake air duct

4. Intake manifold collector

 Transmission range switch (CVT models) 6. (This illustration is view with air cleaner assembly removed.)

solenoid valve (This illustration is view with engine removed.)

Intake valve timing control

8. Exhaust manifold cover

10. Air fuel ratio (A/F) sensor 1 11. Heated oxygen sensor 2 harness connector (This illustration is view fi

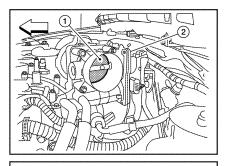
 Heated oxygen sensor 2 (This illustration is view from under vehicle.)

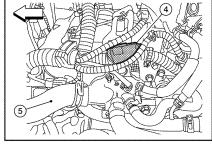
13. Engine oil pan

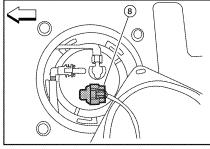
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 □: Vehicle front

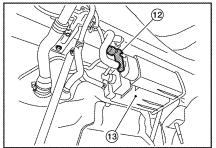
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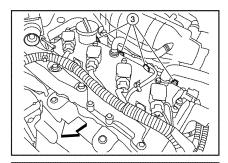
Revision: June 2012 EC-27 2011 Altima GCC

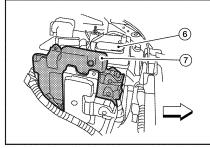


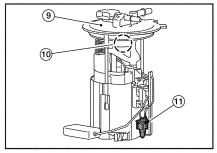










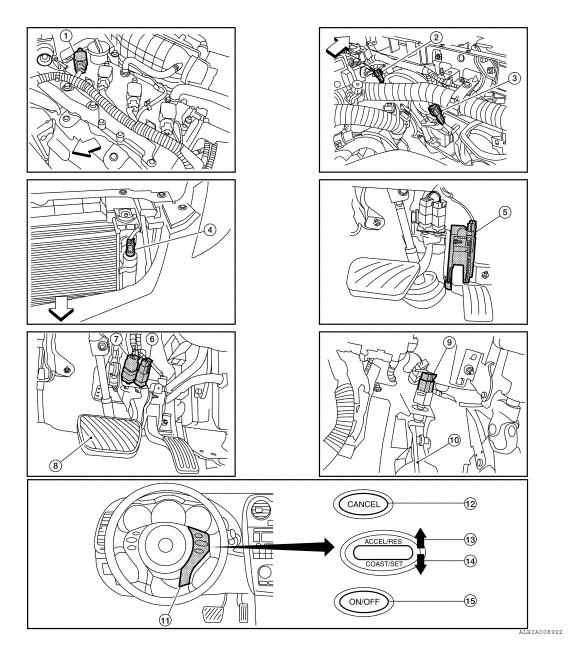


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- Throttle valve (This illustration is view with intake air duct removed.)
- 4. Condenser-2
- 7. ECM
- 10. Fuel pressure regulator
- EVAP canister (This illustration is view with rear suspension member removed.)

- 2. Electric throttle control actuator
- 5. Radiator hose (upper)
- Fuel level sensor unit and fuel pump 9. harness connector
 (This illustration is view with rear seat cushion and inspection hole cover removed.)
- 11. Fuel tank temperature sensor

- 3. Fuel injector harness connector
- 6. Battery
- Fuel level sensor unit and fuel pump assembly
- EVAP canister vent control valve (This illustration is view with rear suspension member removed.)



- 1. No.1 ignition coil
- 4. Refrigerant pressure sensor
- 7. Stop lamp switch
- 10. Clutch pedal
- 13. RESUME/ACCELERATE switch
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 □: Vehicle front

- 2. Cooling fan motor-1 harness connector
- 5. Accelerator pedal position sensor
- 8. Brake pedal
- 11. ASCD steering switch
- 14. SET/COAST switch
- 3. Cooling fan motor-2 harness connector
- 6. ASCD brake switch
- 9. ASCD clutch switch
- 12. CANCEL switch
- 15. MAIN switch

Component Description

INFOID:0000000006391605

Component	Reference
A/F sensor 1	EC-228. "Description"
A/F sensor 1 heater	EC-231, "Description"
Accelerator pedal position sensor	EC-208, "Description"
ASCD brake switch	EC-179, "Description"

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ENGINE CONTROL SYSTEM

< SYSTEM DESCRIPTION >

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Component	Reference
ASCD steering switch	EC-176, "Description"
Camshaft position sensor (PHASE)	EC-148, "Description"
Crankshaft position sensor (POS)	EC-144, "Description"
Cooling fan motor	EC-67, "System Description"
Electric throttle control actuator	EC-206, "Description"
Engine coolant temperature sensor	EC-133, "Description"
EVAP canister purge volume control solenoid valve	EC-241, "Description"
Fuel injector	EC-247, "Description"
Fuel pump	EC-250, "Description"
Heated oxygen sensor 2	EC-254, "Description"
Heated oxygen sensor 2 heater	EC-259, "Description"
Ignition signal	EC-264, "Description"
Intake air temperature sensor	EC-262, "Description"
Intake valve timing control solenoid valve	EC-87. "System Description"
Knock sensor	EC-142, "Description"
Mass air flow sensor	EC-128, "Description"
PCV valve	EC-270, "Description"
Power steering pressure sensor	EC-154, "Description"
Refrigerant pressure sensor	EC-271, "Description"
Stop lamp switch	EC-193, "Description"
Throttle control motor	EC-204, "Description"
Throttle control motor relay	EC-198, "Description"
Throttle position sensor	EC-136, "Description"

[QR25DE]

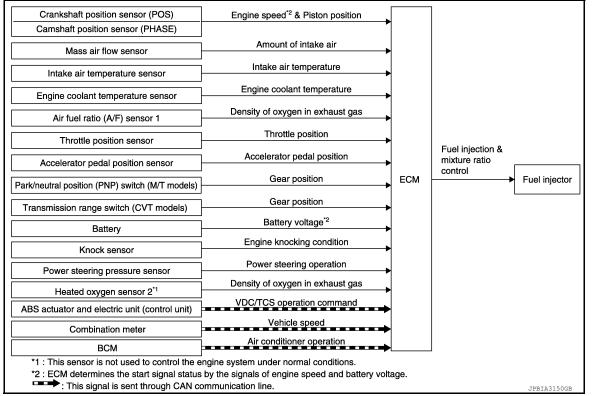
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MULTIPORT FUEL INJECTION SYSTEM

System Diagram



System Description

INFOID:0000000006391607

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	Fuel injection & mixture ratio control	Fuel injector		
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				
Transmission range switch (CVT models) Park/neutral position (PNP) switch (M/T models)	Gear position				
Battery	Battery voltage*3				
Knock sensor	Engine knocking condition				
Power steering pressure sensor	Power steering operation				
Heated oxygen sensor 2*1	Density of oxygen in exhaust gas				
ABS actuator and electric unit (control unit)	ABS operation command*2				
BCM	Air conditioner operation* ²				
Combination meter	Vehicle speed*2				

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

Revision: June 2012 EC-31 2011 Altima GCC

MULTIPORT FUEL INJECTION SYSTEM

[QR25DE]

< SYSTEM DESCRIPTION >

- *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.

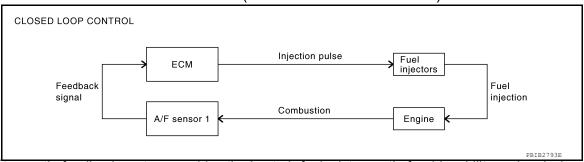
<Fuel increase>

- During warm-up
- · When starting the engine
- During acceleration
- · Hot-engine operation
- When selector lever is changed from N to D (CVT models)
- · 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-228, "Description". 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 (CVT models)
- 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

< SYSTEM DESCRIPTION >

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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.

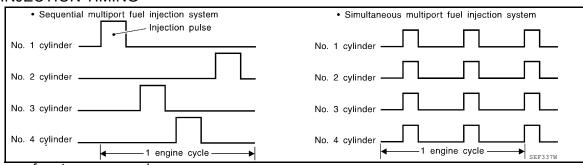
Accordingly, the difference between the basic and theoretical mixture ratios is monitored in this system. This is then computed in terms of "injection pulse duration" to automatically compensate for the difference between the two ratios.

"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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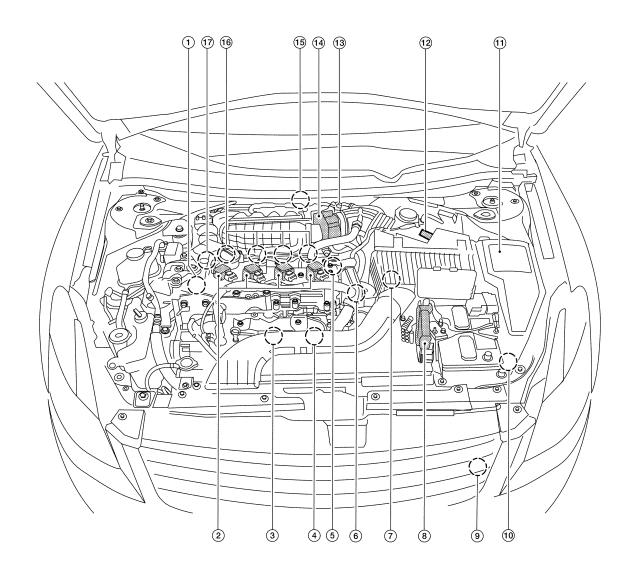
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Component Parts Location

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- Intake valve timing control solenoid valve
- 4. Air fuel ratio (A/F) sensor 1
- Transmission range switch (CVT models)
 Park/neutral position (PNP) switch (M/T models)
- 10. Battery current sensor
- 13. EVAP service port
- 16. Fuel injector

- Ignition coil (with power transistor) and spark plug
- 5. Camshaft position sensor (PHASE)
- 8. ECM
- 11. IPDM E/R
- Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 17. Power steering pressure sensor

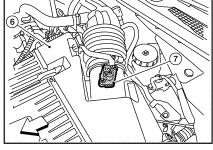
- Knock sensor,
 Crankshaft position sensor (POS)
- 6. Engine coolant temperature sensor
- 9. Refrigerant pressure sensor
- 12. Mass air flow sensor (with intake temperature sensor)
- 15. EVAP canister purge volume control solenoid valve

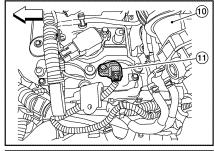
MULTIPORT FUEL INJECTION SYSTEM

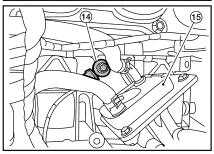
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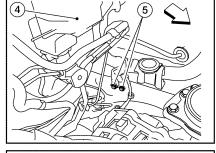
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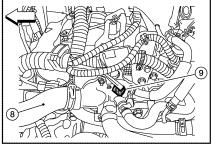
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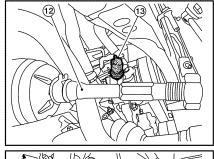


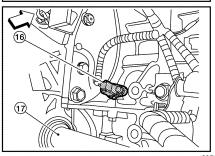












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- 1. Battery
- 4. Brake master cylinder
- 7. Mass air flow sensor (with intake air 8. temperature sensor)
- 10. Intake air duct
- 13. Power steering pressure sensor
- 16. Crankshaft position sensor (POS)
- ∀
 □: Vehicle front

- 2. Fuel pump fuse (15A)
- 5. Engine ground
- 8. Radiator hose (upper)
- 11. Camshaft position sensor (PHASE)
- 14. Knock sensor
- 17. Drive shaft (RH)

- 3. IPDM E/R
- 6. Air cleaner assembly
- 9. Engine coolant temperature sensor
- 12. Tie rod (RH)
- 15. Engine oil cooler

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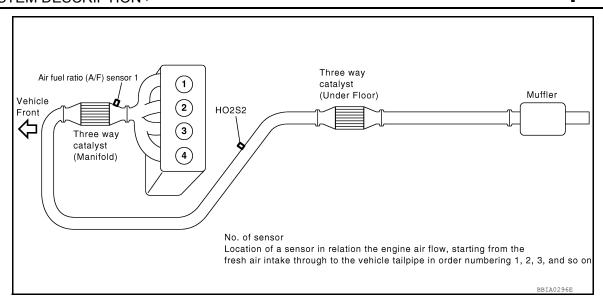
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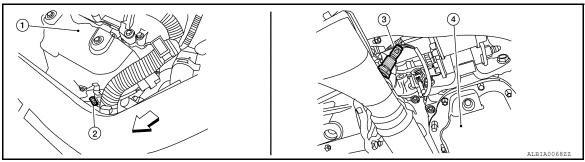
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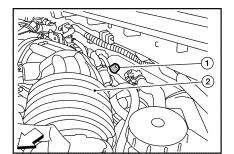
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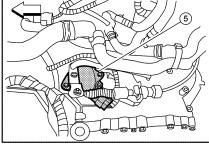


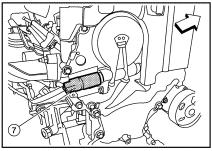


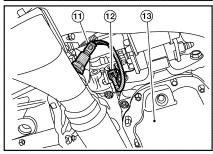
- 1. Exhaust manifold cover
- 2. Air fuel ratio (A/F) sensor 1
- Heated oxygen sensor 2 (This illustration is a view from under vehicle.)

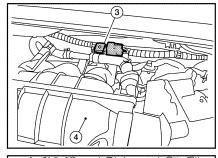
- 4. Engine oil pan
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 □: Vehicle front

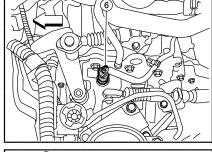


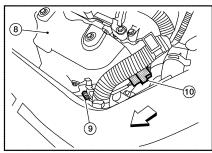












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EVAP service port 1.

2. Intake air duct 3. EVAP canister purge volume control solenoid valve

Intake manifold collector

Transmission range switch (CVT models) 6. (This illustration is view with air cleaner assembly removed.)

Park/neutral position (PNP) switch (M/T models) (This illustration is view with air cleaner assembly removed.)

7. Intake valve timing control solenoid valve (This illustration is view with engine removed.)

8. Exhaust manifold cover 9. Air fuel ratio (A/F) sensor 1

harness connector

10. Air fuel ratio (A/F) sensor 1 11. Heated oxygen sensor 2 (This illustration is view from under vehicle.)

12. Heated oxygen sensor 2 harness con-

13. Engine oil pan

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 □: Vehicle front

(This illustration is view from under vehicle.)

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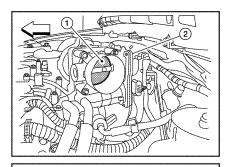
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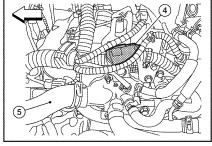
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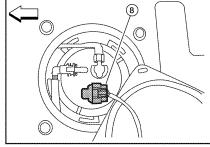
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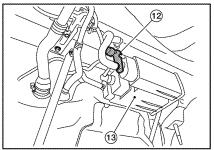
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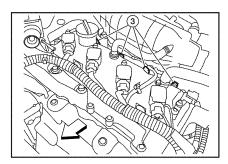
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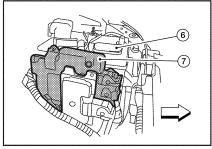


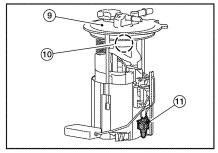










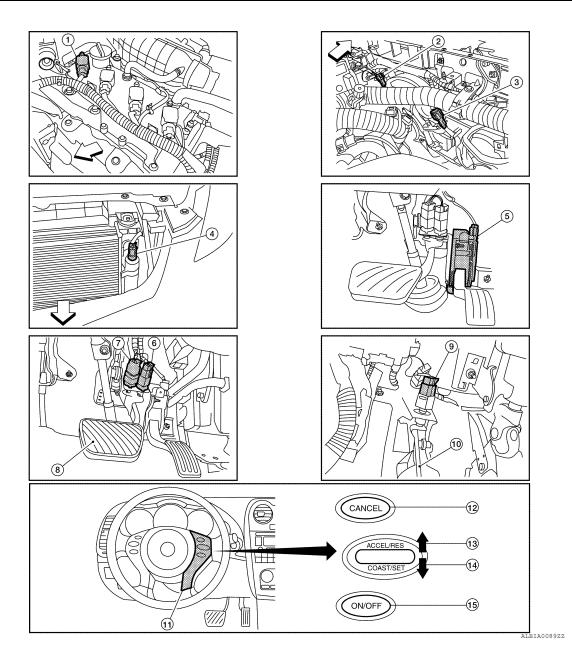


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- Throttle valve (This illustration is view with intake air duct removed.)
- 4. Condenser-2
- 7. ECM
- 10. Fuel pressure regulator
- EVAP canister (This illustration is view with rear suspension member removed.)
- ⟨□ : Vehicle front

- 2. Electric throttle control actuator
- 5. Radiator hose (upper)
- Fuel level sensor unit and fuel pump 9. harness connector
 (This illustration is view with rear seat cushion and inspection hole cover removed.)
- 11. Fuel tank temperature sensor

- 3. Fuel injector harness connector
- 6. Battery
 - Fuel level sensor unit and fuel pump assembly
- EVAP canister vent control valve (This illustration is view with rear suspension member removed.)



- 1. No.1 ignition coil
- 4. Refrigerant pressure sensor
- 7. Stop lamp switch
- 10. Clutch pedal
- 13. RESUME/ACCELERATE switch
- ⟨□: Vehicle front

- 2. Cooling fan motor-1 harness connector
- 5. Accelerator pedal position sensor
- 8. Brake pedal
- 11. ASCD steering switch
- 14. SET/COAST switch
- 3. Cooling fan motor-2 harness connector
- 6. ASCD brake switch
- 9. ASCD clutch switch
- 12. CANCEL switch
- 15. MAIN switch

Component Description

INFOID:0000000006391609

Component	Reference
A/F sensor 1	EC-228, "Description"
Accelerator pedal position sensor	EC-208, "Description"
Camshaft position sensor (PHASE)	EC-148, "Description"
Crankshaft position sensor (POS)	EC-144, "Description"

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MULTIPORT FUEL INJECTION SYSTEM

< SYSTEM DESCRIPTION >

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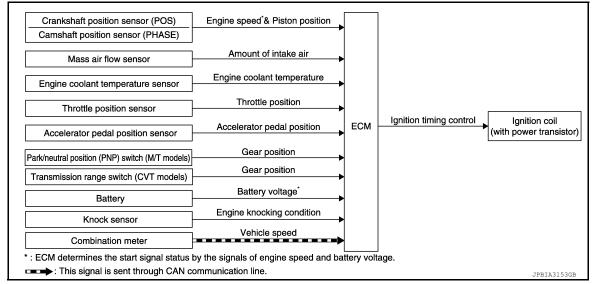
Component	Reference
Engine coolant temperature sensor	EC-133, "Description"
Fuel injector	EC-247, "Description"
Heated oxygen sensor 2	EC-254, "Description"
Intake air temperature sensor	EC-262, "Description"
Knock sensor	EC-142, "Description"
Mass air flow sensor	EC-128, "Description"
Power steering pressure sensor	EC-154, "Description"
Throttle position sensor	EC-136, "Description"
Vehicle speed sensor	EC-152, "Description"

[QR25DE]

ELECTRIC IGNITION SYSTEM

System Diagram

INFOID:0000000006391610



System Description

INFOID:0000000006391611

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			
Mass air flow sensor	Amount of intake air			
Engine coolant temperature sensor	Engine coolant temperature			
Throttle position sensor	Throttle position			
Accelerator pedal position sensor	Accelerator pedal position	Ignition timing control	Ignition coil (with power transistor)	
Battery	Battery voltage*2			
Knock sensor	Engine knocking			
Transmission range switch (CVT models) Park/neutral position (PNP) switch (M/T models)	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

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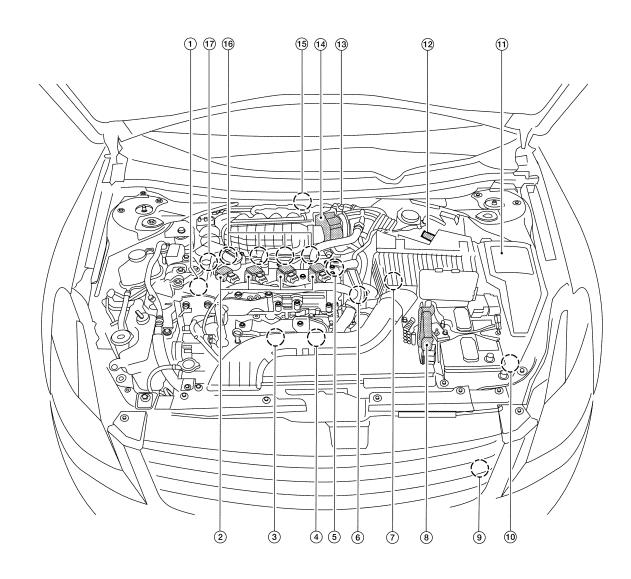
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^{*2:} ECM determines the start signal status by the signals of engine speed and battery voltage.

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

INFOID:0000000006391612



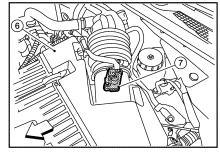
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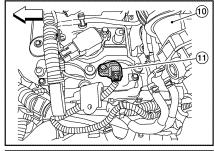
- Intake valve timing control solenoid valve
- Air fuel ratio (A/F) sensor 1
- Transmission range switch (CVT models) Park/neutral position (PNP) switch (M/T models)
- 10. Battery current sensor
- 13. EVAP service port

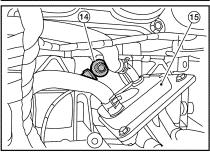
- 16. Fuel injector

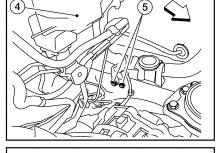
- Ignition coil (with power transistor) and spark plug
- 5. Camshaft position sensor (PHASE)
- 8. **ECM**
- 11. IPDM E/R
- 14. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 17. Power steering pressure sensor

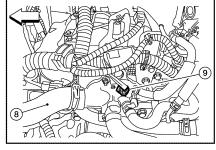
- 3. Knock sensor, Crankshaft position sensor (POS)
- Engine coolant temperature sensor
- Refrigerant pressure sensor
- 12. Mass air flow sensor (with intake temperature sensor)
- 15. EVAP canister purge volume control solenoid valve

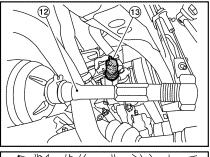


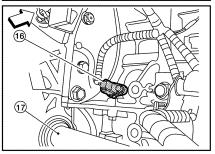












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- 1. Battery
- 4. Brake master cylinder
- 7. Mass air flow sensor (with intake air 8. temperature sensor)
- 10. Intake air duct
- 13. Power steering pressure sensor
- 16. Crankshaft position sensor (POS)
- ∀
 □: Vehicle front

- 2. Fuel pump fuse (15A)
- 5. Engine ground
- 8. Radiator hose (upper)
- 1. Camshaft position sensor (PHASE)
- 14. Knock sensor
- 17. Drive shaft (RH)

- 3. IPDM E/R
- 6. Air cleaner assembly
- 9. Engine coolant temperature sensor
- 12. Tie rod (RH)
- 15. Engine oil cooler

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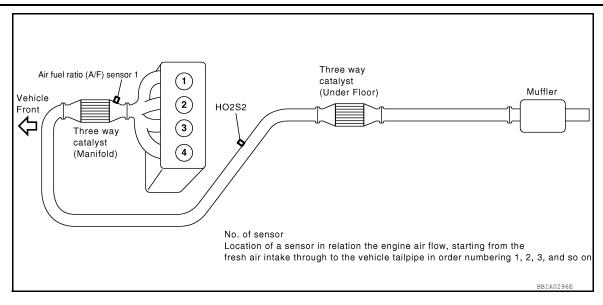
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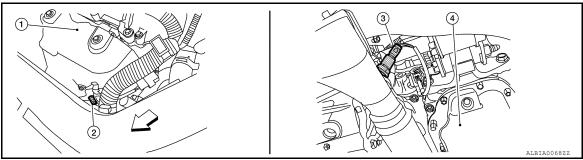
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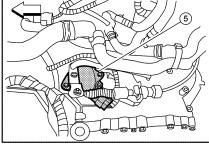
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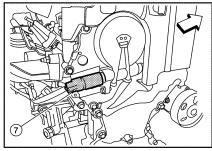


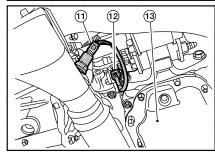


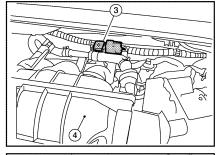
- 1. Exhaust manifold cover
- 2. Air fuel ratio (A/F) sensor 1
- Heated oxygen sensor 2 (This illustration is a view from under vehicle.)

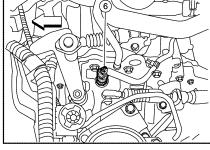
- 4. Engine oil pan
- ∀
 : Vehicle front

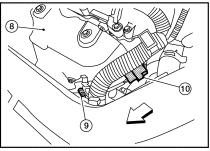












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- EVAP service port 1.
- Intake manifold collector
- 7. Intake valve timing control solenoid valve (This illustration is view with engine removed.)
- 10. Air fuel ratio (A/F) sensor 1 11. Heated oxygen sensor 2 harness connector

- 13. Engine oil pan
- ∀
 □: Vehicle front

- 2. Intake air duct
- Transmission range switch (CVT models) 6. (This illustration is view with air cleaner assembly removed.)
- 8. Exhaust manifold cover
- (This illustration is view from under vehicle.)

- 3. EVAP canister purge volume control solenoid valve
 - Park/neutral position (PNP) switch (M/T models) (This illustration is view with air cleaner assembly removed.)
- 9. Air fuel ratio (A/F) sensor 1
- 12. Heated oxygen sensor 2 harness con-
 - (This illustration is view from under vehicle.)

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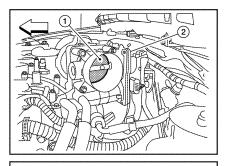
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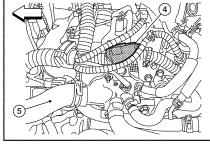
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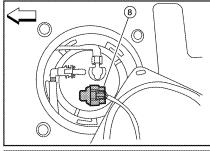
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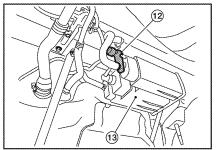
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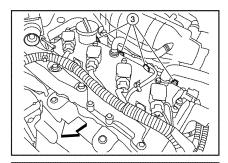
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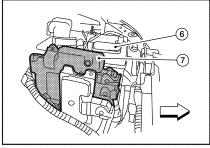


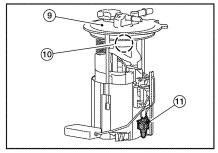












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- Throttle valve (This illustration is view with intake air duct removed.)
- 4. Condenser-2
- 7. ECM
- 10. Fuel pressure regulator
- EVAP canister (This illustration is view with rear suspension member removed.)

- 2. Electric throttle control actuator
- 5. Radiator hose (upper)
- Fuel level sensor unit and fuel pump 9. harness connector
 (This illustration is view with rear seat cushion and inspection hole cover removed.)
- 11. Fuel tank temperature sensor

- 3. Fuel injector harness connector
- 6. Battery
 - Fuel level sensor unit and fuel pump assembly
- EVAP canister vent control valve (This illustration is view with rear suspension member removed.)

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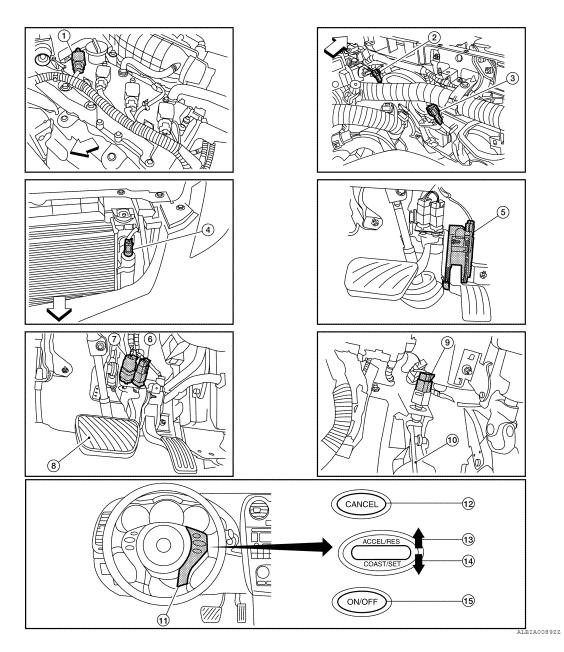
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- 1. No.1 ignition coil
- 4. Refrigerant pressure sensor
- 7. Stop lamp switch
- 10. Clutch pedal
- 13. RESUME/ACCELERATE switch
- ∀
 □: Vehicle front

- 2. Cooling fan motor-1 harness connector
- 5. Accelerator pedal position sensor
- 8. Brake pedal
- 11. ASCD steering switch
- 14. SET/COAST switch
- 3. Cooling fan motor-2 harness connector
- 6. ASCD brake switch
- 9. ASCD clutch switch
- 12. CANCEL switch
- 15. MAIN switch

Component Description

INFOID:0000000006391613

Component	Reference
Accelerator pedal position sensor	EC-208. "Description"
Camshaft position sensor (PHASE)	EC-148. "Description"
Crankshaft position sensor (POS)	EC-144, "Description"
Engine coolant temperature sensor	EC-133, "Description"

ELECTRIC IGNITION SYSTEM

< SYSTEM DESCRIPTION >

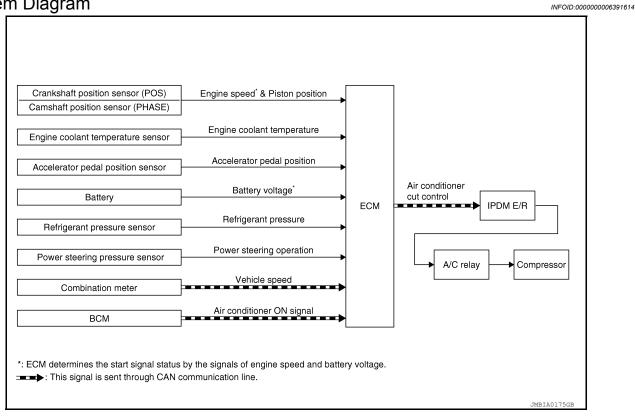
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Component	Reference
Ignition signal	EC-264, "Description"
Knock sensor	EC-142, "Description"
Mass air flow sensor	EC-128, "Description"
Throttle position sensor	EC-136, "Description"
Vehicle speed sensor	EC-152, "Description"

[QR25DE]

AIR CONDITIONING CUT CONTROL

System Diagram



System Description

INPUT/OUTPUT SIGNAL CHART

Sensor	Input Signal to ECM	ECM function	Actuator
Air conditioner switch*1	Air conditioner ON signal		
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	Air conditioner	↓ ↓
Battery	Battery voltage*2	cut control	Air conditioner relay ↓
Refrigerant pressure sensor	Refrigerant pressure		Compressor
Power steering pressure sensor	Power steering operation		
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.

Revision: June 2012

- When the engine coolant temperature becomes excessively high.
- When operating power steering during low engine speed or low vehicle speed.

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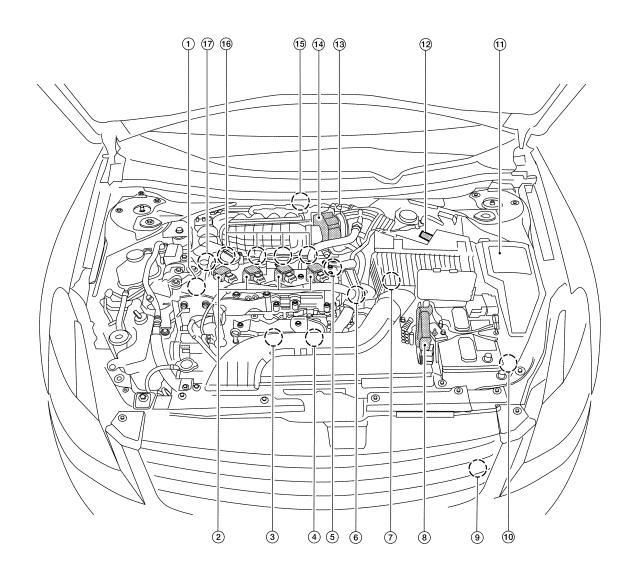
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^{*2:} ECM determines the start signal status by the signals of engine speed and battery voltage.

- When engine speed is excessively low.
- · When refrigerant pressure is excessively low or high.

Component Parts Location

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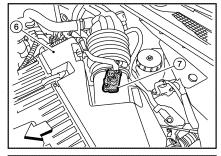
- Intake valve timing control solenoid valve
- 4. Air fuel ratio (A/F) sensor 1
- Transmission range switch (CVT models)
 Park/neutral position (PNP) switch (M/T models)
- 10. Battery current sensor
- 13. EVAP service port

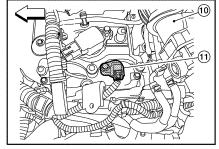
- Ignition coil (with power transistor) and spark plug
- 5. Camshaft position sensor (PHASE)
- 8. ECM
- 11. IPDM E/R
- Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 17. Power steering pressure sensor

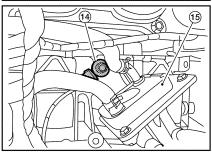
- Knock sensor, Crankshaft position sensor (POS)
- 6. Engine coolant temperature sensor
- 9. Refrigerant pressure sensor
- 12. Mass air flow sensor (with intake temperature sensor)
- 15. EVAP canister purge volume control solenoid valve

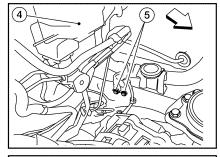
16. Fuel injector

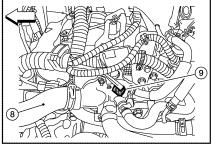
Revision: June 2012 EC-50

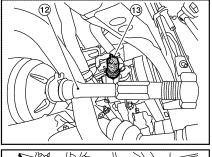


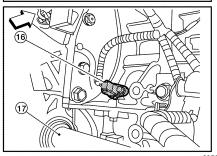












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- 1. Battery
- 4. Brake master cylinder
- 7. Mass air flow sensor (with intake air 8. temperature sensor)
- 10. Intake air duct
- 13. Power steering pressure sensor
- 16. Crankshaft position sensor (POS)
- ∀
 □: Vehicle front

- 2. Fuel pump fuse (15A)
- 5. Engine ground
- 8. Radiator hose (upper)
- Camshaft position sensor (PHASE)
- 14. Knock sensor
- 17. Drive shaft (RH)

- 3. IPDM E/R
- 6. Air cleaner assembly
- 9. Engine coolant temperature sensor
- 12. Tie rod (RH)
- 15. Engine oil cooler

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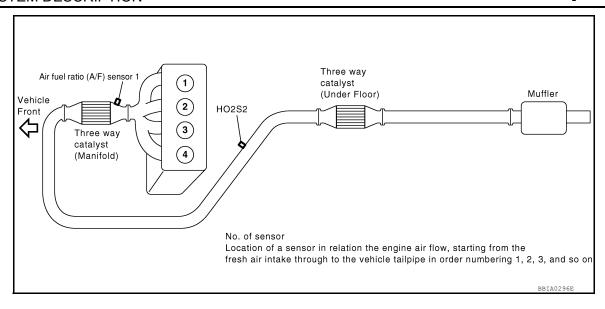
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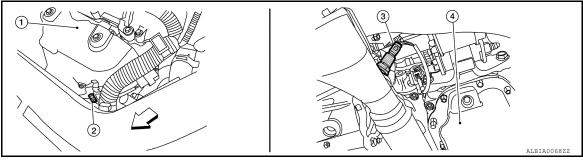
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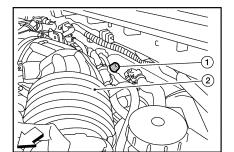
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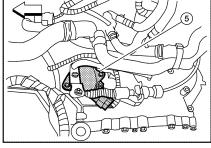


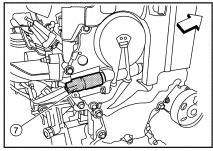


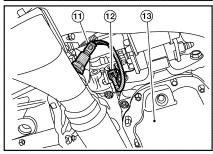
- 1. Exhaust manifold cover
- 2. Air fuel ratio (A/F) sensor 1
- Heated oxygen sensor 2 (This illustration is a view from under vehicle.)

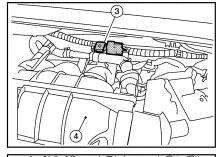
- 4. Engine oil pan
- ∀
 □: Vehicle front

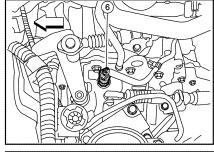


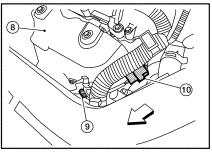












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- EVAP service port 1.
- Intake manifold collector
- Intake valve timing control solenoid valve (This illustration is view with engine removed.)
- 10. Air fuel ratio (A/F) sensor 1 11. Heated oxygen sensor 2
- harness connector
- 13. Engine oil pan
- ∀
 □: Vehicle front

- 2. Intake air duct
- Transmission range switch (CVT models) 6. (This illustration is view with air cleaner assembly removed.)
- Exhaust manifold cover
- (This illustration is view from under vehicle.)

- 3. EVAP canister purge volume control solenoid valve
 - Park/neutral position (PNP) switch (M/T models) (This illustration is view with air cleaner assembly removed.)
- 9. Air fuel ratio (A/F) sensor 1
- 12. Heated oxygen sensor 2 harness con-
 - (This illustration is view from under vehicle.)

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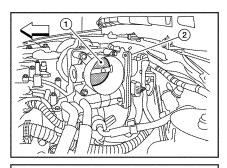
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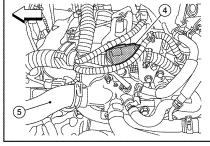
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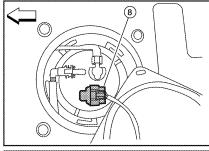
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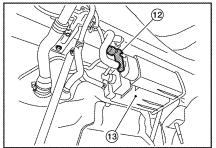
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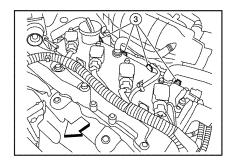
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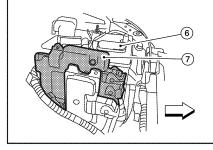


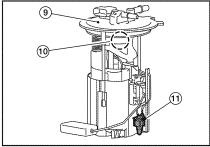










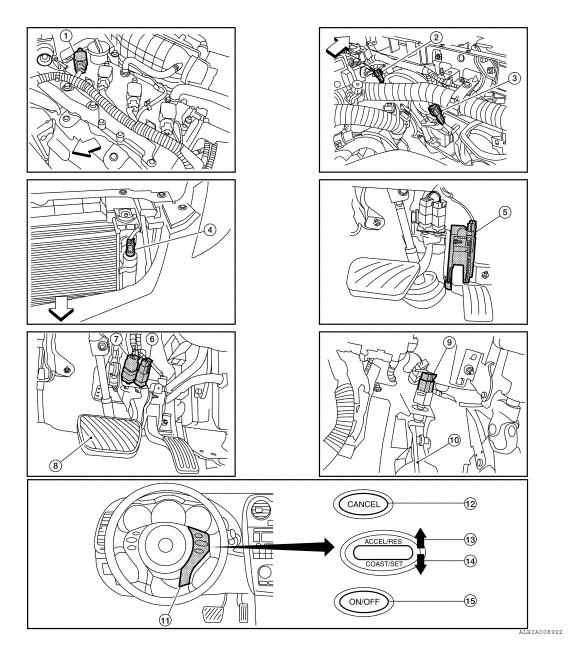


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- Throttle valve (This illustration is view with intake air duct removed.)
- 4. Condenser-2
- 7. ECM
- 10. Fuel pressure regulator
- EVAP canister (This illustration is view with rear suspension member removed.)
- ⟨□ : Vehicle front

- 2. Electric throttle control actuator
- 5. Radiator hose (upper)
- Fuel level sensor unit and fuel pump 9. harness connector
 (This illustration is view with rear seat cushion and inspection hole cover removed.)
- 11. Fuel tank temperature sensor

- 3. Fuel injector harness connector
- 6. Battery
- Fuel level sensor unit and fuel pump assembly
- EVAP canister vent control valve (This illustration is view with rear suspension member removed.)



- 1. No.1 ignition coil
- 4. Refrigerant pressure sensor
- 7. Stop lamp switch
- 10. Clutch pedal
- 13. RESUME/ACCELERATE switch
- ∀
 □: Vehicle front

- 2. Cooling fan motor-1 harness connector
- 5. Accelerator pedal position sensor
- 8. Brake pedal
- 11. ASCD steering switch
- 14. SET/COAST switch
- 3. Cooling fan motor-2 harness connector
- 6. ASCD brake switch
- 9. ASCD clutch switch
- 12. CANCEL switch
- 15. MAIN switch

Component Description

INFOID:0000000006391617

Component	Reference
Accelerator pedal position sensor	EC-208. "Description"
Camshaft position sensor (PHASE)	EC-148. "Description"
Crankshaft position sensor (POS)	EC-144, "Description"
Engine coolant temperature sensor	EC-133, "Description"

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AIR CONDITIONING CUT CONTROL

< SYSTEM DESCRIPTION >

[QR25DE]

Component	Reference
Power steering pressure sensor	EC-154, "Description"
Refrigerant pressure sensor	EC-271, "Description"
Vehicle speed sensor	EC-152, "Description"

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

< SYSTEM DESCRIPTION >

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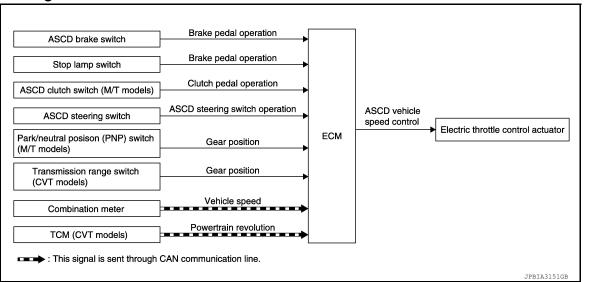
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AUTOMATIC SPEED CONTROL DEVICE (ASCD)

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		
ASCD clutch switch (M/T models)	Clutch pedal operation		
ASCD steering switch	ASCD steering switch operation	ASCD vehicle speed control	Electric throttle control actuator
Transmission range switch (CVT models) Park/neutral position (PNP) switch (M/T models)	Gear position		
Combination meter	Vehicle speed*		
TCM (CVT models)	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 180 km/h (112 MPH).

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

The ASCD operation status is indicated by two indicators (CRUISE and SET on the information display) on the combination meter. If any malfunction occurs in ASCD system, SET indicator blinks and ASCD control is deactivated.

NOTE:

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

SET OPERATION

Press MAIN switch. (CRUISE is indicated on the information display.)

When vehicle speed reaches a desired speed between approximately 40 km/h (25 MPH) and 180 km/h (112 MPH), press SET/COAST switch. (Then SET is indicated on the information display.)

ACCELERATE OPERATION

EC-57 Revision: June 2012 2011 Altima GCC

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

< SYSTEM DESCRIPTION >

[QR25DE]

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
- Clutch pedal is depressed or gear position is changed to neutral position. (M/T models)
- Selector lever is changed to N, P, and R position (CVT models)
- 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 indicators.

- Engine coolant temperature is slightly higher than the normal operating temperature, CRUISE indicator may blink slowly.
 - When the engine coolant temperature decreases to the normal operating temperature, CRUISE indicator 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 indicator 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

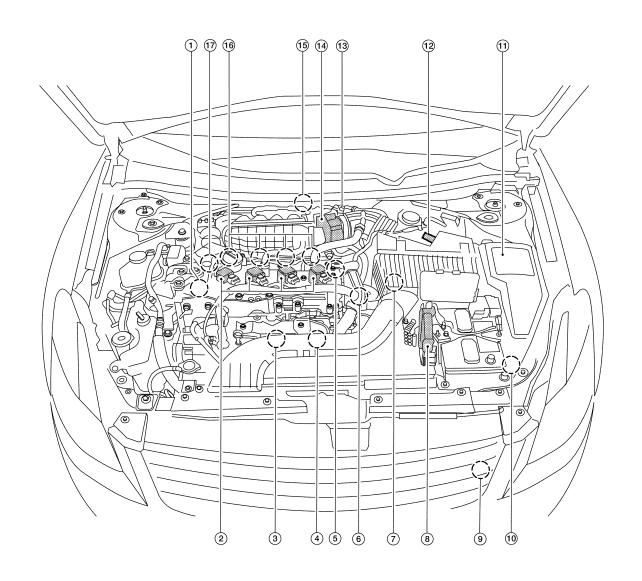
When the RESUME/ACCELERATE switch is pressed after cancel operation other than pressing MAIN switch is performed, vehicle speed will return to last set speed. To resume vehicle set speed, vehicle condition must meet following conditions.

- Brake pedal is released
- Clutch pedal is released (M/T models)
- Selector lever is in other than P and N positions (CVT models)
- Vehicle speed is greater than 40 km/h (25 MPH) and less than 180 km/h (112 MPH)

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Component Parts Location

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Intake valve timing control solenoid

Air fuel ratio (A/F) sensor 1

Transmission range switch (CVT models) Park/neutral position (PNP) switch (M/T models)

10. Battery current sensor

13. EVAP service port

16. Fuel injector

Ignition coil (with power transistor) and spark plug

5. Camshaft position sensor (PHASE)

ECM

11. IPDM E/R

14. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)

17. Power steering pressure sensor

Knock sensor, Crankshaft position sensor (POS)

6. Engine coolant temperature sensor

Refrigerant pressure sensor

12. Mass air flow sensor (with intake temperature sensor)

15. EVAP canister purge volume control solenoid valve

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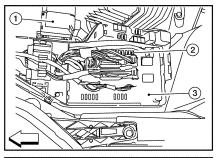
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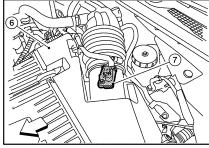
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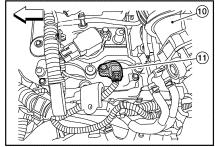
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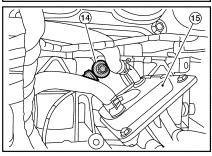
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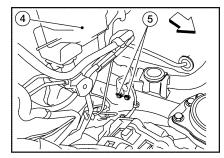
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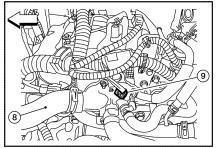


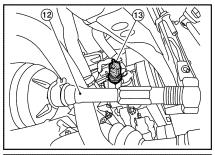


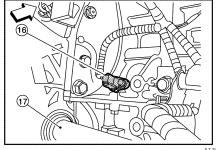












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- 1. Battery
- Brake master cylinder 4.
- Mass air flow sensor (with intake air 8. temperature sensor)
- 10. Intake air duct
- 13. Power steering pressure sensor
- 16. Crankshaft position sensor (POS)
- ⟨□: Vehicle front

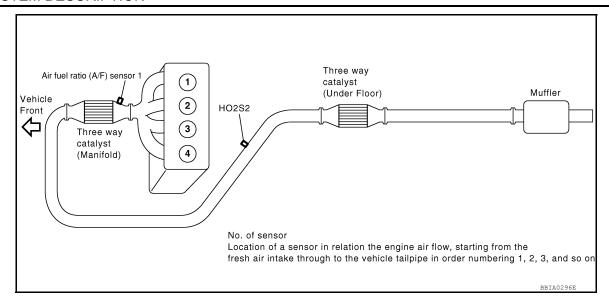
- Fuel pump fuse (15A)
- 5. Engine ground
- Radiator hose (upper)
- 11. Camshaft position sensor (PHASE) 12. Tie rod (RH)
- 14. Knock sensor
- 17. Drive shaft (RH)

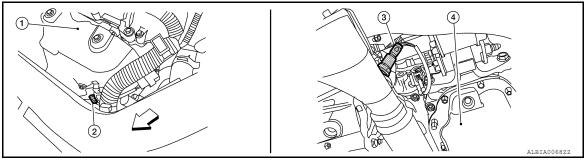
- IPDM E/R 3.
- 6. Air cleaner assembly
- Engine coolant temperature sensor
- 15. Engine oil cooler

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

< SYSTEM DESCRIPTION >

[QR25DE]





- 1. Exhaust manifold cover
- 2. Air fuel ratio (A/F) sensor 1
- Heated oxygen sensor 2 (This illustration is a view from under vehicle.)

- 4. Engine oil pan
- ∀
 □: Vehicle front

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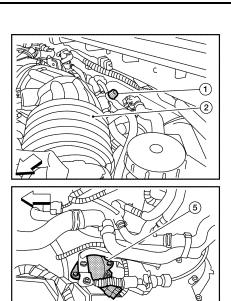
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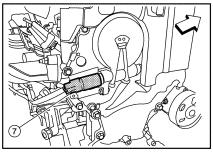
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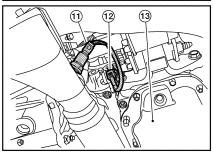
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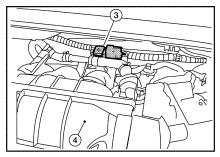
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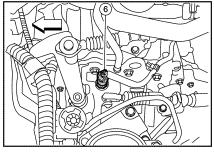
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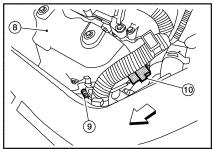










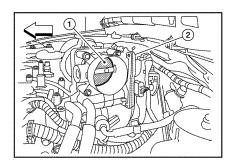


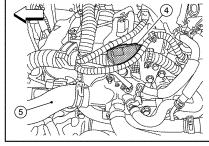
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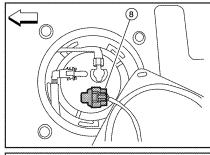
- EVAP service port
- Intake air duct
- Intake manifold collector
- Transmission range switch (CVT models) 6. (This illustration is view with air cleaner assembly removed.)
- Intake valve timing control solenoid valve (This illustration is view with engine removed.)
- Exhaust manifold cover
- EVAP canister purge volume control solenoid valve
- Park/neutral position (PNP) switch (M/T models) (This illustration is view with air cleaner assembly removed.)

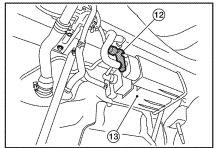
- Air fuel ratio (A/F) sensor 1
- 10. Air fuel ratio (A/F) sensor 1 11. Heated oxygen sensor 2 harness connector
 - (This illustration is view from under vehicle.)
- 12. Heated oxygen sensor 2 harness con-(This illustration is view from under vehicle.)

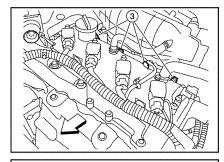
- 13. Engine oil pan
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 □: Vehicle front

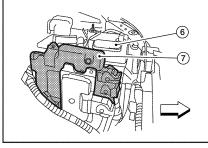


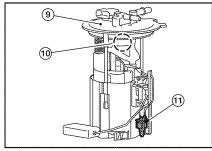












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- Throttle valve (This illustration is view with intake air duct removed.)
- 4. Condenser-2
- 7. ECM
- 10. Fuel pressure regulator
- EVAP canister (This illustration is view with rear suspension member removed.)

- 2. Electric throttle control actuator
- 5. Radiator hose (upper)
- Fuel level sensor unit and fuel pump harness connector (This illustration is view with rear seat cushion and inspection hole cover removed.)
- 11. Fuel tank temperature sensor

- 3. Fuel injector harness connector
- 6. Battery

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Fuel level sensor unit and fuel pump assembly

 EVAP canister vent control valve (This illustration is view with rear suspension member removed.) EC

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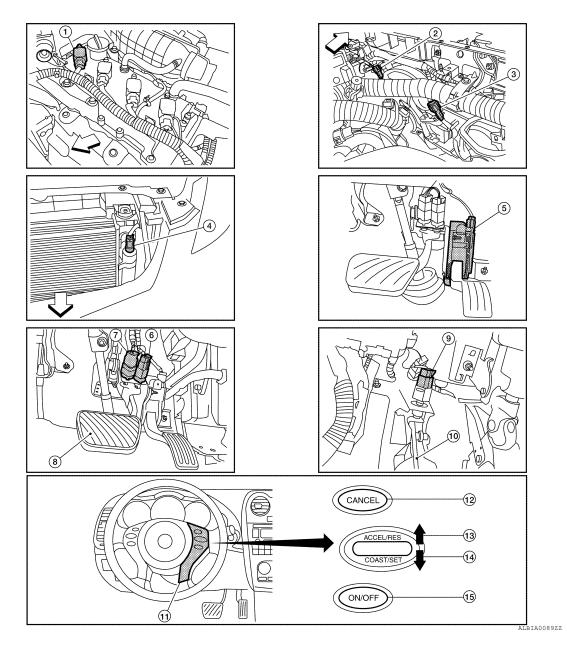
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- 1. No.1 ignition coil
- 4. Refrigerant pressure sensor
- 7. Stop lamp switch
- 10. Clutch pedal
- 13. RESUME/ACCELERATE switch
- ∀
 : Vehicle front

- 2. Cooling fan motor-1 harness connector
- 5. Accelerator pedal position sensor
- 8. Brake pedal
- 11. ASCD steering switch
- 14. SET/COAST switch
- 3. Cooling fan motor-2 harness connector
- 6. ASCD brake switch
- 9. ASCD clutch switch
- 12. CANCEL switch
- 15. MAIN switch

Component Description

INFOID:0000000006391621

Component	Reference
ASCD steering switch	EC-176, "Description"
ASCD clutch switch	EC-179, "Description"
ASCD brake switch	EC-179, "Description"
Stop lamp switch	EC-193, "Description"

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

< SYSTEM DESCRIPTION >

[QR25DE]

Component	Reference
Electric throttle control actuator	EC-206, "Description"
ASCD indicator	EC-227, "Description"

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CAN COMMUNICATION

< SYSTEM DESCRIPTION >

[QR25DE]

CAN COMMUNICATION

System Description

INFOID:0000000006391622

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.

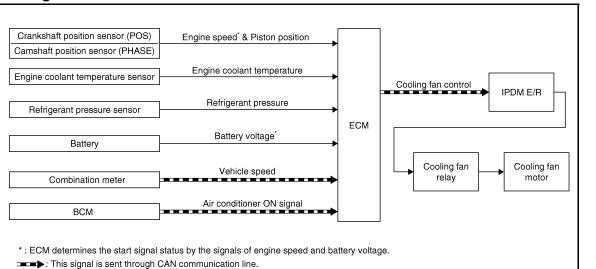
Refer to LAN-24, "CAN Communication Signal Chart", about CAN communication for detail.

[QR25DE]

INFOID:0000000006391623

COOLING FAN CONTROL

System Diagram



System Description

INFOID:0000000006391624

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
Battery	Battery voltage*1		
Combination meter	Vehicle speed*2	Cooling fan	
Engine coolant temperature sensor	Engine coolant temperature	Control	
ВСМ	Air conditioner ON signal*2		
Refrigerant pressure sensor	Refrigerant pressure		

^{*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 4-step control [HIGH/MID/LOW/OFF].

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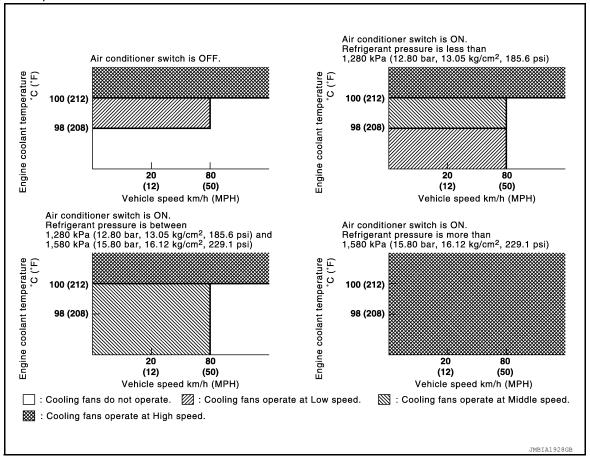
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^{*2:} This signal is sent to ECM through CAN communication line.

Cooling Fan Operation



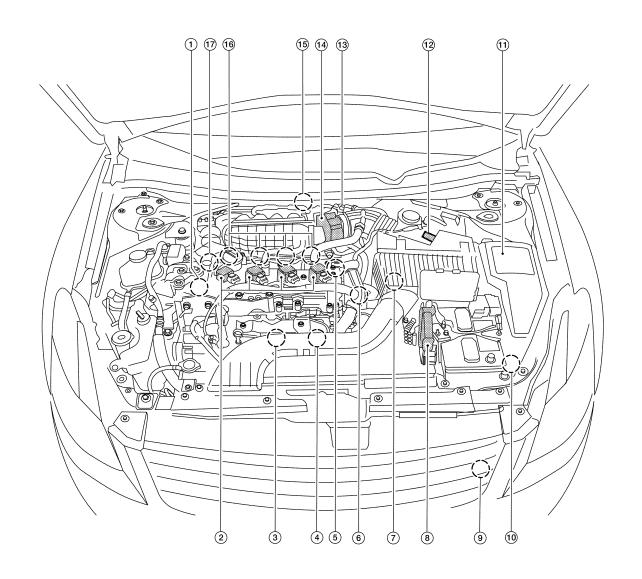
Cooling Fan Relay Operation

The ECM controls cooling fan relays through CAN communication line.

Cooling fan speed	Cooling fan relay		
	1	2	3
Stop (OFF)	OFF	OFF	OFF
Low (LOW)	ON	OFF	OFF
Mid (MID)	OFF	ON	OFF
High (HI)	OFF	ON	ON

Component Parts Location

INFOID:0000000006391625



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Intake valve timing control solenoid

Air fuel ratio (A/F) sensor 1

Transmission range switch (CVT models) Park/neutral position (PNP) switch (M/T models)

10. Battery current sensor

13. EVAP service port

16. Fuel injector

Ignition coil (with power transistor) and spark plug

5. Camshaft position sensor (PHASE)

ECM

11. IPDM E/R

14. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)

17. Power steering pressure sensor

Knock sensor, Crankshaft position sensor (POS)

6. Engine coolant temperature sensor

Refrigerant pressure sensor

12. Mass air flow sensor (with intake temperature sensor)

15. EVAP canister purge volume control solenoid valve

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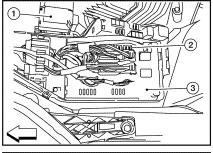
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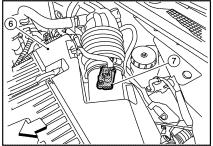
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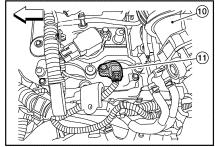
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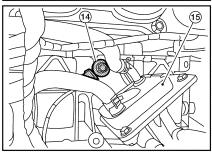
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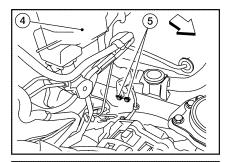
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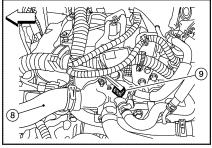


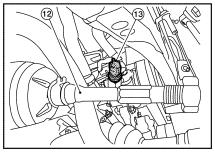


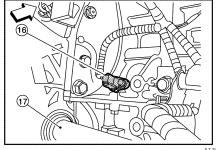










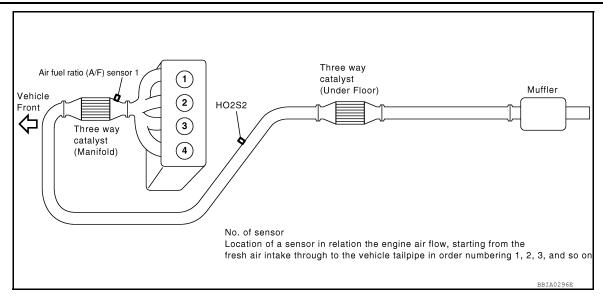


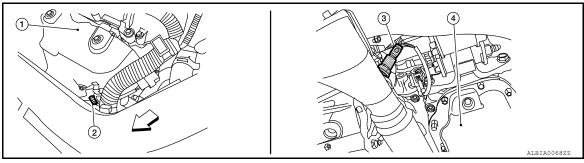
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- 1. Battery
- 4. Brake master cylinder
- Mass air flow sensor (with intake air 8. temperature sensor)
- 10. Intake air duct
- 13. Power steering pressure sensor
- 16. Crankshaft position sensor (POS)
- ⟨□: Vehicle front

- Fuel pump fuse (15A)
- 5. Engine ground
- Radiator hose (upper)
- 11. Camshaft position sensor (PHASE) 12. Tie rod (RH)
- 14. Knock sensor
- 17. Drive shaft (RH)

- IPDM E/R 3.
- 6. Air cleaner assembly
- Engine coolant temperature sensor
- 15. Engine oil cooler





- Exhaust manifold cover
- 2. Air fuel ratio (A/F) sensor 1
- Heated oxygen sensor 2 (This illustration is a view from under vehicle.)

- 4. Engine oil pan
- ∀
 □: Vehicle front

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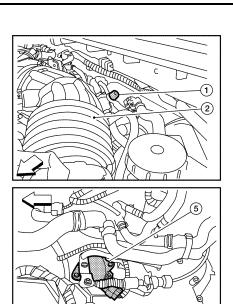
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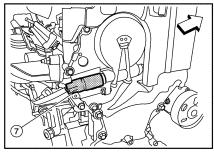
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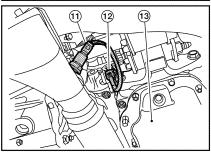
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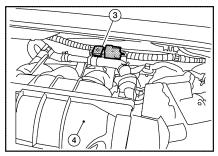
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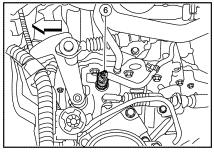
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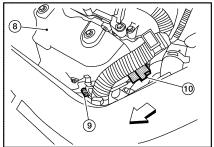












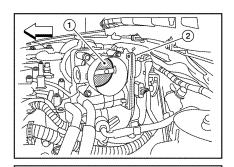
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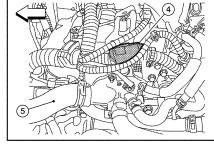
- EVAP service port
- Intake air duct
- Intake manifold collector
- Transmission range switch (CVT models) 6. (This illustration is view with air cleaner assembly removed.)
- Intake valve timing control solenoid valve (This illustration is view with engine removed.)
- Exhaust manifold cover
- EVAP canister purge volume control solenoid valve

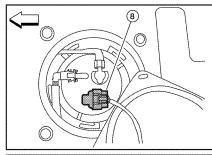
- Park/neutral position (PNP) switch (M/T models) (This illustration is view with air cleaner assembly removed.)
- 9. Air fuel ratio (A/F) sensor 1

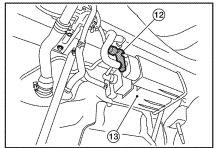
- harness connector
- 10. Air fuel ratio (A/F) sensor 1 11. Heated oxygen sensor 2 (This illustration is view from under vehicle.)
- 12. Heated oxygen sensor 2 harness con-(This illustration is view from under vehicle.)

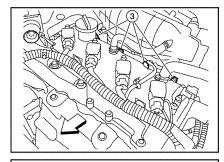
- 13. Engine oil pan
- ∀
 □: Vehicle front

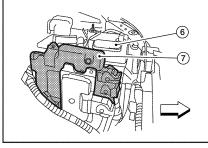


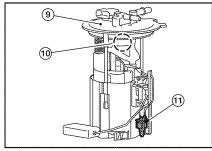












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- Throttle valve
 (This illustration is view with intake air duct removed.)
- 4. Condenser-2
- 7. ECM
- 10. Fuel pressure regulator
- EVAP canister (This illustration is view with rear suspension member removed.)

- 2. Electric throttle control actuator
- 5. Radiator hose (upper)
- Fuel level sensor unit and fuel pump harness connector (This illustration is view with rear seat cushion and inspection hole cover removed.)
- 11. Fuel tank temperature sensor

- 3. Fuel injector harness connector
- 6. Battery

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Fuel level sensor unit and fuel pump assembly

 EVAP canister vent control valve (This illustration is view with rear suspension member removed.) EC

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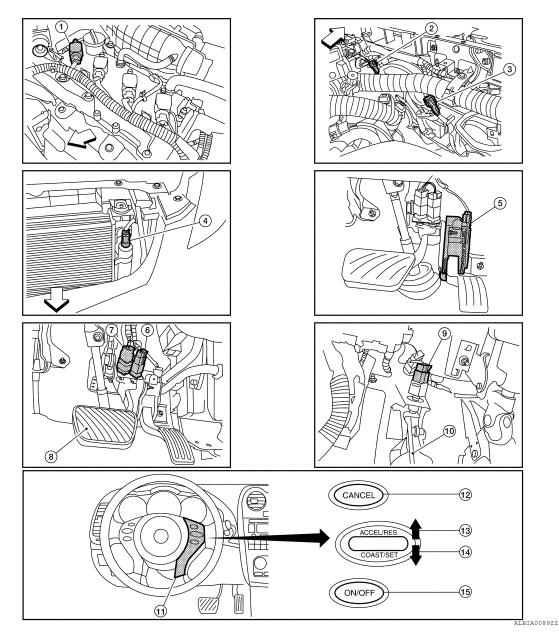
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- 1. No.1 ignition coil
- 4. Refrigerant pressure sensor
- 7. Stop lamp switch
- 10. Clutch pedal
- 13. RESUME/ACCELERATE switch
- ∀
 : Vehicle front

- Cooling fan motor-1 harness connector
- 5. Accelerator pedal position sensor
- 8. Brake pedal
- 11. ASCD steering switch
- 14. SET/COAST switch
- 3. Cooling fan motor-2 harness connector
- 6. ASCD brake switch
- 9. ASCD clutch switch
- 12. CANCEL switch
- 15. MAIN switch

Component Description

INFOID:0000000006391626

Component	Reference
Camshaft position sensor (PHASE)	EC-148. "Description"
Crankshaft position sensor (POS)	EC-144, "Description"
Cooling fan motor	EC-67, "System Description"

COOLING FAN CONTROL

< SYSTEM DESCRIPTION >

[QR25DE]

Component	Reference
Engine coolant temperature sensor	EC-133, "Description"
Refrigerant pressure sensor	EC-271, "Description"

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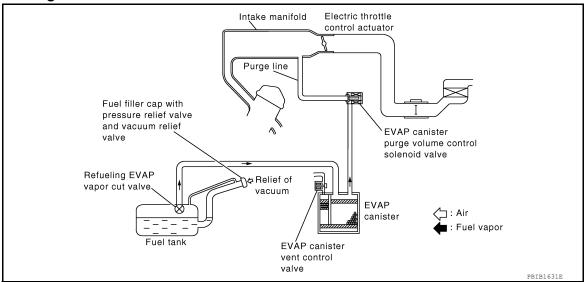
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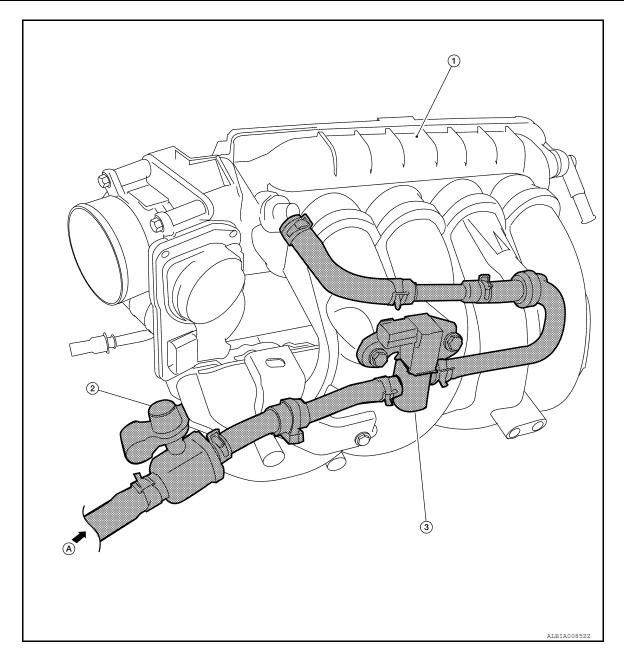
EVAPORATIVE EMISSION SYSTEM

System Diagram

INFOID:0000000006391627



EVAPORATIVE EMISSION LINE DRAWING



1. Intake manifold collector

2. EVAP service port

3. EVAP canister purge volume control solenoid valve

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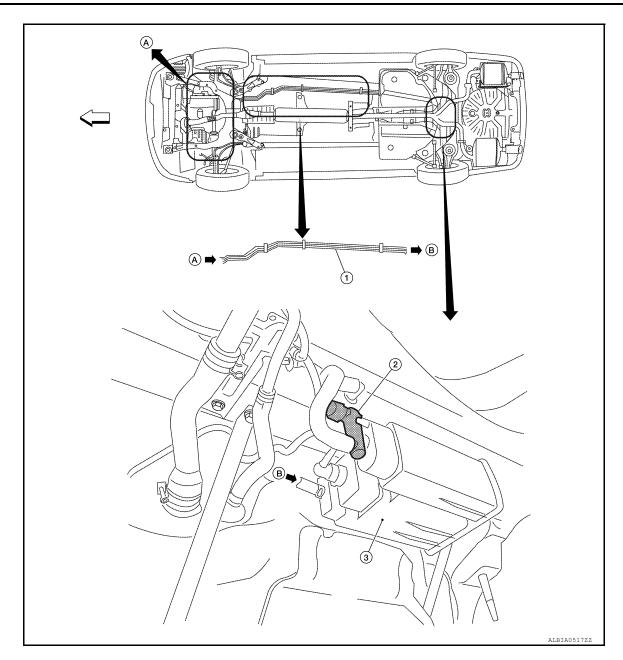
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- EVAP vapor purge line (view with rear 2. suspension member removed)
- EVAP canister vent control valve (view with rear suspension member removed)
- 3. EVAP canister (view with rear suspension member removed)

Previous page

NOTE:

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

System Description

INFOID:0000000006391628

INPUT/OUTPUT SIGNAL CHART

EVAPORATIVE EMISSION SYSTEM

< SYSTEM DESCRIPTION >

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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			E
Engine coolant temperature sensor	Engine coolant temperature			
Battery	Battery voltage*1	EVAP canister	EVAP canister purge vol-	
Throttle position sensor	Throttle position	purge flow control	ume control solenoid valve	
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.

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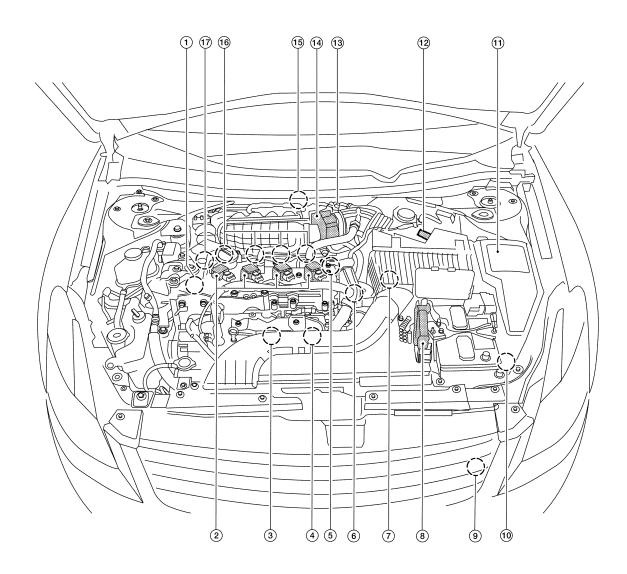
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^{*2:} This signal is sent to the ECM through CAN communication line.

Component Parts Location

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- Intake valve timing control solenoid valve
- 4. Air fuel ratio (A/F) sensor 1
- Transmission range switch (CVT models)
 Park/neutral position (PNP) switch (M/T models)
- 10. Battery current sensor
- 13. EVAP service port
- 16. Fuel injector

- Ignition coil (with power transistor) and spark plug
- 5. Camshaft position sensor (PHASE)
- 8. ECM
- 11. IPDM E/R
- Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 17. Power steering pressure sensor

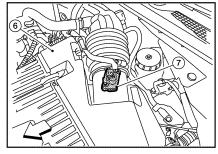
- Knock sensor,
 Crankshaft position sensor (POS)
- 6. Engine coolant temperature sensor
- 9. Refrigerant pressure sensor
- 12. Mass air flow sensor (with intake temperature sensor)
- 15. EVAP canister purge volume control solenoid valve

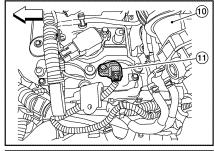
EVAPORATIVE EMISSION SYSTEM

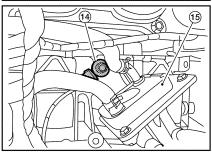
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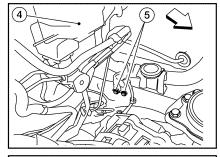
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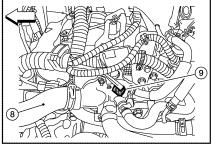
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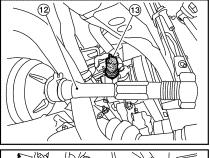


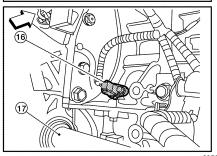












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- 1. Battery
- 4. Brake master cylinder
- Mass air flow sensor (with intake air 8. temperature sensor)
- 10. Intake air duct
- 13. Power steering pressure sensor
- 16. Crankshaft position sensor (POS)
- ∀
 □: Vehicle front

- 2. Fuel pump fuse (15A)
- 5. Engine ground
- 8. Radiator hose (upper)
- 11. Camshaft position sensor (PHASE)
- 14. Knock sensor
- 17. Drive shaft (RH)

- 3. IPDM E/R
- 6. Air cleaner assembly
- 9. Engine coolant temperature sensor
- 12. Tie rod (RH)
- 15. Engine oil cooler

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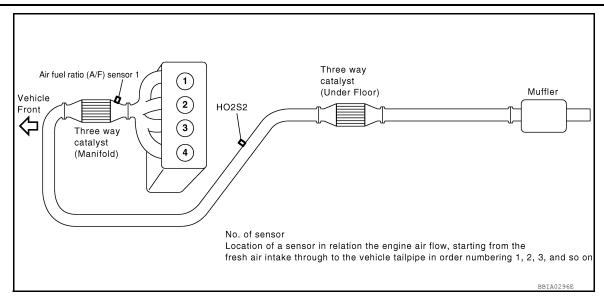
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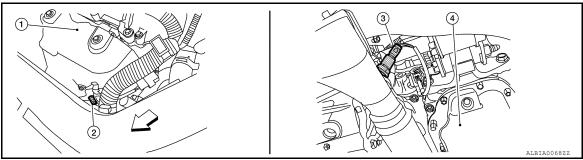
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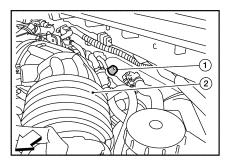
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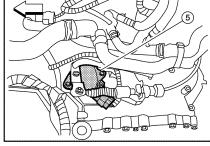


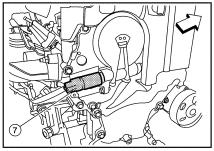


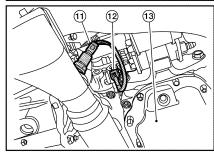
- 1. Exhaust manifold cover
- 2. Air fuel ratio (A/F) sensor 1
- Heated oxygen sensor 2 (This illustration is a view from under vehicle.)

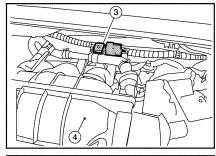
- 4. Engine oil pan
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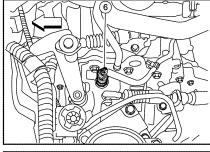


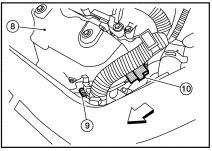












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- EVAP service port 1.
- Intake manifold collector
- 7. Intake valve timing control solenoid valve (This illustration is view with engine removed.)
- 10. Air fuel ratio (A/F) sensor 1 11. Heated oxygen sensor 2
- harness connector
- 13. Engine oil pan
- ∀
 □: Vehicle front

- 2. Intake air duct
- Transmission range switch (CVT models) 6. (This illustration is view with air cleaner assembly removed.)
- 8. Exhaust manifold cover
- (This illustration is view from under vehicle.)

- 3. EVAP canister purge volume control solenoid valve
 - Park/neutral position (PNP) switch (M/T models) (This illustration is view with air cleaner assembly removed.)
- 9. Air fuel ratio (A/F) sensor 1
- 12. Heated oxygen sensor 2 harness con-
 - (This illustration is view from under vehicle.)

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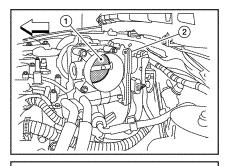
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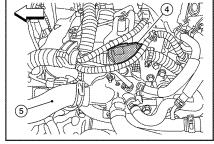
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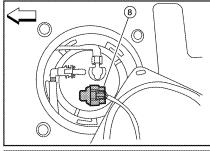
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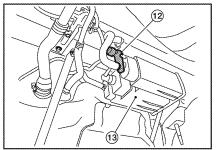
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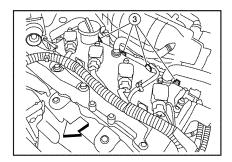
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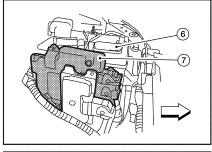


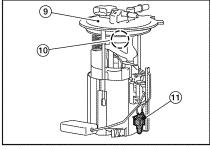










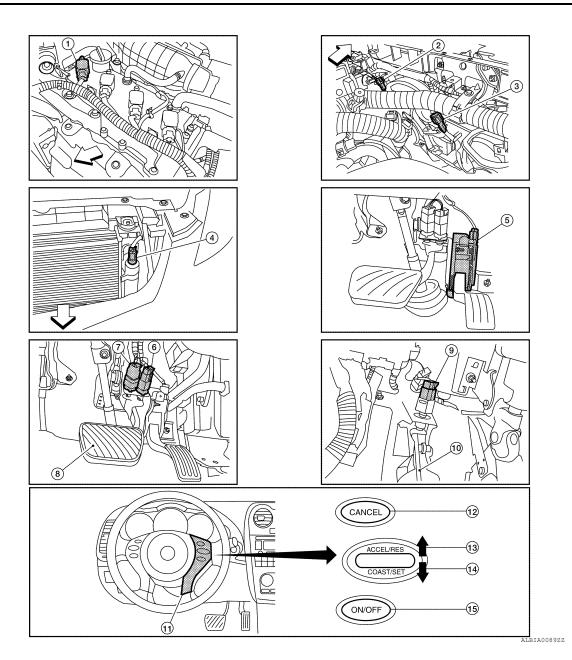


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- Throttle valve (This illustration is view with intake air duct removed.)
- 4. Condenser-2
- 7. ECM
- 10. Fuel pressure regulator
- EVAP canister (This illustration is view with rear suspension member removed.)

- 2. Electric throttle control actuator
- 5. Radiator hose (upper)
- Fuel level sensor unit and fuel pump 9. harness connector
 (This illustration is view with rear seat cushion and inspection hole cover removed.)
- 11. Fuel tank temperature sensor

- 3. Fuel injector harness connector
- 6. Battery
- Fuel level sensor unit and fuel pump assembly
- EVAP canister vent control valve (This illustration is view with rear suspension member removed.)



- 1. No.1 ignition coil
- 4. Refrigerant pressure sensor
- 7. Stop lamp switch
- 10. Clutch pedal
- 13. RESUME/ACCELERATE switch
- ∀
 □: Vehicle front

- 2. Cooling fan motor-1 harness connector
- 5. Accelerator pedal position sensor
- 8. Brake pedal
- 11. ASCD steering switch
- 14. SET/COAST switch
- 3. Cooling fan motor-2 harness connector
- 6. ASCD brake switch
- 9. ASCD clutch switch
- 12. CANCEL switch
- 15. MAIN switch

Component Description

INFOID:0000000006391630

Component	Reference
A/F sensor 1	EC-228, "Description"
Accelerator pedal position sensor	EC-208, "Description"
Camshaft position sensor (PHASE)	EC-148, "Description"
Crankshaft position sensor (POS)	EC-144, "Description"

Revision: June 2012 EC-85 2011 Altima GCC

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EVAPORATIVE EMISSION SYSTEM

< SYSTEM DESCRIPTION >

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Component	Reference
Engine coolant temperature sensor	EC-133, "Description"
EVAP canister purge volume control solenoid valve	EC-241, "Description"
Mass air flow sensor	EC-128, "Description"
Throttle position sensor	EC-136, "Description"
Vehicle speed sensor	EC-152, "Description"

[QR25DE]

INTAKE VALVE TIMING CONTROL

System Diagram

INFOID:0000000006391631 Cam sprocket Intake camshaft Intake IVT Intake TDC TDC control Exhaust valve valve Exhaust valve Oil pressure Oil pressure Retard angle (Figure 1) Advance angle (Figure 2) Oil pressure Retension (Figure 3) JMBIA0060G

System Description

INFOID:0000000006391632

INPUT/OUTPUT SIGNAL CHART

Sensor	Sensor Input signal to ECM		Actuator
Crankshaft position sensor (POS)	Engine speed and piston position		
Camshaft position sensor (PHASE)	- Lingine speed and piston position	Intake valve timing control	Intake valve timing control solenoid valve
Engine coolant temperature sensor	Engine coolant temperature		
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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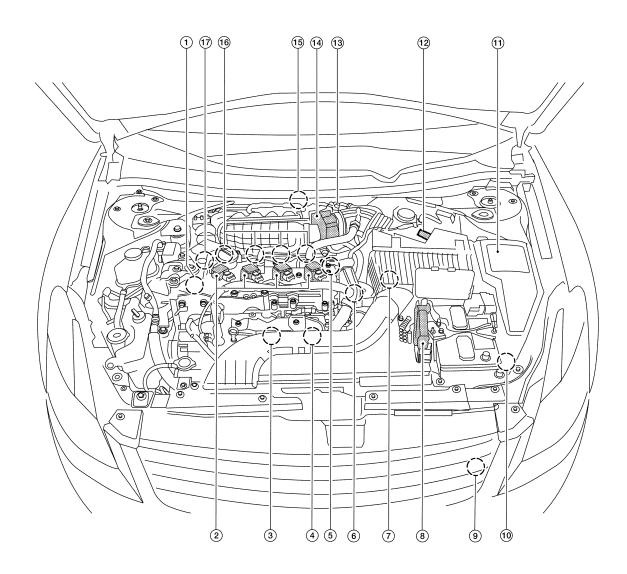
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Component Parts Location

INFOID:0000000006391633



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- Intake valve timing control solenoid valve
- 4. Air fuel ratio (A/F) sensor 1
- Transmission range switch (CVT models)
 Park/neutral position (PNP) switch (M/T models)
- 10. Battery current sensor
- 13. EVAP service port
- 16. Fuel injector

- Ignition coil (with power transistor) and spark plug
- 5. Camshaft position sensor (PHASE)
- 8. ECM
- 11. IPDM E/R
- Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 17. Power steering pressure sensor

- Knock sensor,
 Crankshaft position sensor (POS)
- 6. Engine coolant temperature sensor
- 9. Refrigerant pressure sensor
- 12. Mass air flow sensor (with intake temperature sensor)
- 15. EVAP canister purge volume control solenoid valve

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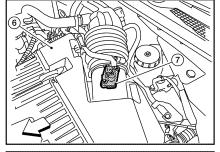
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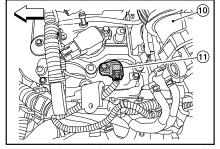
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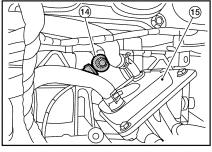
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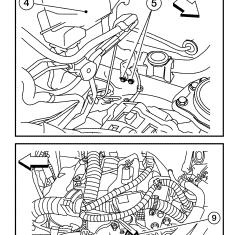
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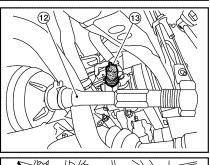
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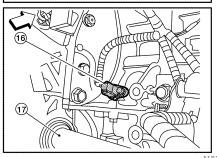












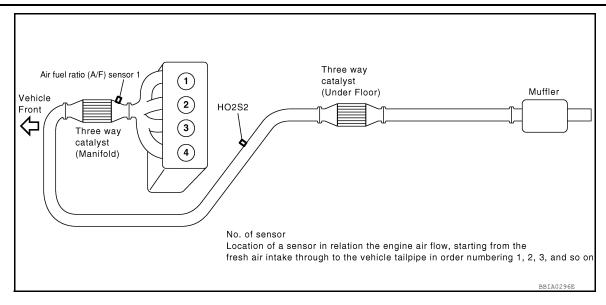
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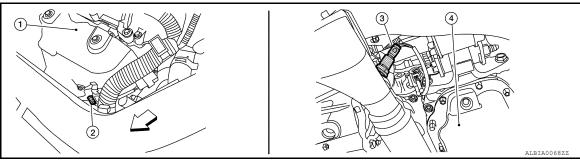
2011 Altima GCC

- 1. Battery
- Brake master cylinder 4.
- Mass air flow sensor (with intake air 8. temperature sensor)
- 10. Intake air duct
- 13. Power steering pressure sensor
- 16. Crankshaft position sensor (POS)
- ∀
 □: Vehicle front

- 2. Fuel pump fuse (15A)
- Engine ground
- Radiator hose (upper)
- Camshaft position sensor (PHASE)
- 14. Knock sensor
- 17. Drive shaft (RH)

- IPDM E/R 3.
- 6. Air cleaner assembly
- 9. Engine coolant temperature sensor
- 12. Tie rod (RH)
- 15. Engine oil cooler

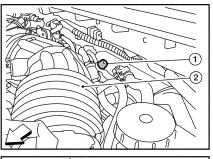


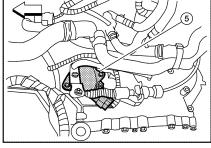


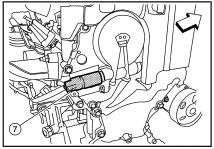
- 1. Exhaust manifold cover
- 2. Air fuel ratio (A/F) sensor 1
- Heated oxygen sensor 2 (This illustration is a view from under vehicle.)

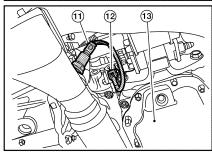
- 4. Engine oil pan
- ∀
 □: Vehicle front

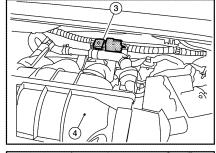
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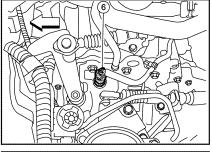


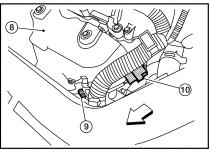












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- 1. EVAP service port
- . Intake manifold collector
- Intake valve timing control solenoid valve (This illustration is view with engine removed.)
- 10. Air fuel ratio (A/F) sensor 1 11. Heated oxygen sensor 2 harness connector (This illustration is view from the connection of the conne
- narness connector
- 13. Engine oil pan
- ∀
 □: Vehicle front

- 2. Intake air duct
- Transmission range switch (CVT models) 6. (This illustration is view with air cleaner assembly removed.)
- B. Exhaust manifold cover
- Heated oxygen sensor 2
 (This illustration is view from under vehicle.)

- EVAP canister purge volume control solenoid valve
- Park/neutral position (PNP) switch (M/T models) (This illustration is view with air cleaner assembly removed.)
- 9. Air fuel ratio (A/F) sensor 1
- Heated oxygen sensor 2 harness connector
 This illustration is view from under set.
 - (This illustration is view from under vehicle.)

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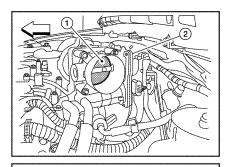
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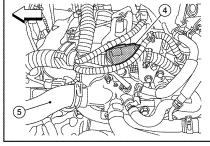
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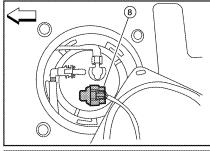
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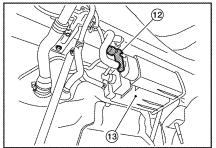
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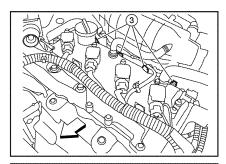
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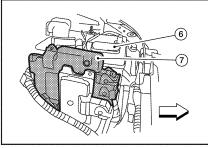


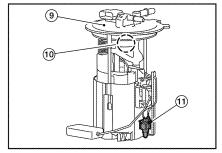












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- Throttle valve (This illustration is view with intake air duct removed.)
- 4. Condenser-2
- 7. ECM
- 10. Fuel pressure regulator
- EVAP canister (This illustration is view with rear suspension member removed.)

- 2. Electric throttle control actuator
- 5. Radiator hose (upper)
- Fuel level sensor unit and fuel pump 9. harness connector
 (This illustration is view with rear seat cushion and inspection hole cover removed.)
- 11. Fuel tank temperature sensor

- 3. Fuel injector harness connector
- 6. Battery
 - Fuel level sensor unit and fuel pump assembly
- EVAP canister vent control valve (This illustration is view with rear suspension member removed.)

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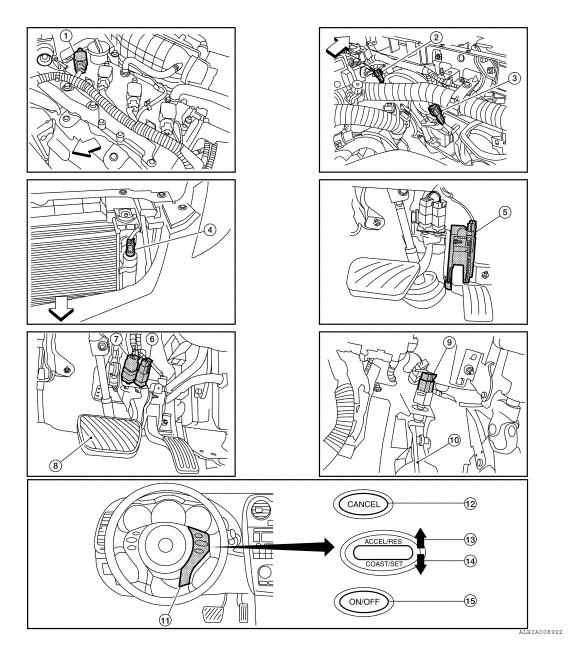
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- 1. No.1 ignition coil
- 4. Refrigerant pressure sensor
- 7. Stop lamp switch
- 10. Clutch pedal
- 13. RESUME/ACCELERATE switch
- ∀
 □: Vehicle front

- 2. Cooling fan motor-1 harness connector
- 5. Accelerator pedal position sensor
- 8. Brake pedal
- 11. ASCD steering switch
- 14. SET/COAST switch
- 3. Cooling fan motor-2 harness connector
- 6. ASCD brake switch
- 9. ASCD clutch switch
- 12. CANCEL switch
- 15. MAIN switch

Component Description

INFOID:0000000006391634

Component	Reference
Camshaft position sensor (PHASE)	EC-148. "Description"
Crankshaft position sensor (POS)	EC-144, "Description"
Engine coolant temperature sensor	EC-133, "Description"

INTAKE VALVE TIMING CONTROL

< SYSTEM DESCRIPTION >

[QR25DE]

Component	Reference
Intake valve timing control solenoid valve	EC-87, "System Description"
Vehicle speed sensor	EC-152, "Description"

< SYSTEM DESCRIPTION >

[QR25DE]

DIAGNOSIS SYSTEM (ECM)

Diagnosis Description

INFOID:0000000006391635

x: Applicable —: Not applicable

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 Trouble Code (DTC)	
Freeze Frame data	
1st Trip Diagnostic Trouble Code (1st Trip DTC)	
1st Trip Freeze Frame data	

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

	DTC	1st trip DTC	Freeze Frame data	1st trip Freeze Frame data
CONSULT-III	×	×	×	×
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-284, <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.

DTC AND FREEZE FRAME DATA

DTC and 1st Trip DTC

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 light up the MIL during the 1st trip, only the DTC is 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".

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. The freeze frame data and 1st trip freeze frame data can only be displayed on the CONSULT-III screen.

Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. There is no priority for 1st trip freeze frame data and it is updated each time a different 1st trip DTC is

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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. If freeze frame data is stored in the ECM memory and another freeze frame data 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

(II) With CONSULT-III

CONSULT-III displays the DTC in "SELF-DIAG RESULTS" mode. Example: P0340, P0850, etc.

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

Without CONSULT-III

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

- 1. Select "ENGINE" with CONSULT-III.
- Select "SELF-DIAGNOSTIC RESULTS".
- 3. Touch "ERASE". (DTC in ECM will be erased.)

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.

- 1. 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

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.

MALFUNCTION INDICATOR LAMP (MIL)

Description

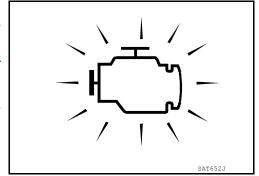
< SYSTEM DESCRIPTION >

[QR25DE]

The MIL is located on the instrument panel.

1. 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 EC-269, "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.

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 the MIL in the 1st trip. • 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 EC-269, "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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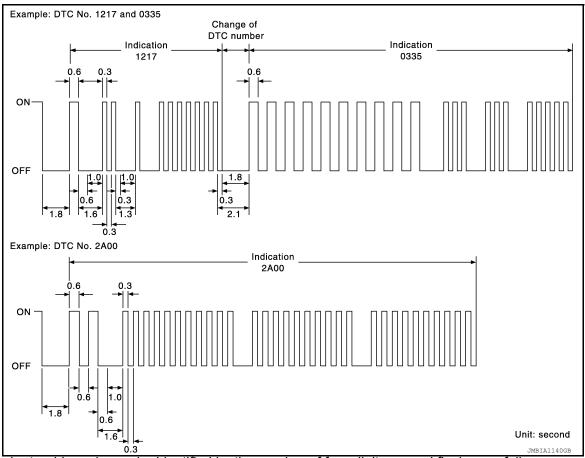
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tified codes can be identified by using the CONSULT-III. A DTC will be used as an example for how to read a code.



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	E	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 EC-286, "DTC Index")

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)

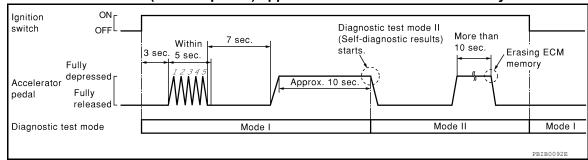
- 1. Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 2. Repeat the following procedure quickly five times within 5 seconds.
- Fully depress the accelerator pedal.
- Fully release the accelerator pedal.
- 3. Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 10 seconds until the MIL starts blinking.
- Fully release the accelerator pedal.

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

NOTE:

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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)

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.

The DTC can be erased from the back up memory in the ECM by depressing accelerator pedal.

- 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.
- 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.

CONSULT-III Function

INFOID:0000000006391636

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.				
Function Test	This mode is used to inform customers when their vehicle condition requires periodic maintenance.				
ECU Identification	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

ENGINE CONTROL COMPONENT PARTS/CONTROL SYSTEMS APPLICATION

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			D	AGNOSTIC TEST M	ODE	
	ltem	WORK	SELF-DIAG	NOSTIC RESULTS	DATA MON-	
		SUPPORT	DTC*1	FREEZE FRAME DATA*2	ITOR	ACTIVE TEST
	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				×	
	Vehicle speed sensor		×	×	×	
	Accelerator pedal position sensor		×		×	
	Throttle position sensor		×	×	×	
	Intake air temperature sensor			×	×	
	Knock sensor		×			
INPUT	Refrigerant pressure sensor				×	
INP	Closed throttle position switch (accelerator pedal position sensor signal)				×	
	Air conditioner switch				×	
	Transmission range switch (CVT models) Park/neutral position (PNP) switch (M/T models)		×		×	
	Stop lamp switch		×		×	
	Power steering pressure sensor		×		×	
	Battery voltage				×	
	Load signal				×	
	Input 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 sole- noid valve				×	×
τυ	Air conditioner relay				×	
OUTPUT	Fuel pump relay	×			×	×
0	Cooling fan relay				×	×
	Air fuel ratio (A/F) sensor 1 heater				×	
	Heated oxygen sensor 2 heater				×	
	EVAP canister vent control valve				×	×
	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-95, "Diagnosis Description".

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WORK SUPPORT MODE

Work Item

Work Item	Condition	Usage
FUEL PRESSURE RELEASE	Fuel pump will stop by touching "START" during 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 coefficient.	When clearing mixture ratio self-learning value
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-286, "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-286, "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.

Freeze frame data item*	Description
FUEL SYS-B2	
L-FUEL TRM-B2 [%]	
S-FUEL TRM-B2 [%]	These items displayed but are not applicable to this model.
INT MANI PRES [kPa]	These name displayed satisfies not appropriate to the measure
COMBUST CONDI- TION	

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

DATA MONITOR MODE

Monitored Item

x: 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	ms	"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	V	The accelerator pedal position sensor signal volt-	ACCEL SEN 2 signal is converted by
ACCEL SEN 2	V	age is displayed.	ECM internally. Thus, it differs from ECM terminal voltage signal.
TP SEN 1-B1	V	The throttle position sensor signal voltage is dis-	TP SEN 2-B1 signal is converted by COMMITTEE THE STATE OF THE ST
TP SEN 2-B1	V	played.	ECM internally. Thus, it differs from ECM terminal voltage signal.

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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 sensor) 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 displayed regardless of the starter signal.
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/neu- tral position (PNP) signal.	
PW/ST SIGNAL	ON/OFF	[ON/OFF] condition of the power steering system (determined by the signal voltage of the power steering pressure sensor) 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.
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	Always "OFF" is displayed.

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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 MID: Middle speed operation LOW: Low speed operation OFF: Stop	
HO2S2 HTR (B1)	ON/OFF	Indicates [ON/OFF] condition of heated oxygen sensor 3 heater determined by ECM according to the input signals.	
I/P PULLY SPD	rpm	Indicates the engine speed computed from the in- put shaft revolution 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.	

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Monitored item	Unit	Description	Remarks
AT OD MONITOR	ON/OFF	Indicates [ON/OFF] condition of CVT O/D according to the input signal from the TCM.	For M/T models, always "OFF" is displayed.
AT OD CANCEL	ON/OFF	Indicates [ON/OFF] condition of CVT O/D cancel request signal.	For M/T models, always "OFF" is displayed.
CRUISE LAMP	ON/OFF	Indicates [ON/OFF] condition of CRUISE indicator determined by the ECM according to the input signals.	
SET LAMP	ON/OFF	Indicates [ON/OFF] condition of SET indicator 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

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 (CVT), Neutral (M/T) 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", "MID", "HI" and "OFF" 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

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< SYSTEM DESCRIPTION >

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TEST ITEM	CONDITION	JUDGMENT	CHECK ITEM (REMEDY)
VENT CONTROL/V	Ignition switch: ON (Engine stopped) Turn solenoid valve "ON" and "OFF" with the 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

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

TROUBLE DIAGNOSIS - SPECIFICATION VALUE

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

DTC/CIRCUIT DIAGNOSIS

TROUBLE DIAGNOSIS - SPECIFICATION VALUE

Description INFOID:0000000006391637 EC

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 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:0000000006391638

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 (0.983 1.043 bar, 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
- CVT models: 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).
- M/T models: After the engine is warmed up to normal operating temperature, drive vehicle for 5 minutes.
- 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-15, "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-108, "Diagnosis Procedure".

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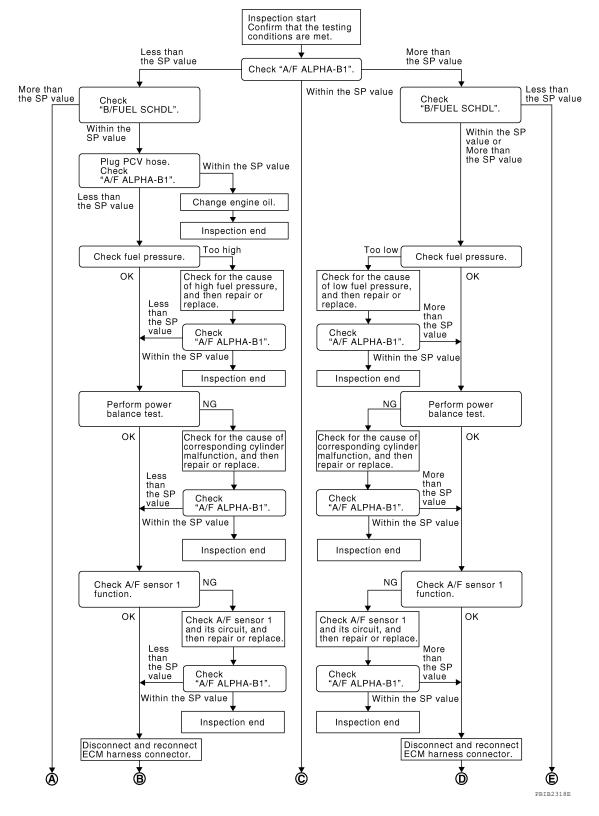
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Diagnosis Procedure

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OVERALL SEQUENCE



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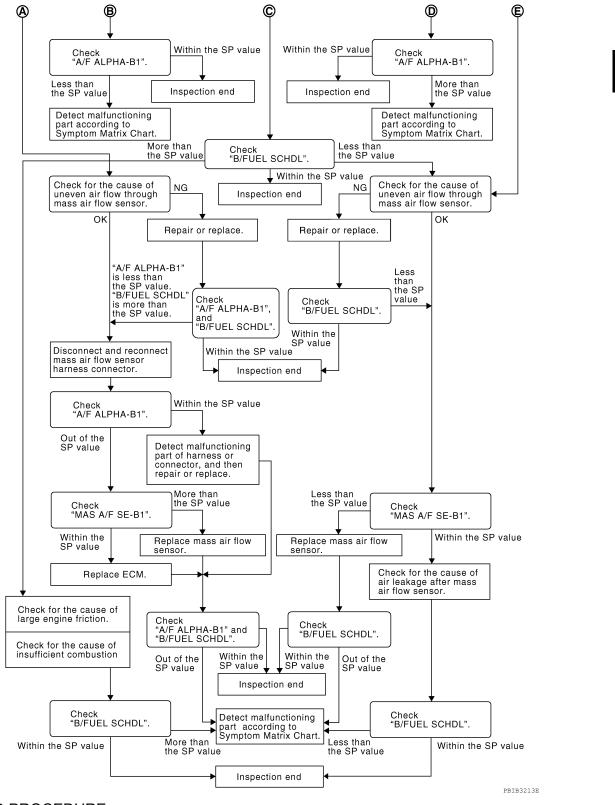
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DETAILED PROCEDURE

1.CHECK "A/F ALPHA-B1"

(E)With CONSULT-III

- Start engine.
- Confirm that the testing conditions are met. Refer to <u>EC-107, "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.

< DTC/CIRCUIT DIAGNOSIS >

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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 19.

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 21.

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 27.

f 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-323, "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.

8.CHECK "A/F ALPHA-B1"

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 Start engine. Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within A
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.
2. Make sure that the each cylinder produces a momentary engine speed drop. In the inequation result permal?
Is the inspection result normal? YES >> GO TO 12.
NO >> GO TO 10.
10.detect malfunctioning part
Check the following. 1. Ignition coil and its circuit (Refer to <u>EC-264, "Component Function Check".)</u> 2. Fuel injector and its circuit (Refer to <u>EC-247, "Component Function Check".)</u> 3. Intake air leakage
4. Low compression pressure (Refer to <u>EM-23, "Compression pressure"</u> .)
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 HEATER FUNCTION
Perform Component Function Check related with A/F sensor 1 heater. Refer to EC-231, "Component Function
Check".
Is the inspection result normal?
YES >> GO TO 14. NO >> GO TO 13.
13. CHECK A/F SENSOR 1 HEATER CIRCUIT
Perform Diagnosis Procedure. Refer to EC-231, "Diagnosis Procedure".
>> GO TO 16.
14. CHECK A/F SENSOR 1 FUNCTION
Perform Component Function Check related with A/F sensor 1. Refer to EC-228, "Component Function Check".
Is the inspection result normal?
YES >> GO TO 16.
NO >> GO TO 15.
15. CHECK A/F SENSOR 1 CIRCUIT
Perform Diagnostic Procedure. Refer to EC-228, "Diagnosis Procedure".
>> GO TO 16.
16.CHECK "A/F ALPHA-B1"

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< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

- 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

NO >> GO TO 17.

17. DISCONNECT AND RECONNECT ECM HARNESS CONNECTOR

- 1. Stop the engine.
- 2. Disconnect ECM harness connector. Check pin terminal and connector for damage, and then reconnect it.

>> GO TO 18.

18.CHECK "A/F ALPHA-B1"

- Start engine.
- 2. 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-311, "Symptom Table".

19. 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 20.

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

20. 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.

21. 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 23.

NO >> Repair or replace malfunctioning part, and then GO TO 22.

22.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

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TROUBLE DIAGNOSIS - SPECIFICATION VALUE [QR25DE] < DTC/CIRCUIT DIAGNOSIS > NO >> "B/FUEL SCHDL" is more, "A/F ALPHA-B1" is less than the SP value: GO TO 23. $23.\,\mathrm{disconnect}$ and reconnect mass air flow sensor harness connector Α Stop the engine. 2. Disconnect mass air flow sensor harness connector. Check pin terminal and connector for damage and EC then reconnect it again. >> GO TO 24. **24.**CHECK "A/F ALPHA-B1" Start engine. 2. 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-128, "DTC Logic". Then GO TO 31. NO >> GO TO 25. 25.CHECK "MAS A/F SE-B1" F 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 26. NO >> More than the SP value: Replace mass air flow sensor, and then GO TO 31. Н 26.REPLACE ECM Replace ECM. Go to EC-18, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement". >> GO TO 31. 27 . 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 29. NO >> Repair or replace malfunctioning part, and then GO TO 28. M 28.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 0 NO >> Less than the SP value: GO TO 29. 29.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?

30.CHECK INTAKE SYSTEM

YES NO

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

>> Less than the SP value: Replace mass air flow sensor, and then GO TO 32.

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- · 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
- · Malfunctioning seal of intake air system, etc.

>> GO TO 32.

31. 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-311, "Symptom Table".

32.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-311, "Symptom Table".

< DTC/CIRCUIT DIAGNOSIS >

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POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000006391640

1. INSPECTION START

Start engine.

Is engine running?

YES >> GO TO 8.

NO >> GO TO 2.

2. CHECK ECM POWER SUPPLY CIRCUIT-I

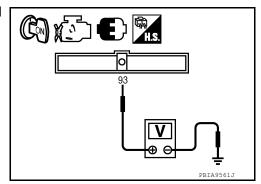
- 1. Turn ignition switch OFF and then ON.
- Check the voltage between ECM harness connector and ground.

EC	ECM		Voltage
Connector	Terminal	Ground	voltage
E10	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 E18
- 10A fuse (No. 35)
- 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 E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace ground connection.

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	
F14	12		Existed	
1 14	16			
	107	Ground		
E10	108	Ground		
£10	111			
	112			

Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 7.

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< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

NO >> GO TO 6.

6.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F2. E11
- · 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

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

IPDN	IPDM E/R		Voltage
Connector	Terminal	Ground	voltage
F10	53	Ground	Battery voltage

Is the inspection result normal?

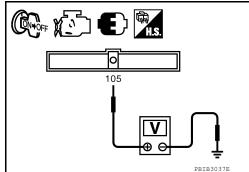
>> Go to EC-264, "Diagnosis Procedure". YES

NO >> GO TO 8.

8. CHECK ECM POWER SUPPLY CIRCUIT-III

- 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
E10	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 13.

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

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

EC	ECM		Voltage
Connector	Terminal	Ground	voltage
F14	24	Ground	Battery voltage

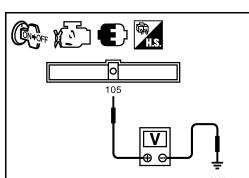
Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 11.

10. CHECK ECM POWER SUPPLY CIRCUIT-V

- Disconnect ECM harness connector.
- Disconnect IPDM E/R harness connector E18.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.



< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

E	СМ	IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E10	105	E18	10	Existed
4. Also check harness for short to ground and short to power.				

Is the inspection result normal?

YES >> GO TO 16.

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

11. CHECK ECM POWER SUPPLY CIRCUIT-VI

- Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector F10.
- 3. Check the continuity between ECM harness connector and IPDM E/R harness connector.

ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F14	24	F10	69	Existed

4. 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 power in harness or connectors.

12. CHECK 15A FUSE

- Disconnect 15A fuse (No. 42) from IPDM E/R.
- Check 15A fuse.

Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace 15A fuse.

13. CHECK GROUND CONNECTION-II

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YFS >> GO TO 14.

NO >> Repair or replace ground connection.

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

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

ECM		Ground	Continuity	
Connector	Terminal	Giodila	Continuity	
F14	12		Existed	
F14	16			
	107	Ground		
E10	108			
⊑10	111			
	112			

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 16.

NO >> GO TO 15.

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15. DETECT MALFUNCTIONING PART

Check the following.

- Harness or connectors F2, E11
- · Harness for open or short between ECM and ground

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

16. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "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

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

U1000, U1001 CAN COMM CIRCUIT

Description INFOID:0000000006391641

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 shorted)
U1001	line	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-119, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

Go to LAN-15, "Trouble Diagnosis Flow Chart".

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U1010 CONTROL UNIT (CAN)

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

U1010 CONTROL UNIT (CAN)

Description INFOID:000000006391644

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
U1010	CAN communication bus	When detecting error during the initial diagnosis of CAN controller of ECM.	• ECM

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- Check DTC.

Is DTC detected?

YES >> Go to EC-120, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391646

1. INSPECTION START

- 1. Turn ignition switch ON.
- 2. Erase DTC.
- 3. Perform DTC Confirmation Procedure. See <u>EC-120</u>, "<u>DTC Logic</u>".
- 4. Check DTC.

Is the DTC U1010 displayed again?

YES >> GO TO 2.

NO >> INSPECTION END

2.REPLACE ECM

- 1. Replace ECM.
- 2. Go to EC-18, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".
 - >> INSPECTION END

P0011 IVT CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

P0011 IVT CONTROL

DTC Logic INFOID:0000000006391647

DTC DETECTION LOGIC

NOTE:

If DTC P0011 is displayed with DTC P0075, first perform the trouble diagnosis for EC-161, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC 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. 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:

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

>> GO TO 3.

3.PERFORM DTC CONFIRMATION PROCEDURE-I

(II) 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.
- Maintain the following conditions for at least 6 consecutive seconds. Hold the accelerator pedal as steady as possible.

ENG SPEED	1,200 - 2,000 rpm
COOLAN TEMP/S	More than 60°C (140°F)
B/FUEL SCHDL	More than 3.5 msec (CVT) More than 4.2 msec (M/T)
Shift lever	D position (CVT) 5th position (M/T)

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.

Is 1st trip DTC detected?

>> Go to EC-123, "Diagnosis Procedure" YES

NO >> GO TO 4.

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4.PERFORM DTC CONFIRMATION PROCEDURE-II

(P)With CONSULT-III

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

ENG SPEED	1,700 - 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.

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-123, "Diagnosis Procedure"

NO >> INSPECTION END

5. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-122, "Component Function Check".

NOTE:

Use component function check to check the overall function of intake valve timing control system. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-123, "Diagnosis Procedure".

Component Function Check

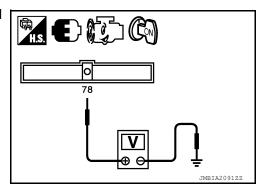
INFOID:0000000006391648

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 let it idle.
- 4. Check the voltage between ECM harness connector and ground under the following condition.

EC	M	Ground	Condition	Voltage signal
Connector	Terminal	Glound	Ooridition	voltage signal
			At idle	0 V
F13	78 (Intake valve timing control solenoid valve)	Ground	When revving engine up to 2,000 rpm quickly	7 - 10 V 2mSec/div 5V/div JMBIA0095GB



Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-123, "Diagnosis Procedure".

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnosis Procedure

INFOID:0000000006391649

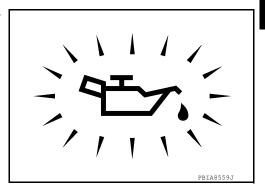
1. CHECK OIL PRESSURE WARNING LAMP

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

Is oil pressure warning lamp illuminated?

YFS >> Go to LU-9, "Inspection".

>> GO TO 2. NO



2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Refer to EC-124, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace intake valve timing control solenoid valve.

$oldsymbol{3}.$ CHECK CRANKSHAFT POSITION SENSOR (POS)

Refer to EC-147, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace crankshaft position sensor (POS).

f 4.CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-150, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace camshaft position sensor (PHASE).

5.CHECK CAMSHAFT (INTAKE)

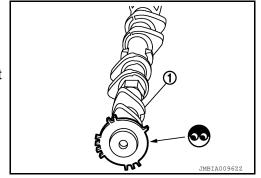
Check the following.

- · 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 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-53, "Removal and Installation".

>> GO TO 7. NO

.CHECK LUBRICATION CIRCUIT

Refer to EM-68, "Inspection After Disassembly".

Is the inspection result normal?

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YES >> GO TO 8.

NO >> Clean lubrication line.

8.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

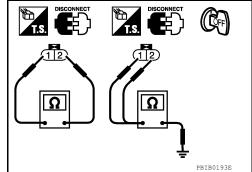
Component Inspection

INFOID:0000000006391650

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

- 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?

YES >> INSPECTION END

NO >> Replace intake valve timing control solenoid valve.



P0075 IVT CONTROL SOLENOID VALVE

Description INFOID:0000000006391651

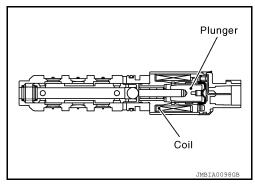
Intake valve timing control solenoid valve is activated by ON/OFF pulse duty (ratio) signals from the ECM.

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 TO 2.

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-125, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

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

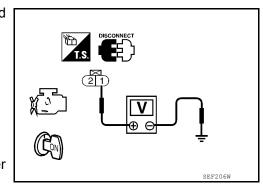
- Turn ignition switch OFF.
- 2. Disconnect intake valve timing control solenoid valve harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between intake valve timing control solenoid valve harness connector and ground.

IVT control s	IVT control solenoid valve		Voltage	
Connector	Terminal	Ground	voltage	
F59	1	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 2.

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



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P0075 IVT CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

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2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. 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.

IVT control solenoid valve		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F59	2	F13	78	Existed

4. 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.

3.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Refer to EC-126, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace intake valve timing control solenoid valve.

4. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391654

1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- 1. 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)

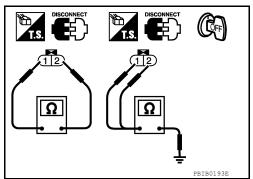
Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace intake valve timing control solenoid valve.

2. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

Remove intake valve timing control solenoid valve.



P0075 IVT CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

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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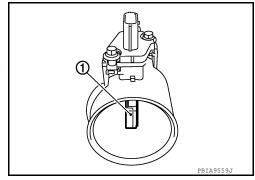
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P0102, P0103 MAF SENSOR

Description INFOID:0000000006391655

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:0000000006391656

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-129, "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-129, "Diagnosis Procedure".

NO >> GO TO 4.

4.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0103-II

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

Is DTC detected?

YES >> Go to EC-129, "Diagnosis Procedure".

P0102, P0103 MAF SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391657

1.INSPECTION START

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Confirm the detected DTC.

Which DTC is detected?

P0102 >> GO TO 2. P0103 >> GO TO 3.

 ${f 2.}$ 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

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace ground connection.

4.CHECK MAF SENSOR POWER SUPPLY CIRCUIT

- 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
F31	2	Ground	Battery voltage

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 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 sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F31	3	F13	56	Existed

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.

$oldsymbol{\circ}$.CHECK MAF SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

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

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MAF sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F31	4	F13	58	Existed

2. 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 MASS AIR FLOW SENSOR

Refer to EC-130, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace mass air flow sensor.

8.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391658

1. CHECK MASS AIR FLOW SENSOR-I

(E)With CONSULT-III

- 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.

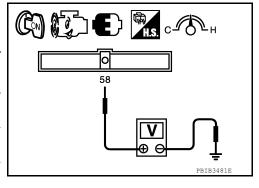
Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.1V
	Idle to about 4,000 rpm	0.9 - 1.1V to Approx. 2.4V*

^{*:} 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.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the voltage between ECM harness connector and ground.

ECM		Ground	Ground Condition		
Connector	Terminal	Ground	Condition	Voltage	
	58 (MAF sensor		Ignition switch ON (Engine stopped.)	Approx. 0.4V	
F13			Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.1V	
siç	signal)	Idle to about 4,000 rpm	0.9 - 1.1V 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?

>> GO TO 4. YES

P0102, P0103 MAF SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

NO >> GO TO 2.

$2. \mathsf{CHECK}$ 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 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.
- 4. Select "MAS A/F SE-B1" and check indication.

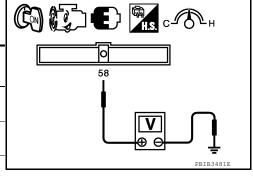
Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.1V
	Idle to about 4,000 rpm	0.9 - 1.1V to Approx. 2.4V*

^{*:} 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 and ground.

ECM		Ground	Condition	Voltage	
Connector	Terminal	Glodila	Condition	voitage	
58			Ignition switch ON (Engine stopped.)	Approx. 0.4V	
F13	(MAF		Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.1V	
			ldle to about 4,000 rpm	0.9 - 1.1V 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

(E) 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.

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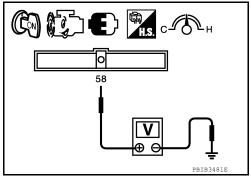
Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.1V
	Idle to about 4,000 rpm	0.9 - 1.1V to Approx. 2.4V*

^{*:} 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 and ground.

ECM		Ground	Condition	Voltage	
Connector	Terminal	Condition		voltage	
58			Ignition switch ON (Engine stopped.)	Approx. 0.4V	
F13 sense	(MAF sensor signal)	Ground	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.1V	
		Idle to about 4,000 rpm	0.9 - 1.1V 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?

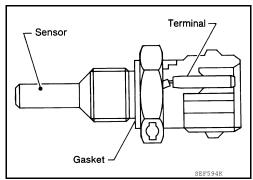
YES >> INSPECTION END

NO >> Clean or replace mass air flow sensor.

P0117, P0118 ECT SENSOR

Description INFOID:0000000006391659

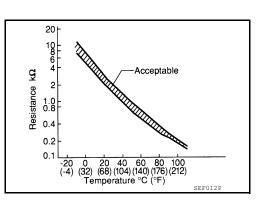
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The 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 terminal 46 (Engine coolant temperature sensor) and ground.



CAUTION:

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.

DTC Logic INFOID:0000000006391660

DTC DETECTION LOGIC

DTC No.	Trouble Diagnosis Name	DTC detecting condition	Possible Cause
P0117	Engine coolant tem- perature sensor cir- cuit 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 tem- perature sensor cir- cuit high input	An excessively high voltage from the sensor is sent to ECM.	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.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

YES >> Go to EC-134, "Diagnosis Procedure".

NO >> INSPECTION END

EC-133 Revision: June 2012 2011 Altima GCC

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< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Diagnosis Procedure

INFOID:0000000006391661

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

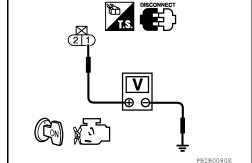
YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK ECT SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect engine coolant temperature (ECT) sensor harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between ECT sensor harness connector and ground.

ECT sensor		Ground	Voltage
Connector	Terminal	Oround	Voltage
F11	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.

${f 3.}$ CHECK ECT SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 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
F11	2	F13	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-134, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace engine coolant temperature sensor.

CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391662

1. CHECK ENGINE COOLANT TEMPERATURE SENSOR

- Turn ignition switch OFF.
- Disconnect engine coolant temperature sensor harness connector.
- Remove engine coolant temperature sensor.

P0117, P0118 ECT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

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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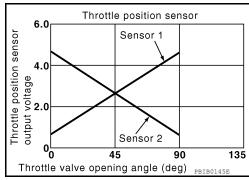
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P0122, P0123 TP SENSOR

Description INFOID:0000000006391663

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:0000000006391664

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-161, "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-136, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391665

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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.
- 2. Turn ignition switch ON.

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P0122, P0123 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Check the voltage between electric throttle control actuator harness connector and ground.

Electric throttle	control actuator	Ground	Voltage	
Connector	Connector Terminal		voltage	
F57	1	Ground	Approx. 5V	

6|5|4|3|2|1

Is the inspection result normal?

YES >> GO TO 3.

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

3.check throttle position sensor 2 ground circuit for open and short

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. 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
F57	4	F13	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.

$oldsymbol{4}.$ 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		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F57	3	F13	38	Existed

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

Is the inspection result normal?

>> GO TO 5. YES

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-138, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace electric throttle control actuator.
- Go to <u>EC-138</u>, "Special Repair Requirement".

>> INSPECTION END

.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

EC-137 Revision: June 2012 2011 Altima GCC

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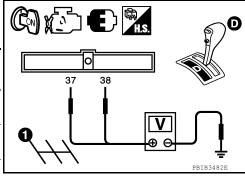
Component Inspection

INFOID:0000000006391666

1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set shift lever to D (CVT) or 1st (M/T) position.
- 6. Check the voltage between ECM harness connector and ground.

ECM		0	O and distant		Valtage	
Connector	Terminal	Ground	Condition		Voltage	
	37 (TP sensor 1			Fully released	More than 0.36V	
F13	signal)	Ground	Accelerator pedal	Fully depressed	Less than 4.75V	
	38 (TP sensor 2			Fully released	Less than 4.75V	
	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

- 1. Replace electric throttle control actuator.
- Go to EC-138, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000006391667

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-20, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

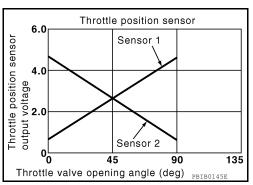
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P0222, P0223 TP SENSOR

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-139, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

1. Turn ignition switch OFF.

Check ground connection E9. Refer to Ground Inspection in GI-45, "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.

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< DTC/CIRCUIT DIAGNOSIS >

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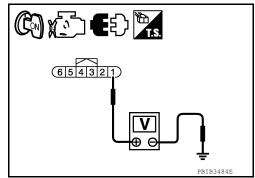
Check the voltage between electric throttle control actuator harness connector and ground.

Electric throttle of	Ground	Voltage	
Connector	Terminal	Ground	voltage
F57	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.



${f 3.}$ CHECK THROTTLE POSITION SENSOR 1 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 c	EC	Continuity		
Connector	Terminal	Connector	Terminal	Continuity
F57	4	F13	36	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 THROTTLE POSITION SENSOR 1 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		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F57	2	F13	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.

${f 5.}$ CHECK THROTTLE POSITION SENSOR

Refer to EC-141, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

$oldsymbol{6}$.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace electric throttle control actuator.
- Go to <u>EC-141</u>, "Special Repair Requirement".

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

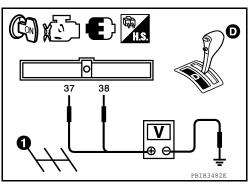
Component Inspection

INFOID:0000000006391671

1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set shift lever to D (CVT) or 1st (M/T) position.
- 6. Check the voltage between ECM harness connector and ground.

ECM		Ground	Co	Condition		
Connector	Terminal	Oround	Condition		Voltage	
	37 (TP sensor 1			Fully released	More than 0.36V	
F13	signal)	Ground	Accelerator pedal	Fully depressed	Less than 4.75V	
	38 (TP sensor 2			Fully released	Less than 4.75V	
	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

- 1. Replace electric throttle control actuator.
- Go to <u>EC-141</u>, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000006391672

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-20, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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P0327, P0328 KS

Description INFOID:000000006391673

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-142, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391675

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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.
- 2. Check the continuity between knock sensor harness connector and ECM harness connector.

Knock sensor		EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F45	2	F13	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.

$\overline{3}$.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		EC	Continuity		
Connector	Terminal	Connector	Terminal	Continuity	
F45	1	F13	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-143, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace knock sensor.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK KNOCK SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect knock sensor harness connector.
- Check resistance between knock sensor terminals as follows.
 NOTE:

It is necessary to use an ohmmeter which can measure more than 10 $M\Omega.$

Terminals	Resistance	
1 and 2	Approx. 532 - 588 kΩ [at 20°C (68°F)]	

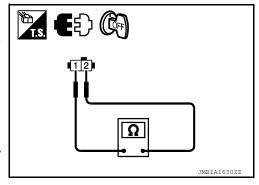
CAUTION:

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:0000000006391677

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.

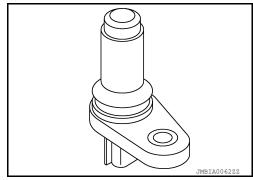
When the engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

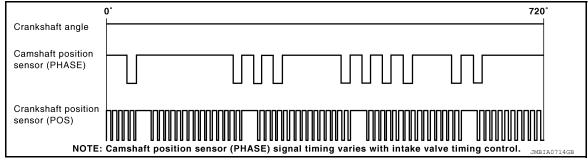
The changing gap causes the magnetic field near the sensor to change.

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)

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Is 1st trip DTC detected?

YES >> Go to EC-145, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391679

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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 ser	nsor (POS)	Ground	Voltage	
Connector	Terminal	Ground	voltage	
F30	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

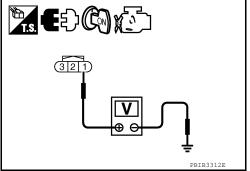
- Turn ignition switch ON.
- Disconnect ECM harness connector.
- Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

CKP sei	CKP sensor (POS)		ECM	
Connector	Terminal	Connector	Terminal	Continuity
F30	1	F13	76	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit.



$oldsymbol{4}.$ CHECK CRANKSHAFT POSITION (CKP) SENSOR (POS) POWER SUPPLY CIRCUIT-III

Check harness for short to power and short to ground, between the following terminals.

EC	М	Sensor		
Connector	Terminal	Name	Connector	Terminal
F13	72	Refrigerant pressure sensor	E219	1
1 13	76	CKP sensor (POS)	F30	1
E10	87	APP sensor	E40	6

Is the inspection result normal?

YES >> GO TO 5.

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

CHECK COMPONENTS

Check the following.

Refrigerant pressure sensor (Refer to <u>EC-271, "Diagnosis Procedure"</u>.)

EC-145 Revision: June 2012 2011 Altima GCC EC

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< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace malfunctioning components.

6.CHECK APP SENSOR

Refer to EC-210, "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.
- 2. Go to EC-210, "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
F30	2	F13	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 se	nsor (POS)	E	ECM	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F30	3	F13	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-147, "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-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391680

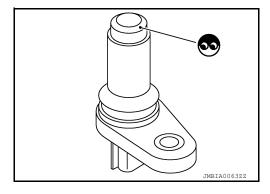
1. CHECK CRANKSHAFT POSITION SENSOR (POS)-I

- 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).



$2. {\sf CHECK} \ {\sf CRANKSHAFT} \ {\sf POSITION} \ {\sf SENSOR} \ ({\sf POS})\text{-II}$

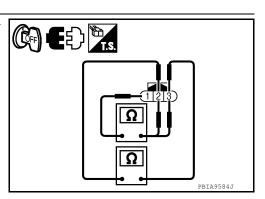
Check resistance between crankshaft position sensor (POS) terminals as follows.

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:0000000006391681

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.

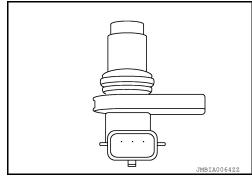
The sensor consists of a permanent magnet and Hall IC.

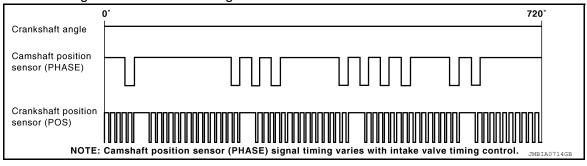
When engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

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-161, "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-9, "System Diagram".) Starting system circuit (Refer to STR-9, "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.

P0340 CMP SENSOR (PHASE)

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

INFOID:0000000006391683

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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 <u>EC-149</u>, "<u>Diagnosis Procedure</u>".

NO >> GO TO 3.

3.PERFORM DTC CONFIRMATION PROCEDURE-I

- Maintaining engine speed at more than 800 rpm for at least 5 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-149, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

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.
- 2. Check ground connection E9. Refer to Ground Inspection in GI-45, "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

- 1. Disconnect camshaft position (CMP) sensor (PHASE) harness connector.
- Turn ignition switch ON.
- Check the voltage between CMP sensor (PHASE) harness connector and ground.

CMP senso	r (PHASE)	Ground	Voltage	
Connector	Terminal	Ground	voitage	
F55	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.

EC-149

CMP senso	r (PHASE)	EC	М	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F55	2	F13	64	Existed

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

Revision: June 2012

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

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2011 Altima GCC

< DTC/CIRCUIT DIAGNOSIS >

- Disconnect ECM harness connector.
- 2. Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

CMP sensor (PHASE)		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F55	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-150, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace camshaft position sensor (PHASE).

7.CHECK CAMSHAFT (INT)

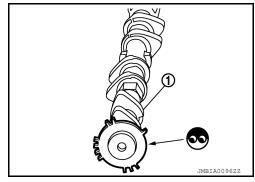
Check the following.

- · 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-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391684

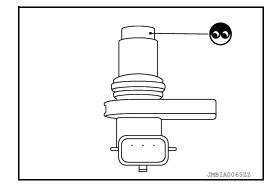
1. CHECK CAMSHAFT POSITION SENSOR (PHASE)-I

- 1. Turn ignition switch OFF.
- 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

P0340 CMP SENSOR (PHASE)

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Check resistance camshaft position sensor (PHASE) terminals as follows.

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). EC

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P0500 VSS

Description INFOID:0000000006391685

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-119, "DTC Logic".
- If DTC P0500 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to <u>EC-120</u>, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0500	Vehicle speed sensor	The vehicle speed signal to ECM is almost 0 km/h (0 MPH) 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) Wheel 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 5 seconds before conducting the next test.

>> GO TO 3.

3.CHECK VEHICLE SPEED SIGNAL

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-153, "Diagnosis Procedure".

4. PERFORM DTC CONFIRMATION PROCEDURE

- Select "DATA MONITOR" mode with CONSULT-III.
- 2. Warm engine up to normal operating temperature.
- Maintain the following conditions for at least 50 (CVT models) or 40 (M/T models) consecutive seconds.
 CAUTION:

P0500 VSS

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Always drive vehicle at	a safe speed.	
ENG SPEED	CVT: 1,350 - 6,000 rpm	
COOLAN TEMP/S	M/T: 1,650 - 6,000 rpm More than 70°C (158°F)	
	CVT: 5.5 - 31.8 msec	
B/FUEL SCHDL	M/T: 4.8 - 31.8 msec	
Shift lever	Except P or N position (CVT) Except Neutral position (M/T)	
PW/ST SIGNAL	OFF	
4. Check 1st trip DTC. Is 1st trip DTC detected? YES >> Go to EC-153, "D NO >> INSPECTION EN 5.PERFORM COMPONENT	D	
Perform component function of	check. Refer to <u>EC-153, "Com</u> ck to check the overall function to be confirmed. 1? D	ponent Function Check". on of the vehicle speed signal circuit. During this
Component Function C	heck	INFOID:000000006391687
1.PERFORM COMPONENT	FUNCTION CHECK	
 Without CONSULT-III 1. Lift up drive wheels. 2. Start engine. 3. Read vehicle speed of sp The vehicle speed should position. Is the inspection result normal YES >> INSPECTION EN NO >> Go to EC-153, "D 	d be able to exceed 10 km/h	(6 MPH) when rotating wheels with suitable gear
Diagnosis Procedure		INFOID:000000006391688
1. CHECK DTC WITH "ABS A	ACTUATOR AND ELECTRIC	UNIT (CONTROL UNIT)"
	Function (ABS)" or BRC-81, " !?	
Refer to MWI-28, "CONSULT		
>> INSPECTION EN	D	

P0550 PSP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

P0550 PSP SENSOR

Description INFOID:000000006391688

Power steering pressure (PSP) sensor is installed to the power steering high-pressure tube and detects a power steering load.

This sensor is a potentiometer which transforms the power steering load into output voltage, and emits the voltage signal to the ECM. The ECM controls the electric throttle control actuator and adjusts the throttle valve opening angle to increase the engine speed and adjusts the idle speed for the increased load.

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0550 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to <u>EC-161, "DTC Logic"</u>.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0550	Power steering pressure sensor circuit	An excessively low or high voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted) Power steering 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. Start engine and let it idle for at least 5 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-154, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391691

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK PSP SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect power steering pressure (PSP) sensor harness connector.
- Turn ignition switch ON.

P0550 PSP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

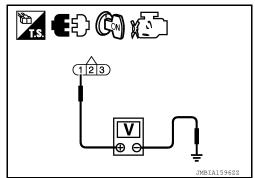
Check the voltage between PSP sensor harness connector and ground.

PSP s	ensor	Ground	Voltage
Connector Terminal		Oround	voltage
F40	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.



${f 3.}$ CHECK PSP SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between PSP sensor harness connector and ECM harness connector.

PSP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F40	3	F13	48	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 short to power in harness or connectors.

f 4 .CHECK PSP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between PSP sensor harness connector and ECM harness connector.

PSP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F40	2	F13	41	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 PSP SENSOR

Refer to EC-155, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace PSP sensor.

O.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK POWER STEERING PRESSURE SENSOR

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected. 2.
- Start engine and let it idle.

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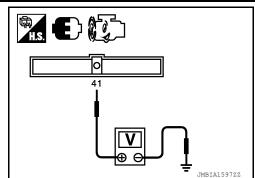
P0550 PSP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

4. Check the voltage between ECM harness connector and ground under the following conditions.

	ECM	Co	ndition	Voltage
Connector	Terminal	Coi	idition	voitage
	41	Steering	Being turned	0.5 - 4.5V
F13	(Power steering pressure sensor signal)	wheel	Not being turned	0.4 - 0.8V



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace power steering pressure sensor.

P0603 ECM POWER SUPPLY

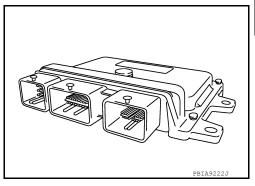
< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

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 10 seconds.
- 2. Turn ignition switch OFF and wait at least 5 minutes
- 3. Turn ignition switch ON and wait at least 10 seconds.
- 4. Repeat steps 2 and 3 for five times.
- 5. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-157, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK ECM POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.

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P0603 ECM POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

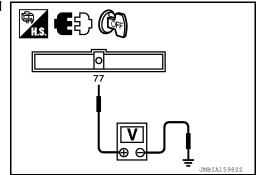
[QR25DE]

Check the voltage between ECM harness connector and ground.

	ECM	Ground	Voltage
Connector	Connector Terminal		voltage
F13	77	Ground	Battery voltage

Is the inspection result normal?

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



2. DETECT MALFUNCTIONING PART

Check the following.

- 15A fuse (No. 42)
- IPDM E/R harness connector F10
- · Harness for open or short between ECM and battery

>> Repair or replace harness or connectors.

3. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace harness or connectors.

4.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- Erase DTC.
- 3. Perform DTC Confirmation Procedure.

See EC-157, "DTC Logic".

Is the 1st trip DTC P0603 displayed again?

YES >> GO TO 5.

NO >> INSPECTION END

5.REPLACE ECM

- 1. Replace ECM.
- Go to EC-18, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> INSPECTION END

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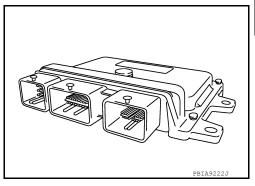
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P0605 ECM

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
		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.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-160, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform dtc confirmation procedure for malfunction b

- 1. wait at least 1 second.
- 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-160, "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-160, "Diagnosis Procedure".

NO >> INSPECTION END

P0605 ECM

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Diagnosis Procedure

INFOID:0000000006391698

1.INSPECTION START

- 1. Turn ignition switch ON.
- 2. Erase DTC.
- 3. Perform DTC Confirmation Procedure.

See EC-159, "DTC Logic".

Is the 1st trip DTC P0605 displayed again?

YES >> GO TO 2.

NO >> INSPECTION END

2.REPLACE ECM

- 1. Replace ECM.
- 2. Go to EC-18, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> INSPECTION END

P0643 SENSOR POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

P0643 SENSOR POWER SUPPLY

DTC Logic INFOID:0000000006391699

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.) (Battery current sensor circuit is shorted.) (PSP sensor circuit is shorted.) [Camshaft position sensor (PHASE) circuit is shorted.] Accelerator pedal position sensor Throttle position sensor Battery current sensor Power steering pressure sensor Camshaft position sensor (PHASE)	E

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?

>> Go to EC-161, "Diagnosis Procedure". YES

>> INSPECTION END NO

Diagnosis Procedure

INFOID:0000000006391700

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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

- Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.

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EC-161 Revision: June 2012 2011 Altima GCC

P0643 SENSOR POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

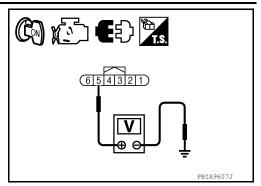
[QR25DE]

Check the voltage between APP sensor harness connector and ground.

APP s	sensor	Ground	Voltage
Connector Terminal		Oround	voltage
E40	5	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 3.



$3. \mathsf{CHECK}$ SENSOR POWER SUPPLY CIRCUITS

- 1. Turn ignition switch OFF.
- 2. Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor		
Connector	Terminal	Name	Connector	Terminal
	47	Electric throttle control actuator	F57	1
F13	51	Battery current sensor	F5	1
1 13	55	PSP sensor	F40	1
	59	CMP sensor (PHASE)	F55	1
E10	83	APP sensor	E40	5

Is the inspection result normal?

YES >> GO TO 4.

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

4. CHECK COMPONENTS

Check the following.

- Power steering pressure sensor (Refer to <u>EC-155</u>, "Component Inspection".)
- Camshaft position sensor (PHASE) (Refer to EC-150, "Component Inspection".)

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace malfunctioning component.

5. CHECK BATTERY CURRENT SENSOR

- 1. Disconnect battery current sensor harness connector.
- 2. Check the continuity between battery current sensor terminals.

Battery current sensor		Battery current sensor		Continuity
Connector	Terminal	Connector Terminal		Continuity
F5	1	F5	2	Existed
13	· ·	13	3	LXISIEU

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace battery negative cable assembly.

6.CHECK TP SENSOR

Refer to EC-138, "Component Inspection".

Is the inspection result normal?

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

7. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

P0643 SENSOR POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

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1. Replace electric throttle control actuator.

2. Go to EC-19, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> INSPECTION END EC 8. CHECK APP SENSOR Refer to EC-210, "Component Inspection". Is the inspection result normal? YES >> GO TO 9. NO >> GO TO 10. D 9. REPLACE ACCELERATOR PEDAL ASSEMBLY 1. Replace accelerator pedal assembly. Е 2. Go to EC-210, "Special Repair Requirement". >> INSPECTION END F 10. CHECK INTERMITTENT INCIDENT Refer to GI-42, "Intermittent Incident". >> INSPECTION END Н

Revision: June 2012 EC-163 2011 Altima GCC

P0850 PNP SWITCH

Description INFOID:000000006391701

When the shift lever position is P or N (CVT), Neutral position (M/T), park/neutral position (PNP) signal 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 park/neutral position (PNP) signal is not changed in the process of engine starting and driving.	Harness or connectors [The park/neutral position (PNP) signal circuit is open or shorted.] Park/neutral position (PNP) switch (M/T models) Transmission range switch (CVT models)

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 TRANSMISSION RANGE SWITCH (CVT) OR PNP SWITCH (M/T) 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 (CVT) Neutral position (M/T)	ON	
Except above position	OFF	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Go to EC-165, "Diagnosis Procedure".

4. PERFORM DTC CONFIRMATION PROCEDURE

- Select "DATA MONITOR" mode with CONSULT-III.
- 2. Start engine and warm it up to normal operating temperature.
- Maintain the following conditions for at least 50 consecutive seconds.

 CAUTION:

Always drive vehicle at a safe speed.

ENG SPEED	CVT: 1,300 - 6,375 rpm M/T: 1,500 - 6,375 rpm
COOLAN TEMP/S	More than 70°C (158°F)

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

B/FUEL SCHDL	CVT: 3.0 - 31.8 msec M/T: 2.1 - 31.8 msec
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-165, "Diagnosis Procedure".

NO >> INSPECTION END

PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-165. "Component Function Check".

NOTE:

Use component function check the overall function of the park/neutral position (PNP) signal circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

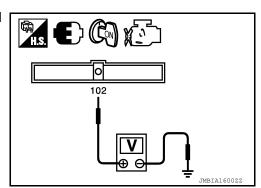
NO >> Go to EC-165, "Diagnosis Procedure".

Component Function Check

1. PERFORM COMPONENT FUNCTION CHECK

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

ECM		Ground Cor		ndition	Voltage
Connector	Terminal	Oround	Condition		Voltage
E10	102 (PNP sig-	Ground Shift lever		P or N (CVT) Neutral (M/T)	Approx. 0V
L10	nal)	Ground	Shint level	Except above	BATTERY VOLTAGE



Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-165, "Diagnosis Procedure".

Diagnosis Procedure

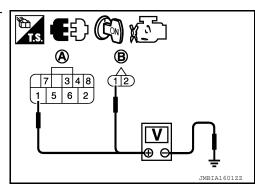
- $1. {\sf CHECK\ TRANSMISSION\ RANGE\ SWITCH\ (CVT)\ OR\ PNP\ SWITCH\ (M/T)\ POWER\ SUPPLY\ CIRCUIT}$
- Turn ignition switch OFF.
- 2. Disconnect transmission range switch (CVT) or PNP switch (M/T) harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between transmission range switch (CVT) or PNP switch (M/T) harness connector and ground.

(C)	range switch VT) tch (M/T)	Ground	Voltage
Connector	Terminal		
F25 (CVT) (A) F32 (M/T) (B)	1	Ground	Battery voltage

Is the inspection result normal?

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

2. DETECT MALFUNCTIONING PART



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P0850 PNP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Check the following.

- IPDM E/R harness connector F10
- 10A fuse (No. 33)
- Harness for open and short between transmission range switch (CVT) or PNP switch (M/T) and IPDM E/R
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK PNP INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between transmission range switch (CVT) or PNP switch (M/T) harness connector and ECM harness connector.

Transmission range switch (CVT) PNP switch (M/T)		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F25 (CVT) F32 (M/T)	2	E10	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.

- IPDM E/R harness connectors E18, F10
- Harness for open and short between transmission range switch (CVT) or PNP switch (M/T) and IPDM E/R
- Harness for open and short between transmission range switch (CVT) or PNP switch (M/T) and ECM
 - >> Repair open circuit or short to ground or short to power in harness or connectors.

${f 5.}$ CHECK TRANSMISSION RANGE SWITCH (CVT) OR PNP SWITCH (M/T)

Refer to TM-297, "Component Inspection (Transmission Range Switch)" (CVT) or TM-22, "Inspection" (M/T).

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace transmission range switch (CVT) or PNP switch (M/T).

6.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

P1212 TCS COMMUNICATION LINE

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

P1212 TCS COMMUNICATION LINE

Description INFOID:0000000006391705

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)".

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.

DTC Logic INFOID:0000000006391706

DTC DETECTION LOGIC

NOTE:

- If DTC P1212 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX. Refer to EC-119, "DTC Logic".
- If DTC P1212 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to EC-120, "DTC Logic".

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 cannot 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

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON. 2.
- Turn ignition switch OFF and wait at least 10 seconds.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 10.5 V 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?

>> Go to EC-167, "Diagnosis Procedure". YES

NO >> INSPECTION END

Diagnosis Procedure

Go to GI-38, "Work Flow".

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INFOID:0000000006391707

P1217 ENGINE OVER TEMPERATURE

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

P1217 ENGINE OVER TEMPERATURE

DTC Logic

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-119, "DTC Logic".
- If DTC P1217 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to EC-120, "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-12, "Changing Engine Coolant"</u>. Also, replace the engine oil. Refer to <u>LU-10, "Changing Engine Oil"</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-12, "SAE Viscosity Number".
- 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 <a>EC-168, "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-169, "Diagnosis Procedure".

Component Function Check

INFOID:0000000006391709

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

< DTC/CIRCUIT DIAGNOSIS >

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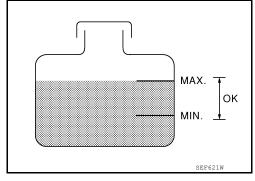
Check the coolant level in the reservoir tank and radiator.

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-169, "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-169, "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/MID/HI).

Without CONSULT-III

- 1. Perform IPDM E/R auto active test and check cooling fan motors operation, refer to PCS-11, "Diagnosis Description".
- Make sure that cooling fan motors-1 and -2 operate at each speed (Low/Middle/High).

Is the inspection result normal?

YES >> INSPECTION END

>> Go to EC-169, "Diagnosis Procedure". NO

Diagnosis Procedure

INFOID:0000000006391710

1.CHECK COOLING FAN OPERATION

(II) 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/MID/HI).

® Without CONSULT-III

- 1. Perform IPDM E/R auto active test and check cooling fan motors operation, refer to PCS-11, "Diagnosis Description".
- Make sure that cooling fan motors-1 and -2 operate at each speed (Low/Middle/High).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-234, "Diagnosis Procedure".

2.CHECK COOLING SYSTEM FOR LEAK-I

Check cooling system for leak. Refer to CO-11, "System Inspection".

Is leakage detected?

YFS >> GO TO 3.

NO >> GO TO 4.

${f 3.}$ CHECK COOLING SYSTEM FOR LEAK-II

Check the following for leak. Refer to CO-11, "System Inspection".

- Hose
- Radiator
- Water pump

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EC-169 Revision: June 2012 2011 Altima GCC >> Repair or replace malfunctioning part.

4. CHECK RADIATOR CAP

Check radiator cap. Refer to CO-15, "Removal and Installation".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace radiator cap.

5. CHECK THERMOSTAT

Check thermostat. Refer to CO-20, "Removal and Installation".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace thermostat.

6. CHECK WATER CONTROL VALVE

Check water control valve. Refer to CO-22, "Removal and Installation".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace water control valve

7. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-134, "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	MA-12, "SAE Viscosity Nu	mber"
	3	Coolant level	Visual	Coolant up to MAX level in reservoir tank and radiator filler neck	CO-12, "Changing Engine Coolant"
	4	Radiator cap	Pressure tester	CO-15, "Removal and Inst	allation"
ON* ²	5	Coolant leaks	Visual	No leaks	CO-11, "System Inspection"
ON* ²	6	Thermostat	Touch the upper and lower radiator hoses	Both hoses should be hot	CO-20, "Removal and Installation"
ON* ¹	7	Cooling fan motor	CONSULT-III	Operating	EC-234, "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-11, "System Inspection"
OFF* ⁴	10	Coolant return from reservoir tank to radiator	• Visual	Should be initial level in reservoir tank	CO-11, "System Inspection"
OFF	11	Water control valve	Remove and inspect the valve	Within the specified value	CO-22, "Removal and Installation"

P1217 ENGINE OVER TEMPERATURE

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Engine	Step	Inspection item	Equipment	Standard	Reference page
OFF	12	Cylinder head	 Straight gauge feeler gauge 	0.1 mm (0.004 in) Maximum distortion (warping)	EM-68, "Inspection After Disassembly"
	13	Cylinder block and pistons	Visual	No scuffing on cylinder walls or piston	EM-85, "Inspection After Disassembly"

^{*1:} Turn the ignition switch ON.

For more information, refer to CO-9, "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.

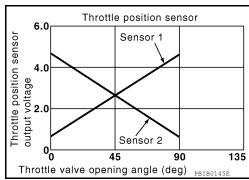
INFOID:0000000006391712

P1225 TP SENSOR

Description INFOID:000000006391711

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-172, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391713

1.check electric throttle control actuator visually

- Turn ignition switch OFF.
- Remove the intake air duct.

P1225 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

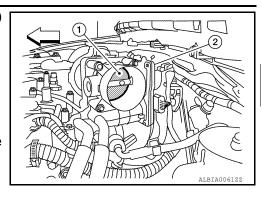
INFOID:0000000006391714

- 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-173, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-20, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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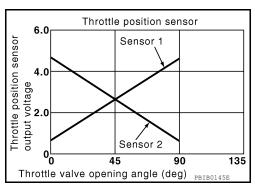
INFOID:0000000006391716

P1226 TP SENSOR

Description INFOID:000000006391715

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.
- 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-174, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391717

1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- 1. Turn ignition switch OFF.
- 2. Remove the intake air duct.

P1226 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

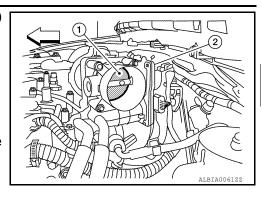
[QR25DE]

- 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-173, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-20, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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P1564 ASCD STEERING SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

P1564 ASCD STEERING SWITCH

Description INFOID:000000006391715

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-57, "System Description" for the ASCD function.

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P1564 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-159, "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.
- Wait at least 10 seconds.
- 3. 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.
- 6. 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-176, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391721

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> 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

< DTC/CIRCUIT DIAGNOSIS >

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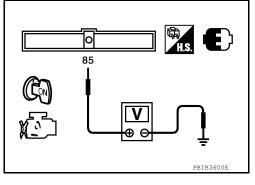
- Select "MAIN SW", "CANCEL SW", "RESUME/ACC SW" and "SET SW" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check each item indication under the following conditions.

Monitor item	Condition	Indication	
MAIN SW	MAIN switch	Pressed	ON
MAIN OW	WAIN SWIGH	Released	OFF
CANCEL SW	CANCEL switch	Pressed	ON
CANCEL 3W	CANCEL SWILLII	Released	OFF
RESUME/ACC SW	RESUME/ACCELERATE switch	Pressed	ON
RESUME/ACC SW	RESONE/ACCELENATE SWILLI	Released	OFF
SFT SW	SET/COAST switch	Pressed	ON
OL1 OVV	OL 1700A01 SWIIGH	Released	OFF

Without CONSULT-III

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

ECM		Ground Condition		Voltage
Connector			Condition	voltage
	85 (ASCD steering switch signal)	(ASCD steering Ground switch	MAIN switch: Pressed	Approx. 0V
			CANCEL switch: Pressed	Approx. 1V
			SET/COAST switch: Pressed	Approx. 2V
E10			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

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect combination switch harness connector M88.
- Check the continuity between combination switch and ECM harness connector.

Combination switch	ECM		Continuity
Terminal	Connector	Terminal	Continuity
16	E10	92	Existed

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

Is the inspection result normal?

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

4. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors M1, E30
- Combination switch (spiral cable)
- · Harness for open and short between ECM and combination switch

P1564 ASCD STEERING SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

>> 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

1. Check the continuity between ECM harness connector and combination switch.

Combination switch	E	Continuity	
Terminal	Connector	Terminal	Continuity
13	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 M1, E30
- 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-178, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace ASCD steering switch.

8. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

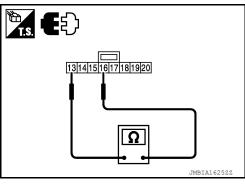
>> INSPECTION END

Component Inspection

INFOID:0000000006391722

- 1. CHECK ASCD STEERING SWITCH
- 1. Disconnect combination switch (spiral cable) harness connector M88.
- Check the continuity between combination switch harness connector terminals under following conditions.

Combination switch		Condition	Resistance	
Connector	Terminals	Condition	resistance	
		MAIN switch: Pressed	Approx. 0 Ω	
		CANCEL switch: Pressed	Approx. 250 Ω	
M88	13 and 16	SET/COAST switch: Pressed	Approx. 660 Ω	
00		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:0000000006391723

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-57, "System Description" for the ASCD function.

DTC Logic INFOID:0000000006391724

DTC DETECTION LOGIC

 If DTC P1572 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-159, "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	В)	ASCD brake switch signal is not sent to ECM for extremely long time while the vehicle is driving.	Harness or connectors (The ASCD clutch switch circuit is shorted.) (M/T) Stop lamp switch ASCD brake switch ASCD clutch switch (M/T) Incorrect stop lamp switch installation Incorrect ASCD brake switch installation Incorrect ASCD clutch switch installation ECM

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.

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 3.

3.perform dtc confirmation procedure for malfunction a-i $\,$

Start engine.

Drive the vehicle for at least 5 consecutive seconds under the following conditions. **CAUTION:**

Always drive vehicle at a safe speed.

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< DTC/CIRCUIT DIAGNOSIS >

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

Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-181, "Diagnosis Procedure".

NO >> GO TO 4.

f 4 . PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A-II

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 5 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-181, "Diagnosis Procedure".

NO >> INSPECTION END

5. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-180, "Component Function Check".

NOTE:

Use component function check to check the overall function of ASCD brake switch. During this check, a DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-181, "Diagnosis Procedure".

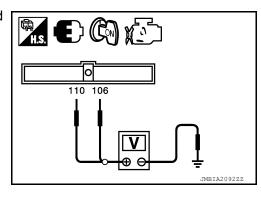
Component Function Check

INFOID:0000000006391725

1. PERFORM COMPONENT FUNCTION CHECK

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

ECM		Ground	Condition		Voltage
Connector	Terminal	Ground	Condition		voltage
E10	110 (ASCD brake switch signal)	Ground	Brake pedal	Slightly depressed	Approx. 0V
				Fully released	Battery voltage
	106 (Stop lamp switch signal)			Slightly depressed	Battery voltage
				Fully released	Approx. 0V



Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-181, "Diagnosis Procedure".

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Diagnosis Procedure

INFOID:0000000006916545

1. CHECK OVERALL FUNCTION-I

(II) With CONSULT-III

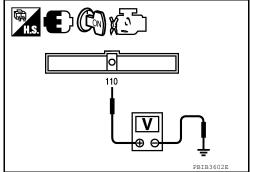
- 1. Turn ignition switch ON.
- Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "BRAKE SW1" indication under the following conditions.

Monitor item	Condition		Indication
BRAKE SW1	Brake pedal (CVT)	Slightly depressed	OFF
DIVARL SWI	AKE SW1 Brake pedal (CVT) Brake pedal and clutch pedal (M/T)	Fully released	ON

Without CONSULT-III

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

ECM		Ground	Conditio	Voltage		
Connector	Terminal	Ground	Conditio	11	voitage	
E10	110 (ASCD	Ground	Brake pedal (CVT)	Slightly de- pressed	Approx. 0 V	
LIU	brake switch signal)	Giodila	Brake pedal and clutch pedal (M/T)	Fully re- leased	Battery voltage	



Is the inspection result normal?

YES >> GO TO 2.

NO-1 >> CVT models: GO TO 3. NO-1 >> M/T models: GO TO 7.

2. CHECK OVERALL FUNCTION-II

(P) With CONSULT-III

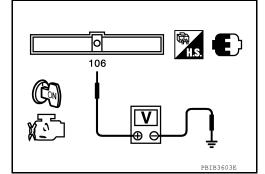
Select "BRAKE SW2" and check indication in "DATA MONITOR" mode.

Monitor item	Condition		Indication
BRAKE SW2	Brake pedal (CVT)	Slightly depressed	ON
DIVINE OWE	Brake pedal and clutch pedal (M/T)	Fully released	OFF

₩ Without CONSULT-III

Check the voltage between ECM harness connector and ground.

ECM		Groun Cond		n	Voltage
Connector	Terminal	d	Conditio	11	voltage
E10	106 (Stop lamp	Groun	Brake pedal (CVT)	Slightly depressed	Battery voltage
	switch signal)	d	Brake pedal and clutch pedal (M/T)	Fully re- leased	Approx. 0 V



Is the inspection result normal?

YES >> GO TO 25. NO >> GO TO 14.

${f 3.}$ CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

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< DTC/CIRCUIT DIAGNOSIS >

Turn ignition switch OFF.
 Disconnect ASCD brake switch harness connector.

3. Turn ignition switch ON.

4. Check the voltage between ASCD brake switch harness connector and ground.

ASCD brai	ke switch	Ground	Voltage
Connector	Terminal	Oround	voltage
E37	1	Ground	Battery voltage

Is the inspection result normal?

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



Check the following.

- Fuse block (J/B) connector E6
- Junction block connector E44, E46
- 10 A fuse (No.3)
- · 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.

$5. \mathsf{CHECK}$ ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector and ASCD brake switch 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
E37	2	E10	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-186, "Component Inspection (ASCD Brake Switch)".

Is the inspection result normal?

YES >> GO TO 19.

NO >> Replace ASCD brake switch. Refer to <u>BR-17</u>, "Removal and Installation".

7. CHECK ASCD BRAKE SWITCH CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ASCD clutch switch harness connector.
- 3. Turn ignition switch ON.

[QR25DE]

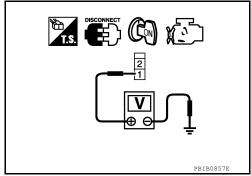
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< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Check the voltage between ASCD clutch switch harness connector and ground.

ASCD clu	tch switch	Ground	Condition		Voltage (V)
Connector	Terminal	Giodila			voltage (v)
E39	1	Ground	Brake pedal	Slightly de- pressed	Approx. 0
			pedai	Fully released	Battery voltage



Is the inspection result normal?

YES >> GO TO 12. NO >> GO TO 8.

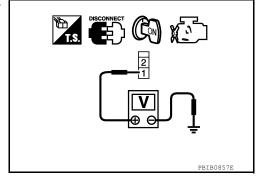
8.CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ASCD brake switch harness connector.
- Turn ignition switch ON. 3.
- 4. Check the voltage between ASCD brake switch harness connector and ground.

ASCD bral	ke switch	Ground	Voltage	
Connector	Terminal	Giodila	vollage	
E37	1	Ground	Battery voltage	

Is the inspection result normal?

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



9. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E6
- Junction block connector E44, E46
- 10 A fuse (No.3)
- · 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.

10.check ascd brake switch input signal circuit for open and short

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between ASCD brake switch harness connector and ASCD clutch switch harness connector.

ASCD bra	ASCD brake switch		ASCD clutch switch	
Connector	Terminal	Connector	Terminal	Continuity
E37	2	E39	1	Existed

4. 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 ASCD BRAKE SWITCH

Refer to EC-186, "Component Inspection (ASCD Brake Switch)".

Is the inspection result normal?

YES >> GO TO 19.

NO >> Replace ASCD brake switch. Refer to BR-17, "Removal and Installation".

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$12.\mathsf{CHECK}$ 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 ECM harness connector and ASCD clutch switch harness connector.

ECM		ASCD clutch switch		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E10	110	E39	2	Existed

4. 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 ASCD CLUTCH SWITCH

Refer to EC-187, "Component Inspection (ASCD Clutch Switch)".

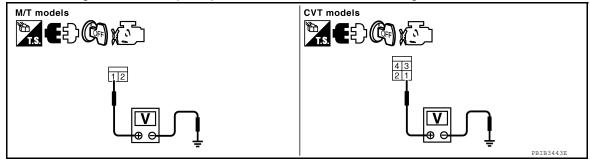
Is the inspection result normal?

YES >> GO TO 19.

NO >> Replace ASCD clutch switch. Refer to CL-9, "Removal and Installation".

14.CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check the voltage between stop lamp switch harness connector and ground.



Stop lam	switch	Ground	Voltage	
Connector	Connector Terminal		voltage	
E38	1	Ground	Battery voltage	

Is the inspection result normal?

YES-1 >> M/T models: GO TO 16.

YES-2 >> CVT models: GO TO 18.

NO >> GO TO 15.

15. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E6
- 10 A fuse (No.7)
- 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.

16. 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.

ECM		Stop lamp switch		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E10	106	E38	2	Existed

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

Is the inspection result normal?

YES >> GO TO 23. NO >> GO TO 17.

17. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E6
- Junction block connector E44, E45
- Harness for open or short between ECM and stop lamp switch

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

18. CHECK STOP LAMP RELAY-1 GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp relay-1 harness connector.
- Check the continuity between stop lamp relay-1 harness connector and and ground.

Stop lamp relay-1		Ground	Continuity
Connector	Terminal	Ground	Continuity
E57	2	Ground	Existed

Is the inspection result normal?

YES >> GO TO 19.

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

19. CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT

- Connect stop lamp switch harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between stop lamp relay-1 harness connector and ground.

Stop lamp relay-1		Ground Con		ondition	Voltage (V)
Connector	Terminal	Ground	Condition Voltage (V)		voltage (v)
E57	1	Ground	Brake pedal	Slightly de- pressed	Battery voltage
	pε			Fully released	Approx. 0

Is the inspection result normal?

YES >> GO TO 21.

NO >> GO TO 20.

20. DETECT MALFUNCTIONING PART

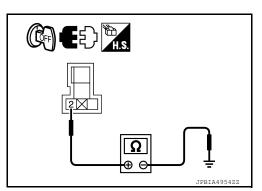
Check the following.

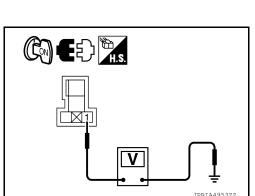
- Joint connector E-14 E56
- · Harness for open or short between stop lamp switch and stop lamp relay-1

Is the inspection result normal?

YES >> GO TO 23.

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





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21. CHECK STOP LAMP RELAY-1 POWER SUPPLY CIRCUIT

Check the voltage between stop lamp relay-1 harness connector and ground.

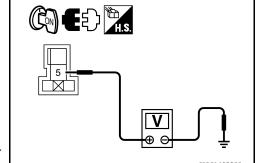
Check the voltage between stop lamp relay-1 harness connector and ground.

Stop lamp relay-1		Ground	Voltage (V)
Connector	Terminal	Ground	voltage (v)
E57	5	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 22.

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



22.CHECK STOP LAMP RELAY-1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp relay-1 harness connector.
- 3. Check the continuity between stop lamp relay-1 harness connector and ECM harness connector.

EC	ECM Stop lamp relay-1		Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E10	106	E57	3	Existed

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

Is the inspection result normal?

YES >> GO TO 24.

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

23. CHECK STOP LAMP SWITCH

Refer to EC-188, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 25.

NO >> Replace stop lamp switch. Refer to BR-17, "Removal and Installation".

24. CHECK STOP LAMP RELAY-1

Refer to EC-188, "Component Inspection (Stop Lamp Relay-1)".

Is the inspection result normal?

YES >> GO TO 25.

NO >> Replace stop lamp relay-1. For the relay number, refer to <u>EC-288, "Wiring Diagram — ENGINE CONTROL SYSTEM —"</u>. For the relay arrangement, refer to PG-34, "Harness Layout" (coupe models) or PG-103, "Harness Layout" (sedan models).

25. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection (ASCD Brake Switch)

INFOID:0000000006391727

1.CHECK ASCD BRAKE SWITCH-I

- 1. Turn ignition switch OFF.
- Disconnect ASCD brake switch harness connector.

< DTC/CIRCUIT DIAGNOSIS >

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Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Existed
1 4114 2		Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK ASCD BRAKE SWITCH-II

1. Adjust ASCD brake switch installation. Refer to BR-13, "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 and 2	вгаке редаг	Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD brake switch.

Component Inspection (ASCD Clutch Switch)

1. CHECK ASCD CLUTCH SWITCH-I

- Turn ignition switch OFF.
- Disconnect ASCD clutch switch harness connector.
- 3. Check the continuity between ASCD clutch switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	1 and 2 Clutch pedal	Fully released	Existed
i aliu z		Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK ASCD CLUTCH SWITCH-II

Adjust ASCD clutch switch installation. Refer to CL-6, "Inspection and Adjustment".

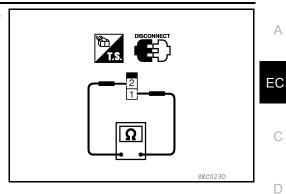
2. Check the continuity between ASCD clutch switch terminals under the following conditions.

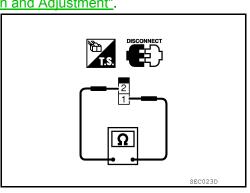
Terminals	Condition		Continuity
1 and 2	Clutch pedal	Fully released	Existed
i aliu z	Ciuton pedai	Slightly depressed	Not existed

Is the inspection result normal?

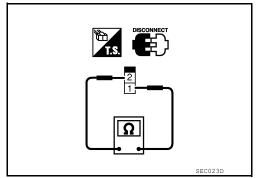
YES >> INSPECTION END

NO >> Replace ASCD clutch switch.





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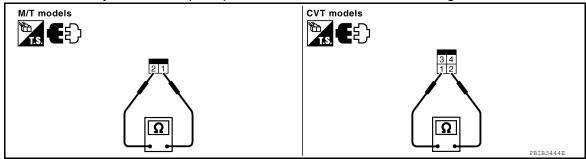
[QR25DE]

Component Inspection (Stop Lamp Switch)

INFOID:0000000006391729

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	1 and 2 Brake pedal	Fully released	Not existed
i aliu z		Slightly depressed	Existed

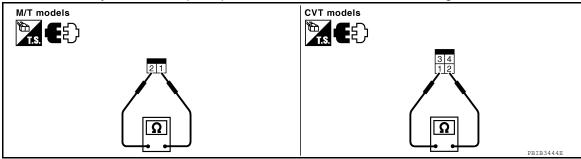
Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK STOP LAMP SWITCH-II

- Adjust stop lamp switch installation. Refer to <u>BR-13</u>, "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 aliu z	2 Brake pedal	Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch.

Component Inspection (Stop Lamp Relay-1)

INFOID:0000000006916546

1. STOP LAMP RELAY-1

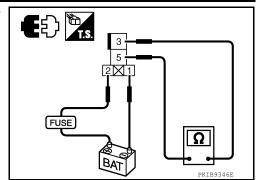
- Turn ignition switch OFF.
- 2. Remove stop lamp relay-1. For the relay number, refer to <u>EC-288, "Wiring Diagram ENGINE CONTROL SYSTEM —"</u>. For the relay arrangement, refer to <u>PG-34, "Harness Layout"</u> (coupe models) or <u>PG-103, "Harness Layout"</u> (sedan models).

< DTC/CIRCUIT DIAGNOSIS >

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3. Check continuity between stop lamp relay-1 terminals under the following conditions.

Stop lamp relay-1		Conditions	Continuity
Terminal		Conditions	
3	5	12 V direct current supply between terminals 1 and 2	Existed
		No current supply	Not existed



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp relay-1.

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P1574 ASCD VEHICLE SPEED SENSOR

Description INFOID:000000006391730

The ECM receives two vehicle speed 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-57, "System Description" for ASCD functions.

DTC Logic

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-119</u>, "<u>DTC Logic"</u>.
- If DTC P1574 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to <u>EC-120</u>, "<u>DTC Logic"</u>.
- If DTC P1574 is displayed with DTC P0500, first perform the trouble diagnosis for DTC P0500. Refer to EC-152, "DTC Logic"
- If DTC P1574 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to <u>EC-159</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 (CVT models) 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.
- 2. 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-190, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391732

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-286, "CONSULT-III Function (TRANSMISSION)".

Is the inspection result normal?

YES >> GO TO 2.

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P1574 ASCD VEHICLE SPEED SENSOR		
< DTC/CIRCUIT DIAGNOSIS >	[QR25DE]	
NO >> Perform trouble shooting relevant to DTC indicated.		^
2.CHECK DTC WITH "ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)"		Α
Refer to BRC-15, "CONSULT Function (ABS)" or BRC-81, "CONSULT Function (ABS)".	1	
Is the inspection result normal?		EC
YES >> GO TO 3. NO >> Repair or replace.		
3.CHECK COMBINATION METER		С
		C
Check combination meter function. Refer to MWI-28, "CONSULT Function (METER/M&A)" .		
		D
>> INSPECTION END		
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Revision: June 2012 EC-191 2011 Altima GCC

P1715 INPUT SPEED SENSOR

Description INFOID:000000006391733

ECM receives input shaft revolution signal from TCM through CAN communication line. ECM uses this signal for engine control.

DTC Logic (INFOID:000000006391734

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-119</u>, "<u>DTC Logic</u>".
- If DTC P1715 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to EC-120, "DTC Logic".
- If DTC P1715 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to <u>EC-159</u>, "<u>DTC Logic"</u>.
- If DTC P1715 is displayed with DTC P0335, first perform the trouble diagnosis for DTC P0335. Refer to EC-144, "DTC Logic".
- If DTC P1715 is displayed with DTC P0340, P0345, first perform the trouble diagnosis for DTC P0340, P0345. Refer to <u>EC-148</u>, "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1715	Input speed sensor (TCM output)	Input shaft revolution signal is different from the theoretical value calculated by ECM from output shaft revolution signal and engine rpm signal.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (Input 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

- 1. Start engine.
- Drive vehicle at a speed of more than 50 km/h (31 MPH) for at least 5 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-192, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391735

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-286, "CONSULT-III Function (TRANSMISSION)".

OK or NG

OK >> GO TO 2

NG >> Perform trouble shooting relevant to DTC indicated.

2.REPLACE TCM

Replace TCM. Refer to TM-414, "Removal and Installation".

>> INSPECTION END

P1805 BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

P1805 BRAKE SWITCH

Description INFOID:0000000006391736

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

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.
- Erase the DTC.
- 4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-193, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006916779

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 the inspection result normal?

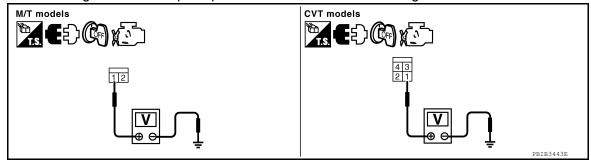
YES-1 >> M/T models: GO TO 4.

YES-2 >> CVT models: GO TO 6.

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.



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Stop lamp switch Connector Terminal		Ground	Voltage	
		Ground	voltage	
E38	1	Ground	Battery voltage	

Is the inspection result normal?

YES-1 >> M/T models: GO TO 4.

YES-2 >> CVT models: GO TO 6.

NO >> GO TO 3.

3.DETECT MALFUNCTIONING PART

Check the following.

- Junction block connector E6
- 10 A fuse (No. 7)
- 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.
- Check the continuity between ECM harness connector and stop lamp switch harness connector.

ECM		Stop lamp switch		Continuity
Connector	nector Terminal Connector Terminal		Continuity	
E10	106	E38	2	Existed

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

Is the inspection result normal?

YES >> GO TO 11. NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E6
- Junction block connector E44, E45
- · Harness for open or short between ECM and stop lamp switch

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

6. CHECK STOP LAMP RELAY-1 GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp relay-1 harness connector.
- 3. Check the continuity between stop lamp relay-1 harness connector and ground.

Stop lamp	relay-1	Ground	Continuity
Connector Terminal		Ground	Continuity
E57	2	Ground	Existed

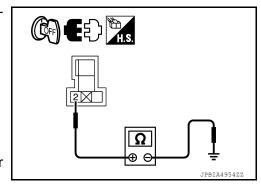
Is the inspection result normal?

YES >> GO TO 7.

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

7.CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT

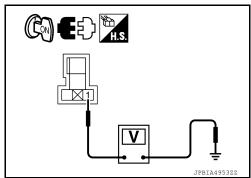
- 1. Connect stop lamp switch harness connector.
- 2. Turn ignition switch ON.



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Check the voltage between stop lamp relay-1 harness connector and ground.

Stop lam	p relay-1	Ground	Condition		Voltage (V)	
Connector	Terminal	Ground	Condition		voilage (v)	
E57	1	Ground	Brake pedal	Slightly de- pressed	Battery voltage	
			peual	Fully released	Approx. 0	



Is the inspection result normal?

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

8. DETECT MALFUNCTIONING PART

Check the following.

- Joint connector E-14 E56
- Harness for open or short between stop lamp switch and stop lamp relay-1

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.

9.CHECK STOP LAMP RELAY-1 POWER SUPPLY CIRCUIT

Check the voltage between stop lamp relay-1 harness connector and ground.

Stop lamp relay-1		Ground	Voltage (V)
Connector Terminal		Ground	voltage (v)
E57	5	Ground	Battery voltage

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 relay-1 input signal circuit for open and short

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp relay-1 harness connector.
- Check the continuity between stop lamp relay-1 harness connector and ECM harness connector.

	ECM		ECM Stop lamp relay-1			Continuity
	Connector Terminal		Connector	Terminal	Continuity	
	E10	106	E57	3	Existed	

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.

11. CHECK STOP LAMP SWITCH

Refer to EC-196, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace stop lamp switch. Refer to BR-17, "Removal and Installation".

12. CHECK STOP LAMP RELAY-1

Refer to EC-197, "Component Inspection (Stop Lamp Relay-1)".

Is the inspection result normal?

EC-195 Revision: June 2012 2011 Altima GCC

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YES >> GO TO 13.

NO

>> Replace stop lamp relay-1. For the relay number, refer to <u>EC-288, "Wiring Diagram — ENGINE CONTROL SYSTEM —"</u>. For the relay arrangement, refer to <u>PG-34, "Harness Layout"</u> (coupe models) or <u>PG-103, "Harness Layout"</u> (sedan models).

13. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

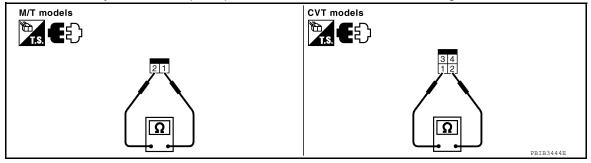
>> INSPECTION END

Component Inspection (Stop Lamp Switch)

INFOID:0000000006391739

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	C	Continuity	
1 and 2 Bral	Brake pedal	Fully released	Not existed
	Drake pedar	Slightly depressed	Existed

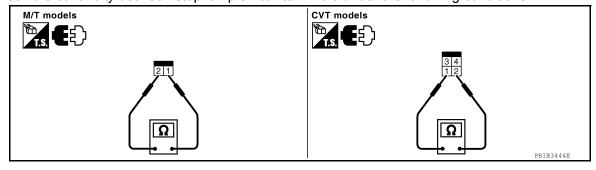
Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. CHECK STOP LAMP SWITCH-II

- 1. Adjust stop lamp switch installation. Refer to BR-13, "Inspection and Adjustment".
- 2. Check the continuity between stop lamp switch terminals under the following conditions.



Terminals	C	Continuity	
1 and 2 Brake pedal	Brake nedal	Fully released	Not existed
	Slightly depressed	Existed	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch.

P1805 BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

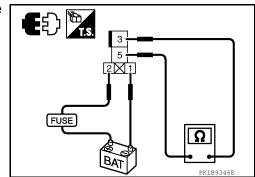
Component Inspection (Stop Lamp Relay-1)

INFOID:0000000006916778

1. STOP LAMP RELAY-1

- 1. Turn ignition switch OFF.
- 2. Remove stop lamp relay-1. For the relay number, refer to <u>EC-288, "Wiring Diagram ENGINE CON-TROL SYSTEM —"</u>. For the relay arrangement, refer to <u>PG-34, "Harness Layout"</u> (coupe models) or <u>PG-103, "Harness Layout"</u> (sedan models).
- 3. Check continuity between stop lamp relay-1 terminals under the following conditions.

Stop lamp relay-1 Terminal		Conditions Continu	
		Conditions	Continuity
3	5	12 V direct current supply between terminals 1 and 2	Existed
		No current supply	Not existed
	14	10	•



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp relay-1.

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P2100, P2103 THROTTLE CONTROL MOTOR RELAY

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

P2100, P2103 THROTTLE CONTROL MOTOR RELAY

Description INFOID:000000006391740

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

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-198, "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-198, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391742

1. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Disconnect IPDM E/R harness connector F10.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

P2100, P2103 THROTTLE CONTROL MOTOR RELAY

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Sonnector Terminal Connector Terminal Connector Terminal Stristed	EC	M	IPDI	M E/R	Continuity	
Also check harness for short to ground and short to power. the inspection result normal? YES >> GO TO 2. NO >> Repair open circuit or short to ground or short to power in harness or connectors. .CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT Check the continuity between ECM harness connector and IPDM E/R harness connector. ECM IPDM E/R Continuity Connector Terminal Connector Terminal Terminal Continuity F14 2 F10 54 Existed Also check harness for short to ground and short to power. the inspection result normal? YES >> GO TO 3. NO >> Repair open circuit or short to ground or short to power in harness or connectors. .CHECK FUSE Disconnect 15A fuse (No. 42) from IPDM E/R. Check 15A fuse for blown. the inspection result normal? YES >> GO TO 4. NO >> Replace 15A fuse. .CHECK INTERMITTENT INCIDENT efer to GI-42, "Intermittent Incident". the inspection result normal? YES >> Replace IPDM E/R.	Connector	Terminal	Connector	Terminal	Continuity	ı
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efer to GI-42, "Intermittent Incident". the inspection result normal? /ES >> Replace IPDM E/R.	′ES >>	GO TO 4	ļ.			
the inspection result normal? /ES >> Replace IPDM E/R.						
/ES >> Replace IPDM E/R.				uent.		
NO >> Repair or replace namess or connectors.	′ES >>	Replace	IPDM E/R.			
	4O >>	Repair or	r replace na	arness or c	nnectors.	

Revision: June 2012 EC-199 2011 Altima GCC

P2101 ELECTRIC THROTTLE CONTROL FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

P2101 ELECTRIC THROTTLE CONTROL FUNCTION

Description INFOID:000000006391743

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

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-198</u>, "<u>DTC Logic"</u> or <u>EC-206</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-200, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391745

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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

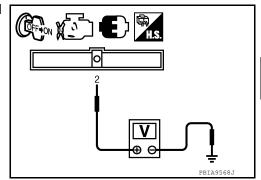
P2101 ELECTRIC THROTTLE CONTROL FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Check the voltage between ECM harness connector and ground.

ECM		Ground Condition		Voltage	
Connector	Terminal	Ground	Condition	voltage	
F14	2	Ground	Ignition switch OFF	Approx. 0V	
	2	Giodila	Ignition switch ON	Battery voltage	



Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 3.

${f 3.}$ CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT

- Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector F10.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

IPDM E/R		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F10	70	F14	15	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.

$oldsymbol{4}.$ CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-II

Check the continuity between ECM harness connector and IPDM E/R harness connector.

IPDM E/R		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F10	54	F14	2	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 fuse

- Disconnect 15A fuse (No. 42) from IPDM E/R.
- Check 15A fuse for blown.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace 15A fuse.

6. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connectors.

/.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.

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Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	5		5	Not existed
F57		F14	6	Existed
1 37			5	Existed
	6		6	Not existed

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

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace.

8.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.
 - Electric throttle control actuator

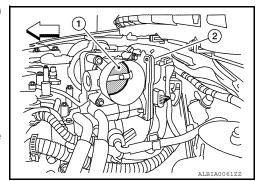
: Vehicle front

Is the inspection result normal?

YES >> GO TO 9.

NO

>> Remove the foreign matter and clean the electric throttle control actuator inside.



9. CHECK THROTTLE CONTROL MOTOR

Refer to EC-202, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 11.

10. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace harness or connectors.

11.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace malfunction electric throttle control actuator.
- Go to EC-203, "Special Repair Requirement".

>> INSPECTION END

Component Inspection

INFOID:0000000006391746

1. CHECK THROTTLE CONTROL MOTOR

Disconnect electric throttle control actuator harness connector.

P2101 ELECTRIC THROTTLE CONTROL FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

INFOID:0000000006391747

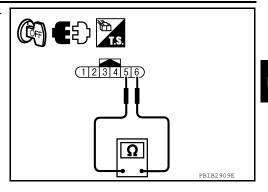
Check resistance between electric throttle control actuator terminals as follows.

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-203, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-20, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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P2118 THROTTLE CONTROL MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

P2118 THROTTLE CONTROL MOTOR

Description INFOID:000000006391748

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-204, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391750

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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
F57	3	F14	6	Existed
1 37	6	117	5	Existed
			6	Not existed

P2118 THROTTLE CONTROL MOTOR

< DTC/CIRCUIT DIAGNOSIS >

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-205, "Component Inspection".

Is the inspection result normal?

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

4. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "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.
- Go to EC-205, "Special Repair Requirement".

>> INSPECTION END

Component Inspection

1. CHECK THROTTLE CONTROL MOTOR

- 1. 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-203, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-20, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

Revision: June 2012

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P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

Description INFOID.000000006391753

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.

$2.\mathsf{PERFORM}$ DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A AND B

- 1. Turn ignition switch ON and wait at least 1 second.
- Set shift lever to D (CVT) or 1st (M/T) position and wait at least 3 seconds.
- 3. Set shift lever to P (CVT) or Neutral (M/T) 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 (CVT) or 1st (M/T) position and wait at least 3 seconds.
- 7. Set shift lever to P (CVT) or Neutral (M/T) 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-206, "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 (CVT) or 1st (M/T) position and wait at least 3 seconds.
- 3. Set shift lever to N, P (CVT) or Neutral (M/T) position.
- Start engine and let it idle for 3 seconds.
- 5. Check DTC.

Is DTC detected?

YES >> Go to EC-206, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391755

1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

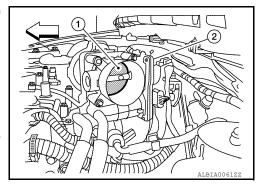
< DTC/CIRCUIT DIAGNOSIS > [QR25DE]

- 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.
 - 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-173, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-20, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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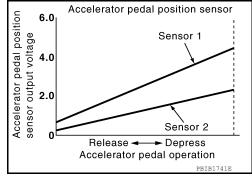
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P2122, P2123 APP SENSOR

Description INFOID:000000006391757

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 Leceiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine oper-

ation 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-161, "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-208, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391759

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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

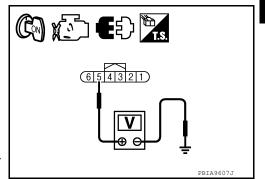
- Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

APP s	ensor	Ground	Voltage	
Connector	Connector Terminal		voltage	
E40	E40 5		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.



${f 3.}$ CHECK APP SENSOR 1 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.

APP s	ensor	EC	Continuity	
Connector	Terminal	Connector Terminal		Continuity
E40	4	E10	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.

$oldsymbol{4}.$ CHECK APP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between APP sensor harness connector and ECM harness connector.

APP s	ensor	EC	Continuity	
Connector Terminal		Connector	Terminal	Continuity
E40	3	E10	81	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 APP SENSOR

Refer to EC-210, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

>> GO TO 6. NO

$\mathsf{6}.\mathsf{REPLACE}$ ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- Go to <u>EC-210</u>, "Special Repair Requirement".

>> INSPECTION END

7.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

EC-209 Revision: June 2012 2011 Altima GCC EC

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>> INSPECTION END

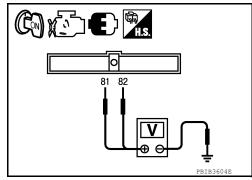
Component Inspection

INFOID:0000000006391760

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 and ground.

ECM		Ground	C	ondition	Voltage	
Connector	Terminal	Ground	Condition		voltage	
	81			Fully released	0.5 - 1.0V	
E10	(APP sensor 1 signal)	Ground	Accelerator pedal	Fully depressed	4.2 - 4.8V	
	82			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-210, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000006391761

1. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-19, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 2.

2. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-20, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END

Accelerator pedal position sensor

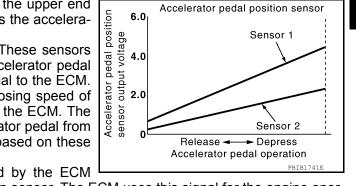
Sensor 1

P2127. P2128 APP SENSOR

Description INFOID:0000000006391762

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:0000000006391763

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	ŀ
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

- Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-211, "Diagnosis Procedure".

>> INSPECTION END

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection". 2.

Is the inspection result normal?

YES >> GO TO 2.

EC-211 Revision: June 2012 2011 Altima GCC

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INFOID:0000000006391764

NO >> Repair or replace ground connection.

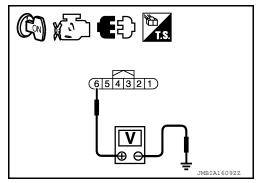
2.CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-I

- 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 s	ensor	Ground	Voltage	
Connector	Connector Terminal		voltage	
E40	E40 6		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.
- Check the continuity between APP sensor harness connector and ECM harness connector.

APP s	ensor	EC	Continuity	
Connector Terminal		Connector	Terminal	Continuity
E40	6	E10	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 APP SENSOR 2 POWER SUPPLY CIRCUIT-III

Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
F13 72 76		Refrigerant pressure sensor	E219	1	
		CKP sensor (POS)	F30	1	
E10	87	APP sensor	E40	6	

Is the inspection result normal?

YES >> GO TO 5.

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

CHECK COMPONENTS

Check the following.

- Crankshaft position sensor (POS) (Refer to EC-147, "Component Inspection".)
- Refrigerant pressure sensor (Refer to EC-271, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace malfunctioning component.

6. CHECK APP SENSOR 2 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.

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INFOID:0000000006391765

APP se	ensor	EC	Continuity	
Connector Terminal		Connector	Terminal	Continuity
E40	2	E10	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
E40	1	E10	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-213, "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.
- 2. Go to EC-214, "Special Repair Requirement".

>> INSPECTION END

10. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

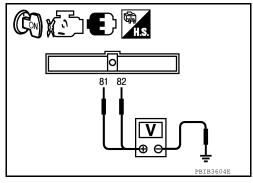
>> INSPECTION END

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 and ground.

ECM		Ground	Condition		Voltage
Connector	Terminal	Ground	Condition		Voltage
E10	81 (APP sensor 1 signal) 82 (APP sensor 2 signal)	Ground	Accelerator pedal	Fully released	0.5 - 1.0V
				Fully depressed	4.2 - 4.8V
		Ground		Fully released	0.25 - 0.5V
				Fully depressed	2.0 - 2.5V



Is the inspection result normal?

P2127, P2128 APP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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YES >> INSPECTION END

NO >> GO TO 2.

$2.\mathtt{REPLACE}$ ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly.
- 2. Go to EC-214, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000006391766

1. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-19, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 2.

2.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-20, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

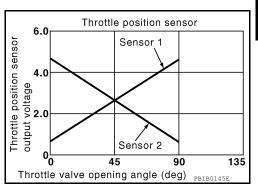
>> END

P2135 TP SENSOR

Description INFOID:0000000006391767

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-161, "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.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- Check DTC.

Is DTC detected?

YES >> Go to EC-215, "Diagnosis Procedure".

NO >> INSPECTION END

>> GO TO 2.

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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

1. Disconnect electric throttle control actuator harness connector.

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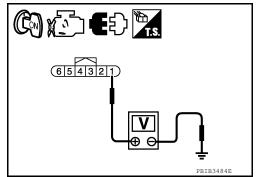
- 2. Turn ignition switch ON.
- Check the voltage between electric throttle control actuator harness connector and ground.

Electric throttle of	control actuator	Ground	Voltage	
Connector	Terminal	Giodila		
F57	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 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 c	ontrol actuator	ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
F57	4	F13	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.

f 4.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	ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
F57	2	F13	37	Existed	
F37	3		38		

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-217, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace electric throttle control actuator.
- EC-217, "Special Repair Requirement"

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

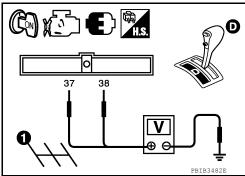
Component Inspection

INFOID:0000000006391770

1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set shift lever to D (CVT) or 1st (M/T) position.
- 6. Check the voltage between ECM harness connector and ground.

ECM		Ground	Condition		Voltage	
Connector	Terminal	Oround	Condition		voltage	
	37 (TP sensor 1			Fully released	More than 0.36V	
F13 38 (TP sensor 2 signal)	`	Ground	Accelerator	Fully depressed	Less than 4.75V	
	Oround	pedal	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

- 1. Replace electric throttle control actuator.
- Go to <u>EC-217</u>, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000006391771

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-20, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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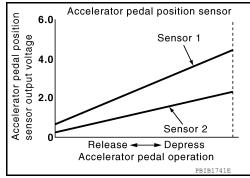
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P2138 APP SENSOR

Description INFOID.000000006391772

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 Leceiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine oper-

ation 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 <u>EC-161, "DTC Logic"</u>.

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.) 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-218, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391774

1. CHECK GROUND CONNECTION

1. Turn ignition switch OFF.

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< DTC/CIRCUIT DIAGNOSIS >

Check ground connection E9. Refer to Ground Inspection in GI-45, "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

- Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

APP s	ensor	Ground	Voltage
Connector	Terminal	Ground	voltage
E40	5	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 3.

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

APP s	ensor	Ground	Voltage
Connector	Terminal	Ground	Voltage
E40	6	Ground	Approx. 5V

Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 4.

f 4 . CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-II

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

APP sensor		EC	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E40	6	E10	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.

CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-III

Check harness for short to power and short to ground, between the following terminals.

EC	M	Sensor		
Connector	Terminal	Name	Connector	Terminal
F13	72	Refrigerant pressure sensor	E219	1
		CKP sensor (POS)	F30	1
E10	87	APP sensor	E40	6

Is the inspection result normal?

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YES >> GO TO 6.

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

6. CHECK COMPONENTS

Check the following.

- Crankshaft position sensor (POS) (Refer to EC-147, "Component Inspection".)
- Refrigerant pressure sensor (Refer to EC-271, "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
E40	2	E10	100	Existed
Ľ 4 0	4	∟10	84	LAISIGU

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

Check the continuity between APP sensor harness connector and ECM harness connector as follows.

•	APP sensor		ECM		Continuity	
	Connector	Terminal	Connector	Terminal	Continuity	
	E40	1	E10	82	Existed	
	L 4 0	3	LIU	81	LXISIEU	

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-221, "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.
- 2. Go to EC-221, "Special Repair Requirement".

>> INSPECTION END

11. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

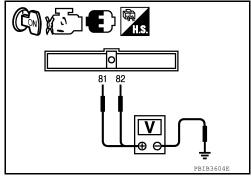
Component Inspection

INFOID:0000000006391775

1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- 1. Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

ECM		Ground	Condition		Voltage	
Connector	Terminal	Ground	Condition		voilage	
	81			Fully released	0.5 - 1.0V	
E10	(APP sensor 1 signal) 82 (APP sensor 2 signal)	(-iround	Accelerator pedal	Fully depressed	4.2 - 4.8V	
LIU				Fully released	0.25 - 0.5V	
				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-221, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000006391776

1. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-19, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 2.

2.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-20, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-20, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END

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Revision: June 2012 EC-221 2011 Altima GCC

ASCD BRAKE SWITCH

Description INFOID.000000006391777

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-57, "System Description" for the ASCD function.

Component Function Check

INFOID:0000000006391778

1. CHECK FOR ASCD BRAKE SWITCH FUNCTION

(I) With CONSULT-III

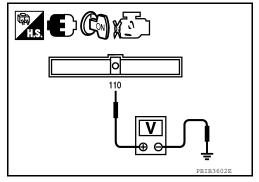
- 1. Turn ignition switch ON.
- 2. Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "BRAKE SW1" indication under the following conditions.

Monitor item	Condition	Indication	
BRAKE SW1	Brake pedal (CVT)	Slightly depressed	OFF
BRAKE SWT	Brake pedal and clutch pedal (M/T)	Fully released	ON

⋈ Without CONSULT-III

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

EC	CM	Ground	Condition		Voltage
Connector	Terminal	Ground			voltage
E10	110 (ASCD brake switch signal)	Ground	Brake pedal (CVT) Brake pedal and clutch pedal (M/T)	Slightly depressed Fully released	Approx. 0V Battery voltage



Is the inspection result normal?

YES >> INSPECTION END.

NO >> Refer to <u>EC-222, "Diagnosis Procedure"</u>.

Diagnosis Procedure

INFOID:0000000006391779

1. CHECK OVERALL FUNCTION-I

Check which type of transmission the vehicle is equipped with.

CVT or M/T?

CVT >> GO TO 2.

M/T >> GO TO 6.

2.CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ASCD brake switch harness connector.
- 3. Turn ignition switch ON.

ASCD BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

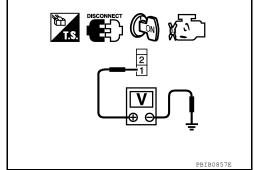
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Check the voltage between ASCD brake switch harness connector and ground.

ASCD bra	ke switch	Ground	Voltage
Connector	Terminal	Ground	voltage
E37	1	Ground	Battery voltage

Is the inspection result normal?

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



3. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E6
- 10A fuse (No. 3)
- · 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.

4. 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
E37	2	E10	110	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 ASCD BRAKE SWITCH

Refer to EC-225, "Component Inspection (ASCD Brake Switch)".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace ASCD brake switch.

6. CHECK ASCD BRAKE SWITCH CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ASCD clutch switch harness connector.
- 3. Turn ignition switch ON.
- 4. Check the continuity between ASCD clutch switch harness connector and ground.

ASCD clut	ch switch	Ground	Condition		Voltage (V)
Connector	Terminal		Condition		voitage (v)
E39	1	Ground	Brake pedal Slightly depressed		Approx. 0
L39	'	Oround	brake pedar	Fully released	Battery voltage

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

Is the inspection result normal?

YES >> GO TO 11.

NO >> GO TO 7.

.CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

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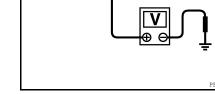
< DTC/CIRCUIT DIAGNOSIS >

- 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 brake switch		Ground	Voltage	
Connector	Terminal	Ground	voltage	
E37	1	Ground	Battery voltage	

Is the inspection result normal?

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



8. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E6
- 10A fuse (No. 3)
- · 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.

9. CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Check the continuity between ASCD brake switch harness connector and ASCD clutch switch harness connector.

ASCD brake switch		ASCD clutch switch		Continuity
Connector	Terminal	Connector Terminal		Continuity
E37	2	E39	1	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 ASCD BRAKE SWITCH

Refer to EC-225, "Component Inspection (ASCD Brake Switch)".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace ASCD brake switch.

11. CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector
- Check the continuity between ASCD clutch switch harness connector and ECM harness connector.

ASCD clutch switch		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E39	2	E10	110	Existed

4. 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 ASCD CLUTCH SWITCH

ASCD BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

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Refer to EC-225, "Component Inspection (ASCD Clutch Switch)".

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace ASCD clutch switch.

13. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection (ASCD Brake Switch)

1. CHECK ASCD BRAKE SWITCH-I

- Turn ignition switch OFF.
- Disconnect ASCD brake switch harness connector. 2.
- 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 and 2	Diake pedal	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 BR-13, "Inspection and Adjustment".
- 2. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Condition		Continuity
1 and 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.

Component Inspection (ASCD Clutch Switch)

1. CHECK ASCD CLUTCH SWITCH-I

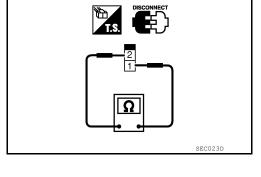
- Turn ignition switch OFF.
- Disconnect ASCD clutch switch harness connector.
- 3. Check the continuity between ASCD clutch switch terminals under the following conditions.

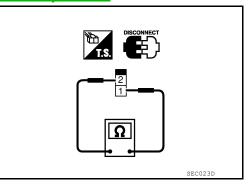
Terminals	Condition		Condition		Continuity
1 and 2	Clutch pedal	Fully released	Existed		
i alla Z	Cluton pedal	Slightly depressed	Not existed		

Is the inspection result normal?

>> INSPECTION END YES

NO >> GO TO 2.





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EC-225 Revision: June 2012 2011 Altima GCC

ASCD BRAKE SWITCH

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2.check ascd clutch switch-ii

1. Adjust ASCD clutch switch installation. Refer to CL-6, "Inspection and Adjustment".

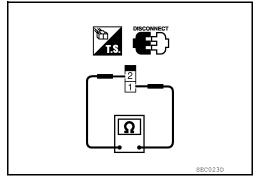
Check the continuity between ASCD clutch switch terminals under the following conditions.

Terminals	Condition		Condition		Continuity
1 and 2	Clutch pedal	Fully released	Existed		
i allu Z	Ciuton pedal	Slightly depressed	Not existed		

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD clutch switch.



ASCD INDICATOR

< DTC/CIRCUIT DIAGNOSIS > [QR25DE]

ASCD INDICATOR

Description INFOID:0000000006391782

The ASCD operation status is indicated by two indicators, (CRUISE and SET on the information display) on the combination meter.

CRUISE indicator is displayed to indicate that ASCD system is ready for operation when MAIN switch on ASCD steering switch is turned ON.

SET indicator is displayed when the following conditions are met.

- CRUISE indicator is displayed.
- SET/COAST switch on ASCD steering switch is turned ON while vehicle speed is within the range of ASCD setting.

SET indicator is displayed during ASCD control.

Refer to EC-57, "System Description" for the ASCD function.

Component Function Check

1. ASCD INDICATOR FUNCTION

Check ASCD indicator under the following conditions.

ASCD INDICATOR	CONDITIO	SPECIFICATION	
CRUISE	• Ignition switch: ON • MAIN switch: Pressed at the 1st time → at the 2nd time		$ON \to OFF$
057	MAIN switch: ON	ASCD: Operating	ON
SET	When vehicle speed: Between 40 km/h (25 MPH) and 180 km/h (112 MPH)	ASCD: Not operating	OFF

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-227, "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-119, "DTC Logic".

2. CHECK COMBINATION METER OPERATION

Refer to MWI-28, "CONSULT Function (METER/M&A)".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check combination meter circuit. Refer to MWI-5, "METER SYSTEM: System Diagram".

3.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

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A/F SENSOR 1

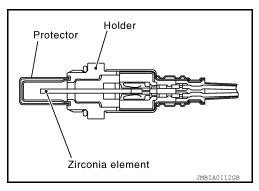
Description INFOID:0000000006391788

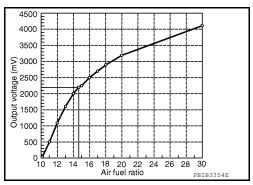
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

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).





Component Function Check

INFOID:0000000006391786

1.PERFORM COMPONENT FUNCTION CHECK-I

- Start engine and warm it up to normal operating temperature.
- 2. Select "A/F ALPHA-B1" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "A/F ALPHA-B1" indication with engine idling.

A/F ALPHA-B1 indication: Remain between 75 - 125 %

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-228, "Diagnosis Procedure".

2.PERFORM COMPONENT FUNCTION CHECK-II

- Select "A/F SEN1(B1)" in "DATA MONITOR" mode with CONSULT-III.
- Check "A/F SEN1(B1)" indication with engine idling.

A/F SEN1(B1) indication: Fluctuates between 2.0 - 2.3 V

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-228, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006391787

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

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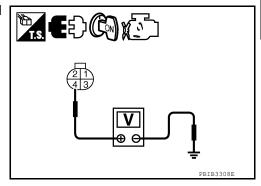
$\overline{2}$.check air fuel ratio (a/f) sensor 1 power supply circuit

- Disconnect A/F sensor 1 harness connector.
- Turn ignition switch ON.
- Check the voltage between A/F sensor 1 harness connector and ground.

A/F sensor 1		Ground	Voltage
Connector	Terminal	Ground	voltage
F44	4	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 F10
- 15A fuse (No. 37)
- 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.
- Disconnect ECM harness connector. 2.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F ser	nsor 1	ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F44	1	F13	45	Existed
Г 44	2	FIS	49	Existed

Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F sei	nsor 1	ECM				ECM		ECM		Ground	Continuity
Connector	Terminal	Connector Terminal		Ground	Continuity						
F44	1	F13	45	Ground	Not existed						
1 44	2	1 13	49	Giodila	NOI EXISIEU						

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-42, "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.

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A/F SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

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• 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

A/F SENSOR 1 HEATER

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

A/F SENSOR 1 HEATER

Description INFOID:0000000006391788

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 heater control	Air fuel ratio (A/F) sensor 1 heater
Mass air flow sensor	Amount of intake air	TICALCI COTILIOI	Ticator

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.

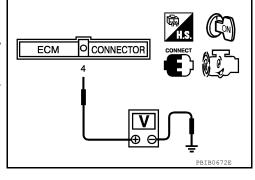
Component Function Check

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

1. Start engine and warm it up to the normal operating temperature.

2. Check the voltage between ECM harness connector and ground under the following condition.

ECM		Ground Condition		Voltage signal	
Connector	Terminal	Orodria	Condition	Voltage signal	
F14	4 (A/Fsensor 1 heater signal)	Ground	At idle	2.9 - 8.8 V★ 50mSec/div 5V/div JMBIA0082GB	



★: Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to <u>EC-231</u>, "<u>Diagnosis Procedure</u>".

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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 air fuel ratio (A/F) sensor 1 harness connector.
- Turn ignition switch ON.

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A/F SENSOR 1 HEATER

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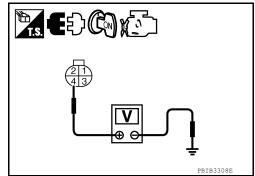
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Check the voltage between A/F sensor 1 harness connector and ground.

A/F se	ensor 1	Ground	Voltage
Connector	Terminal	Oround	Voltage
F44	4	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 F10
- 15A fuse (No. 37)
- · 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 s	ensor 1	ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F44	3	F14	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-233, "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

7. CHECK INTERMITTENT INCIDENT

Perform GI-42, "Intermittent Incident".

>> Repair or replace.

A/F SENSOR 1 HEATER

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Component Inspection

INFOID:0000000006391791

$1.\mathsf{CHECK}\,\mathsf{AIR}\,\mathsf{FUEL}\,\mathsf{RATIO}\,\mathsf{(A/F)}\,\mathsf{SENSOR}\,\mathsf{1}$

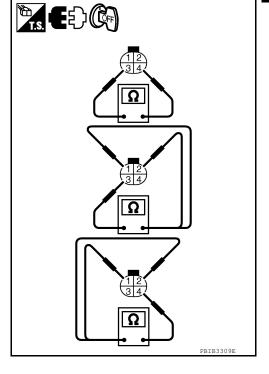
- 1. Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.
- 3. Check resistance between A/F sensor 1 terminals as follows.

Terminals	Resistance
3 and 4	1.8 - 2.44 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 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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COOLING FAN

Description INFOID:000000006391792

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 4-step control [HIGH/MIDDLE/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 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-67, "System Diagram".

Component Function Check

INFOID:0000000006391793

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" "MID" "HI" on the CONSULT-III screen.
- 3. Check that cooling fan operates.

Without CONSULT-III

 Perform IPDM E/R auto active test and check cooling fan motors operation, refer to <u>PCS-11</u>, "<u>Diagnosis</u> <u>Description</u>".

Is the inspection result normal?

YES >> INSPECTION END.

NO >> Go to EC-234, "Diagnosis Procedure".

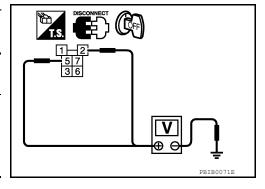
Diagnosis Procedure

INFOID:0000000006391794

1. CHECK COOLING FAN RELAY POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect cooling fan relays-2, -3.
- 3. Turn ignition switch ON.
- Check the voltage between cooling fan relays-2, -3 harness connectors and ground.

Cooling fan rel	Ground	Voltage	
Connector	Connector Terminal		
E42	2	Ground	Battery voltage
(cooling fan relay-2)	5		
E43	2	Ground	Battery voltage
(cooling fan relay-3)	5		



Is the inspection result normal?

COOLING FAN

< DTC/CIRCUIT DIAGNOSIS >

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

2.DETECT MALFUNCTIONING PART

Check the following.

- 10 A fuse (No. 33)
- 40 A fusible link (letter K)
- IPDM E/R harness connector E18
- · Harness for open or short between cooling fan relay-2 and battery
- Harness for open or short between cooling fan relay-3 and battery
- Harness for open or short between cooling fan relay-2 and IPDM E/R
- Harness for open or short between cooling fan relay-3 and IPDM E/R

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

3.CHECK COOLING FAN RELAY OUTPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connectors.
- Check the continuity between cooling fan relay-2, -3 harness connectors and IPDM E/R harness connec-

Cooling fan relay		IPDI	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E42 (cooling fan relay-2)	1	E17	42	Existed
E43 (cooling fan relay-3)	1	E18	34	LAISIEU

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 for open or short between cooling fan relay-2 and IPDM E/R
- Harness for open or short between cooling fan relay-3 and IPDM E/R

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

${f 5.}$ CHECK COOLING FAN MOTOR POWER SUPPLY CIRCUIT

- Disconnect cooling fan motor-1 harness connector.
- Check the voltage between cooling fan motor-1 harness connector and ground.

Cooling fan n	notor-1	Ground	Voltage	
Connector	Connector Terminal		voltage	
E220	1	Ground	Battery voltage	
	2	Ground	battery voltage	

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- 40 A fusible link (letter M)
- Harness connector E12, E203

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- Harness for open or short between cooling fan motor-1 and battery
 - >> Repair open circuit, short to ground or short to power in harness or connectors.

7.CHECK COOLING FAN MOTOR CIRCUIT-I

- 1. Disconnect cooling fan motor-2 harness connector.
- Check the continuity between cooling fan relay-2, -3 harness connectors and cooling fan motor-1, -2 harness connectors.

Cooling fan relay		Cooling fa	Cooling fan motor	
Connector	Terminal	Connector	Terminal	Continuity
E42	3	E221 (Cooling fan motor-2)	2	
(cooling fan relay-2)	7	E220 (Cooling fan motor-1)	3	Existed
E43	3	E221 (Cooling fan motor-2)	1	Laisteu
(cooling fan relay-3)	7	E220 (Cooling fan motor-1)	4	

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

Is the inspection result normal?

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

8.DETECT MALFUNCTIONING PART

Check the following.

- Harness connector E12, E203
- Harness for open or short between cooling fan motor-1 and cooling fan relay-2
- Harness for open or short between cooling fan motor-1 and cooling fan relay-3
- Harness for open or short between cooling fan motor-2 and cooling fan relay-2
- Harness for open or short between cooling fan motor-2 and cooling fan relay-3
 - >> Repair open circuit, short to ground or short to power in harness or connectors.

9. CHECK COOLING FAN MOTOR CIRCUIT-II

Check the continuity between IPDM E/R harness connector and cooling fan motor-1, -2 harness connector

IPDI	M E/R	Cooling fan motor		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E18	35	E220 (Cooling fan motor-1)	4	Existed
LIO	38	E221 (Cooling fan motor-2)	1	LAISIEU

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

Is the inspection result normal?

YES >> GO TO 11. NO >> GO TO 10.

10.DETECT MALFUNCTIONING PART

Check the following.

- Harness connector E12, E203
- Harness for open or short between cooling fan motor-1 and IPDM E/R
- Harness for open or short between cooling fan motor-2 and IPDM E/R

COOLING FAN

< DTC/CIRCUIT DIAGNOSIS >

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

11. CHECK COOLING FAN MOTOR CIRCUIT-III

1. Check the continuity between cooling fan relay-2, -3 harness connectors and ground.

Cooling fan motor		Ground	Continuity
Connector	Terminal	Ground	Continuity
E42 (cooling fan relay-2)	6	Ground	Existed
E43 (cooling fan relay-3)	6	Giodila	Laisteu

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

Is the inspection result normal?

YES >> GO TO 12.

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

12. CHECK COOLING FAN MOTOR CIRCUIT-IV

1. Check the continuity between cooling fan motor-2 harness connector and ground.

Cooling fan motor-2		Ground	Continuity
Connector	Terminal	Ground	Continuity
E221	3	Ground	Existed
LZZI	4	Glound	LAISIEU

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

Is the inspection result normal?

YES >> GO TO 13.

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

13.CHECK COOLING FAN RELAY-2 AND -3

Refer to EC-238, "Component Inspection (Cooling Fan Relay)".

Is the inspection result normal?

YES >> GO TO 14.

NO >> Replace malfunctioning cooling fan relay.

14. CHECK COOLING FAN MOTORS-1 AND -2

Refer to EC-238, "Component Inspection (Cooling Fan Relay)".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace malfunctioning cooling fan motor.

15. CHECK INTERMITTENT INCIDENT

Perform GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness connectors.

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.

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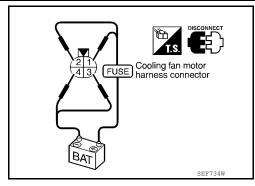
COOLING FAN

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3. Supply cooling fan motor terminals with battery voltage and check operation.

	Condition	Tern	ninals
	Condition	(+)	(-)
Cooling fan motor		1	3 and 4
	Α	2	3 and 4
		1 and 2	3
		1 and 2	4
	В	1 and 2	3 and 4



Check that cooling fan speed of condition B is higher than that of A.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace cooling fan motor.

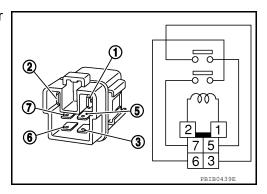
Component Inspection (Cooling Fan Relay)

INFOID:0000000006391796

1. CHECK COOLING FAN RELAYS

- 1. Turn ignition switch OFF.
- 2. Remove cooling fan relay -2, -3.
- 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
6 and 7	12V direct current supply between terminals 1 and 2	Existed
o and 7	No current supply	Not existed



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace cooling fan relay.

ELECTRICAL LOAD SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

INFOID:0000000006391798

ELECTRICAL LOAD SIGNAL

Description INFOID:0000000006391797

The electrical load signal (Headlamp switch signal, rear window defogger switch signal, etc.) is transferred through the CAN communication line.

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Component Function Check

1.check rear window defogger switch function

- Turn ignition switch ON.
- 2. Connect CONSULT-III and select "DATA MONITOR" mode.
- Select "LOAD SIGNAL" and check indication under the following conditions.

Monitor item	Condition		Indication
LOAD SIGNAL	Rear window defogger switch	ON	ON
LOAD GIONAL	rteal willdow delogger switch	OFF	OFF

Is the inspection result normal?

>> GO TO 2. YES

NO >> Go to EC-239, "Diagnosis Procedure".

2.CHECK LIGHTING SWITCH FUNCTION

Check "LOAD SIGNAL" indication under the following conditions.

Monitor item	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.

>> Go to EC-239, "Diagnosis Procedure". NO

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
TILATERTANOW	Treater fair control switch	OFF	OFF

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-239, "Diagnosis Procedure".

Diagnosis Procedure

1.INSPECTION START

Confirm the malfunctioning circuit (rear window defogger, headlamp or heater fan). Refer to EC-239, "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 BCS-17, "REAR WINDOW DEFOGGER: CONSULT Function (BCM - REAR DEFOGGER)".

EC-239 Revision: June 2012 2011 Altima GCC

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ELECTRICAL LOAD SIGNAL

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< DTC/CIRCUIT DIAGNOSIS >

>> INSPECTION END

3. CHECK HEADLAMP SYSTEM

Refer to EXL-7, "System Diagram" (XENON TYPE) or EXL-9, "System Diagram" (HALOGEN TYPE).

>> INSPECTION END

4. CHECK HEATER FAN CONTROL SYSTEM

Refer to HAC-4, "Work Flow" (AUTO A/C) or HAC-107, "Work Flow" (MANUAL A/C).

>> INSPECTION END

EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

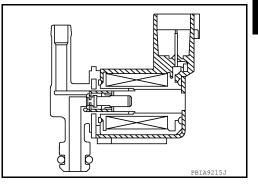
< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Description INFOID:0000000006391800

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.



Component Function Check

INFOID:0000000006391801

${f 1}.$ CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE FUNCTION

(P)With CONSULT-III

- Turn ignition switch OFF.
- 2. Disconnect the EVAP purge hose from EVAP canister purge volume control solenoid valve (EVAP canister side).
- Start engine and let it idle.
- Select "PURG VOL CONT/V" in "ACTIVE TEST" mode wit CONSULT-III.
- 5. Touch "Qu" and "Qd" on CONSULT-III screen to adjust "PURG VOL CONT/V" and check vacuum existence under the following conditions.

PURG VOL CONT/V	Vacuum
100%	Existed
0 %	Not existed

Without CONSULT-III

- Turn ignition switch OFF.
- Disconnect the EVAP purge hose from EVAP canister purge volume control solenoid valve (EVAP canister side).
- Start engine and let it idle for at least 100 seconds.
- Check vacuum existence under the following conditions.

Condition	Vacuum
At idle	Not existed
About 2,000 rpm	Existed

Is the inspection result normal?

YES >> INSPECTION END

>> Go to EC-241, "Diagnosis Procedure". 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. 2.
- Turn ignition switch ON.

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INFOID:0000000006391802

EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

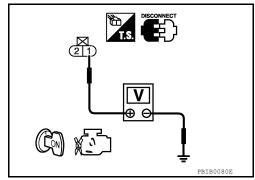
 Check the voltage between EVAP canister purge volume control solenoid valve harness connector and ground.

EVAP canister purge volume control solenoid valve		Ground	Voltage
Connector	Terminal		
F29	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 E11, F2
- 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.
- 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		CM	Continuity
Connector	Terminal	Connector	Terminal	
F29	2	F14	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.

f 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-243, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace EVAP canister purge volume control solenoid valve.

O.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

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>> INSPECTION END

Component Inspection

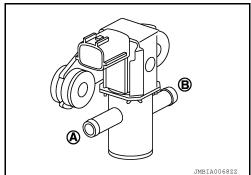
INFOID:0000000006391803

1. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

(P)With CONSULT-III

- 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

- 1. Turn ignition switch OFF.
- 2. 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.

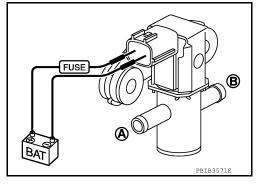
Condition	Air passage continuity between (A) and (B)
12V direct current supply between terminals 1 and 2	Existed
No supply	Not existed

Is the inspection result normal?

>> INSPECTION END

YES

NO >> Replace EVAP canister purge volume control solenoid valve



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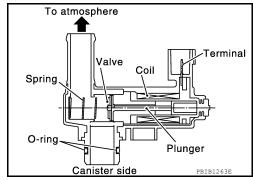
EVAP CANISTER VENT CONTROL VALVE

Description INFOID:0000000006391804

The EVAP canister vent control valve is located on the EVAP canis-

This solenoid valve is not used for engine control, and always remains open.

If the vent is closed by any reason under EVAP purge conditions, the evaporative emission control system is depressurized and EVAP canister may be damaged.



Component Function Check

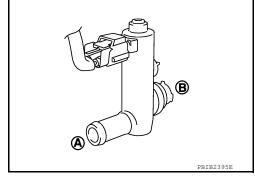
INFOID:0000000006391805

1. CHECK EVAP CANISTER VENT CONTROL VALVE FUNCTION

- Turn ignition switch OFF.
- Remove EVAP canister vent control valve with its harness connector connected from EVAP canister.
- Start engine.
- Blow air into port (A) and check that it flows freely out of port (B).

>> INSPECTION END YES

>> Go to EC-244, "Diagnosis Procedure". NO



INFOID:0000000006391806

Diagnosis Procedure

1. CHECK VACUUM LINE

- Turn ignition switch OFF.
- Check vacuum line between EVAP canister purge volume control solenoid valve and intake manifold collector for crack, clogging, improper connection or disconnection. Refer to EC-23, "System Diagram".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace.

2.CHECK EVAP CANISTER VENT CONTROL VALVE POWER SUPPLY CIRCUIT

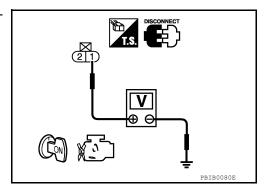
- Disconnect EVAP canister vent control valve harness connector.
- Turn ignition switch ON.
- Check voltage between EVAP canister vent control valve harness connector and ground.

EVAP canister vent control valve		Ground	Voltage
Connector	Terminal		
B39	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4. NO

>> GO TO 3. 3.DETECT MALFUNCTIONING PART Check the following.



EVAP CANISTER VENT CONTROL VALVE

< DTC/CIRCUIT DIAGNOSIS >

- · Harness connectors E29, B10
- Harness connectors F2, E11
- 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.

4. 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		CM	Continuity
Connector	Terminal	Connector	Terminal	
B39	2	E10	109	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 E29, B10
- · 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.

6. CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-245, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace EVAP canister vent control valve.

7. CHECK INTERMITTENT INCIDENT

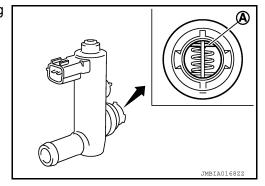
Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK EVAP CANISTER VENT CONTROL VALVE

- 1. Remove EVAP canister vent control valve from EVAP canister.
- Check portion (A) of EVAP canister vent control valve for being rusted.



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EVAP CANISTER VENT CONTROL VALVE

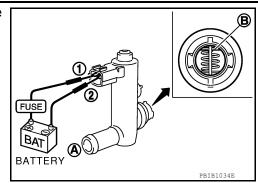
< DTC/CIRCUIT DIAGNOSIS >

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3. 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)	No
OFF	Yes



Operation takes less than 1 second.

If NG, replace EVAP canister vent control valve.

If OK, go to next step.

- 4. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.
- 5. Perform step 3 again.

Is the inspection result normal?

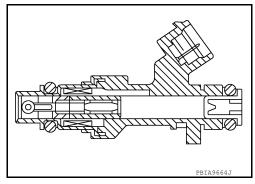
YES >> INSPECTION END

NO >> Replace EVAP canister purge volume control solenoid valve

FUEL INJECTOR

Description

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-247, "Diagnosis Procedure".

2.CHECK FUEL INJECTOR FUNCTION

(P) 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.

Without CONSULT-III

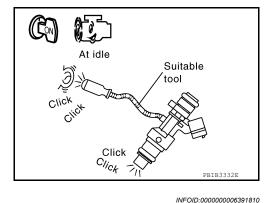
- 1. Let engine idle.
- Listen to each fuel injector operating sound.

Clicking noise should be heard.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-247, "Diagnosis Procedure".



Diagnosis Procedure

1. CHECK FUEL INJECTOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect fuel injector harness connector.
- 3. Turn ignition switch ON.

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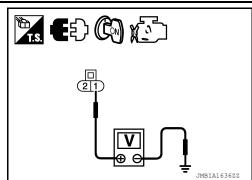
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< DTC/CIRCUIT DIAGNOSIS >

 Check the voltage between fuel injector harness connector and ground.

	Fuel injector	Ground	Voltage	
Cylinder	Connector	Terminal	Giodila	voitage
1	F17	1		
2	F18	1	Ground	Patton/ voltage
3	F19	1	Ground	Battery voltage
4	F20	1		



Is the inspection result normal?

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

2. DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R harness connector F10
- 10A fuse (No. 35)
- · 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

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

Continuity	М	EC	Fuel injector		
Continuity	Terminal	Connector	Terminal	Connector	Cylinder
	32		2	F17	1
Existed	31	F14	2	F18	2
Existed	30	Г 1 4	2	F19	3
	29		2	F20	4

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-248, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace malfunctioning fuel injector.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "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

INFOID:0000000006391811

1. CHECK FUEL INJECTOR

1. Turn ignition switch OFF.

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FUEL INJECTOR

< DTC/CIRCUIT DIAGNOSIS >

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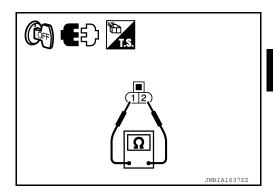
- 2. Disconnect fuel injector harness connector.
- 3. Check resistance between fuel injector terminals as follows.

Terminals	Resistance
1 and 2	10.4 - 15.3Ω [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:0000000006391812

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 start ability. 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:0000000006391813

1. CHECK FUEL PUMP FUNCTION

- 1. Turn ignition switch ON.
- 2. Pinch fuel feed hose (2) with two fingers.

1 : Air cleaner assembly

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-250, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006391814



- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Turn ignition switch ON.

< DTC/CIRCUIT DIAGNOSIS >

Check the voltage between ECM harness connector and ground.

ECM		Ground	Voltage	
Connector	Terminal	Oround	voltage	
F14	14	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 4. >> GO TO 2. NO

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2.CHECK FUEL PUMP POWER SUPPLY CIRCUIT-II

Check the voltage between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Voltage
Connector	Terminal	Giodila	vollage
F10	77	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 10.

3.DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R connector F10
- Harness for open or short between IPDM E/R and ECM

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

EC-251

f 4.CHECK FUEL PUMP POWER SUPPLY CIRCUIT-III

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected. 2.
- 3. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- Turn ignition switch ON.
- Check the voltage between "fuel level sensor unit and fuel pump" harness connector and ground.

	sensor unit el pump	Ground	Voltage
Connector	Terminal		
B42	1	Ground	Battery voltage should exist 1 second after ignition switch is turn ON.

Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 5.

5.CHECK 15A FUSE

- Turn ignition switch OFF.
- 2. Disconnect 15 A fuse (No. 32) from IPDM E/R.
- Check 15 A fuse.

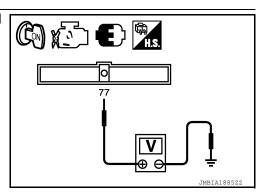
Is the inspection result normal?

YES >> GO TO 6.

Revision: June 2012

NO >> Replace15 A fuse.

 $oldsymbol{\mathsf{O}}.\mathsf{CHECK}$ FUEL PUMP POWER SUPPLY CIRCUIT-IV



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- 1. Disconnect IPDM E/R harness connector E18.
- Check the continuity between IPDM E/R harness connector and "fuel level sensor unit and fuel pump" harness connector.

IPDM E/R		Fuel level sensor unit and fuel pump		Continuity
Connector	Terminal	Connector	Terminal	
E18	13	B42	1	Existed

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

Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 7.

7.DETECT MALFUNCTIONING PART

Check the following.

- · Harness connectors E29, B10
- IPDM E/R connectors E18
- Harness for open or short between IPDM E/R and "fuel level sensor unit and fuel pump"

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

8. CHECK FUEL PUMP GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Check the continuity between "fuel level sensor unit and fuel pump" and ground.

Fuel level s and fue		Ground	Continuity	
Connector	Terminal			
B42	3	Ground	Existed	

3. Also check harness for 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 E29 (with rear view monitor), B10 (with rear view monitor)
- IPDM E/R connector E18
- · Harness for open or short between IPDM E/R and "fuel level sensor unit and fuel pump"

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

10.CHECK FUEL PUMP

Refer to EC-253, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace "fuel level sensor unit and fuel pump".

11. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace harness or connectors.

FUEL PUMP

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Component Inspection

INFOID:0000000006391815

1. CHECK FUEL PUMP

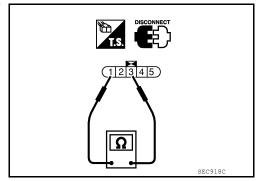
- 1. Turn ignition switch OFF.
- 2. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 3. Check resistance between "fuel level sensor unit and fuel pump" terminals as follows.

Terminals	Resistance
1 and 3	0.2 - 5.0Ω [at 25°C (77°F)]

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace "fuel level sensor unit and fuel pump".



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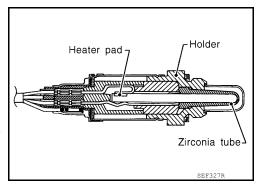
Description INFOID:00000000006391816

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas.

Even if switching characteristic of the air fuel ratio (A/F) sensor 1 is 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.



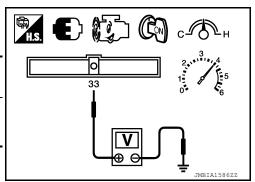
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Component Function Check

1.PERFORM COMPONENT FUNCTION CHECK-I

- 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		Ground	Condition	Voltage	
Connector	Terminal	Glound	Condition	voltage	
F13	33 (HO2S2 signal)	Ground	Revving up to 4,000 rpm under no load at least 10 times	The voltage does not remain in the range of 0.2 - 0.4V.	



Is the inspection result normal?

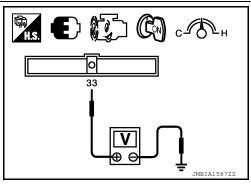
YES >> INSPECTION END

NO >> GO TO 2.

2. PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connector and ground under the following condition.

ECM		Ground	Condition	Voltage	
Connector	Terminal	Ground	Condition	voitage	
F13	33 (HO2S2 signal)	Ground	Keeping engine speed at idle for 10 minutes	The voltage does not remain in the range of 0.2 - 0.4V.	



Is the inspection result normal?

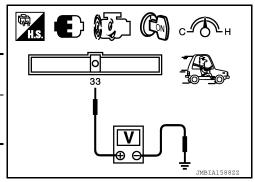
YES >> INSPECTION END

NO >> GO TO 3.

3. PERFORM COMPONENT FUNCTION CHECK-III

Check the voltage between ECM harness connector and ground under the following condition.

ECM		Ground	Condition	Voltage	
Connector	Terminal	Ground	Condition	Voltage	
F13	33 (HO2S2 signal)	Ground	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage does not remain in the range of 0.2 - 0.4V.	



Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-255, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006391818

1.CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.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	HO2S2		ECM	
Connector	Terminal	Connector Terminal		Continuity
F42	1	F13	35	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.

3.CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2	HO2S2		ECM		
Connector	Terminal	Connector Terminal		Continuity	
F42	4	F13	33	Existed	

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
F42	4	F13	33	Ground	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.

f 4.CHECK HEATED OXYGEN SENSOR 2

Refer to EC-256, "Component Inspection".

EC-255 Revision: June 2012 2011 Altima GCC

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Is the inspection result normal?

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

5. 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

6. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391819

1.INSPECTION START

Do you have CONSULT-III?

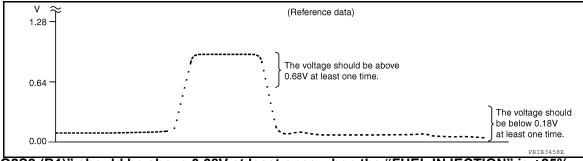
Do you have CONSULT-III?

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.
- 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.
- Let engine idle for 1 minute.
- Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)" as the monitor item with CONSULT-III.
- 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.

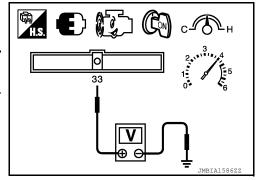
3.CHECK HEATED OXYGEN SENSOR 2-I

Without CONSULT-III

- 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		Cround	Condition	Voltago	
Connector	Terminal	Ground Condition		Voltage	
F13	33 (HO2S2 signal)	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?

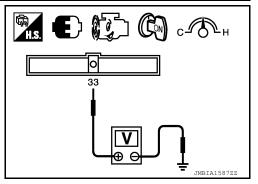
YES >> INSPECTION END

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		Ground	Condition	Voltage	
Connector	Terminal	Ground	Condition	voltage	
F13	33 (HO2S2 signal)	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?

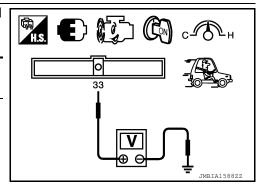
YES >> INSPECTION END

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		Ground	Condition	Voltage
Connector	Terminal	Ground	Condition	voltage
F13	33 (HO2S2 signal)	Ground	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	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).

Revision: June 2012 EC-257 2011 Altima GCC

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>> INSPECTION END

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HO2S2 HEATER

Description INFOID:0000000006391820

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

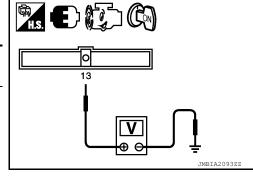
Engine speed rpm	Heated oxygen sensor 2 heater	
Above 3,600	OFF	
 Below 3,600 rpm after the following conditions are met. Engine: After warming up Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load 	ON	

Component Function Check

1. CHECK HEATED OXYGEN SENSOR 2 HEATER FUNCTION

- 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. 3.
- Let engine idle for 1 minute.
- Check the voltage between ECM harness connector and ground under the following condition.

ECM		Ground Condition		Voltage signal	
Connector	Terminal	Cround	Condition	Voltage signal	
F14 (HO2S2 heater signal)		Ground	At idle	Approx. 10V★ 50mSec/div 5V/div JMBIA0037GB	
			Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14V)	



★: Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-259, "Diagnosis Procedure".

Diagnosis Procedure

${\sf 1.}$ CHECK GROUND CONNECTION

EC-259 Revision: June 2012 2011 Altima GCC Ν

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INFOID:0000000006391822

< DTC/CIRCUIT DIAGNOSIS >

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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		voitage	
F42	2	Ground	Battery voltage	

Is the inspection result normal?

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



Check the following.

- IPDM E/R harness connector F10
- 15A fuse (No. 37)
- · 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

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

НС	HO2S2		ECM	
Connector	Terminal	Connector	Terminal	Continuity
F42	3	F14	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.

5. CHECK HEATED OXYGEN SENSOR 2 HEATER

Refer to EC-261, "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 oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool and approved anti-seize lubricant.

>> INSPECTION END

HO2S2 HEATER

< DTC/CIRCUIT DIAGNOSIS >

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7. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

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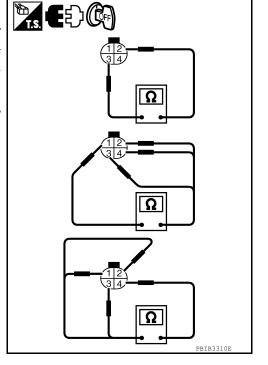
1. CHECK HEATED OXYGEN SENSOR 2 HEATER

- 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 oxygen sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner tool and approved anti-seize lubricant.

>> INSPECTION END

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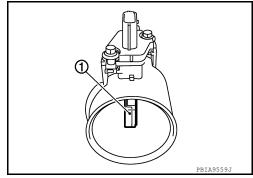
Revision: June 2012 EC-261 2011 Altima GCC

IAT SENSOR

Description INFOID.000000006391824

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 terminal 50 (Intake air temperature sensor) and ground.

CAUTION:

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.

Component Function Check

1. CHECK INTAKE AIR TEMPERATURE SENSOR FUNCTION

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

EC	М	Ground	Voltage	
Connector Terminal		Ground	voltage	
F13	50	Ground	Approx. 0 - 4.8V	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-262, "Diagnosis Procedure".

ECM OCONNECTOR HS.

INFOID:0000000006391826

INFOID:0000000006391825

Diagnosis Procedure

CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

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.

Revision: June 2012 EC-262 2011 Altima GCC

IAT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

Check the voltage between mass air flow sensor harness connector and ground.

MAF	sensor	Ground	Voltage	
Connector	Connector Terminal		voltage	
F31	5	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.

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${f 3.}$ CHECK INTAKE AIR TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between mass air flow sensor harness connector and ECM harness connector.

MAF	sensor	E	CM	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F31	6	F13	56	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 INTAKE AIR TEMPERATURE SENSOR

Refer to EC-263, "Component Inspection",

Is the inspection result normal?

YES >> GO TO 5.

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

5. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK INTAKE AIR TEMPERATURE SENSOR

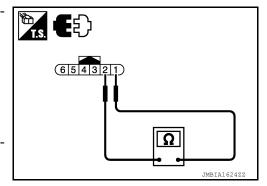
- Turn ignition switch OFF.
- Disconnect mass air flow sensor harness connector.
- Check resistance between mass air flow sensor terminals as follows.

Terminals	Condition	Resistance kΩ	
1 and 2	Intake air temperature °C (°F) 25 (7		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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IGNITION SIGNAL

Description INFOID:000000006391828

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:0000000006391829

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-264</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

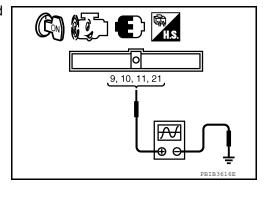
NO >> Go to EC-264, "Diagnosis Procedure".

3. IGNITION SIGNAL FUNCTION

⊗ Without CONSULT-III

- 1. Let engine idle.
- Read the voltage signal between ECM harness connector and ground.

		ı		
ECM		Ground	Valtage signal	
Connector	Terminal	Ground	Voltage signal	
	9			
544	10		20mSec/div	
	11	Ground		
F14	21		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-264, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006391830

1. CHECK IGNITION COIL POWER SUPPLY CIRCUIT-I

1. Turn ignition switch OFF, wait at least 10 seconds and then turn ON.

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

Check the voltage between ECM harness connector and ground.

EC	М	Ground	Voltage
Connector Terminal		Ground	voltage
E10	105	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

>> Go to EC-115, "Diagnosis Procedure". NO

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2.CHECK IGNITION COIL POWER SUPPLY CIRCUIT-II

- Turn ignition switch OFF.
- 2. Disconnect condenser-2 harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between condenser-2 harness connector and around.

Conder	nser-2	Ground	Voltage	
Connector Terminal		Giodila	voitage	
F26	1	Ground	Battery voltage	

Is the inspection result normal?

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

3.check ignition coil power supply circuit-iii

- 1. Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector F10.
- Check the continuity between IPDM E/R harness connector and condenser-2 harness connector.

IPDM	M E/R Conder		nser-2	Continuity
Connector	Terminal	Connector Terminal		Continuity
F10	53	F24	1	Existed

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

Is the inspection result normal?

YES >> Go to EC-115, "Diagnosis Procedure".

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

f 4.CHECK CONDENSER-2 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Check the continuity between condenser-2 harness connector and ground.

Conder	nser-2	Ground	Continuity
Connector Terminal		Oroana	Continuity
F24	2	Ground	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 CONDENSER-2

Refer to EC-268, "Component Inspection (Condenser-2)"

Is the inspection result normal?

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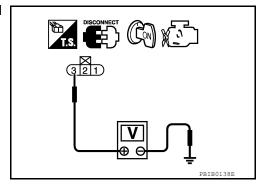
YES >> GO TO 6.

NO >> Replace condenser.

6.CHECK IGNITION COIL POWER SUPPLY CIRCUIT-IV

- 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	Ground	voltage
1	F34	3		
2	F35	3	Ground	Pottony voltago
3	F36	3	Ground	Battery voltage
4	F37	3		



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 IGNITION COIL GROUND CIRCUIT FOR OPEN AND SHORT

- 1. 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	F34	2		
2	F35	2	Ground	Existed
3	F36	2	Giodila	LAISIEU
4	F37	2		

3. Also check harness for 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 IGNITION COIL OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Disconnect ECM harness connector.
- Check the continuity between ECM harness connector and ignition coil harness connector.

Ignition coil			ECM		Continuity
Cylinder	Connector	Terminal	Connector	Terminal	Continuity
1	F34	1		11	
2	F35	1	F14	10	Existed
3	F36	1	Г1 4	9	Existed
4	F37	1		21	

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 IGNITION COIL WITH POWER TRANSISTOR

Refer to EC-267, "Component Inspection (Ignition Coil with Power Transistor)".

IGNITION SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

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Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace malfunctioning ignition coil with power transistor.

10. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

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>> INSPECTION END

Component Inspection (Ignition Coil with Power Transistor)

1. CHECK IGNITION COIL WITH POWER TRANSISTOR-I

- 1. Turn ignition switch OFF.
- 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.

- 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.

- Start engine.
- After engine stalls, crank it two or three times to release all fuel pressure.
- 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:

13 - 17 mm
(0.52-0.66 in)
Grounded metal portion
(Cylinder head, cylinder block, etc.)

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IGNITION SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

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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.

Component Inspection (Condenser-2)

INFOID:0000000006391832

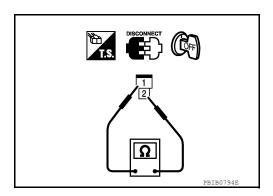
1. CHECK CONDENSER-2

- 1. Turn ignition switch OFF.
- 2. Disconnect condenser-2 harness connector.
- 3. Check resistance between condenser-2 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-2.



MALFUNCTION INDICATOR LAMP

< DTC/CIRCUIT DIAGNOSIS >

[QR25DE]

MALFUNCTION INDICATOR LAMP

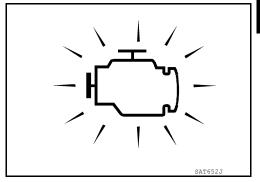
Description INFOID:0000000006391833

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-269, "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-269, "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-119, "Diagnosis Procedure".

2.CHECK DTC WITH METER

Refer to MWI-28, "CONSULT Function (METER/M&A)".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace.

3. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace combination meter.

NO >> Repair or replace.

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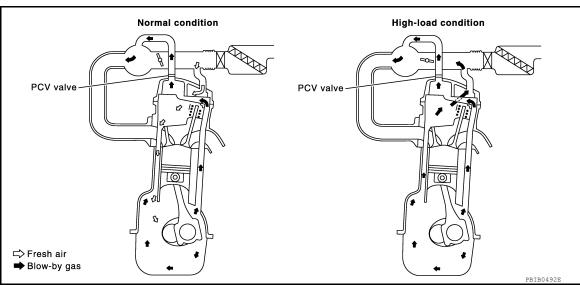
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POSITIVE CRANKCASE VENTILATION

Description INFOID:0000000006391836



This system returns blow-by gas to the intake manifold.

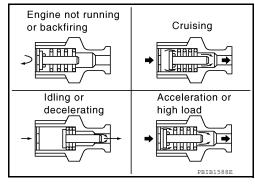
The positive crankcase ventilation (PCV) valve is provided to conduct crankcase blow-by gas to the intake manifold.

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 then 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:0000000006391837

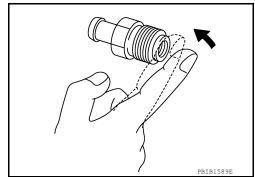
Component Inspection

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

< DTC/CIRCUIT DIAGNOSIS >

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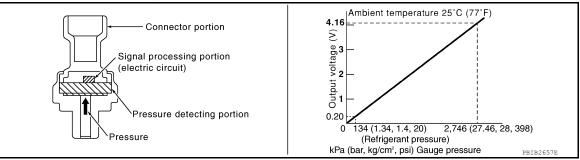
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REFRIGERANT PRESSURE SENSOR

Description INFOID:0000000006391838

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:0000000006391839

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.
- Check the voltage between ECM harness connector and ground.

ECM		Ground	Voltage
Connector	Terminal	Ground	voltage
E219	39 (Refrigerant pressure sensor signal)	Ground	1.0 - 4.0V

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-271, "Diagnosis Procedure".

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Diagnosis Procedure

1. CHECK GROUND CONNECTION

- 1. Turn A/C switch and blower fan switch OFF.
- Stop engine.
- 3. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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.

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REFRIGERANT PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

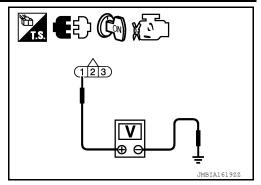
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Check the voltage between refrigerant pressure sensor harness connector and ground.

Refrigerant pre	ssure sensor	Ground	Voltage
Connector Terminal		Cround	voltage
E219	1	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 F1, E3
- 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 pressure sensor		EC	M	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E219	3	F13	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 F1, E3
- · 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

1. Check the continuity between ECM harness connector and refrigerant pressure sensor harness connector.

Refrigerant pressure sensor		EC	М	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E219	2	F13	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.

.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors F1, E3
- · Harness for open or short between ECM and refrigerant pressure sensor

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REFRIGERANT PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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

8.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace refrigerant pressure sensor.

NO >> Repair or replace.

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ECU DIAGNOSIS INFORMATION

ECM

Reference Value

VALUES ON THE DIAGNOSIS TOOL

Remarks:

- Specification data are reference values.
- 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	C	Values/Status	
ENG SPEED	Run engine and compare CONSU	Almost the same speed as the tachometer indication.	
MAS A/F SE-B1	See EC-108, "Diagnosis Procedure"		
B/FUEL SCHDL	See EC-108, "Diagnosis Procedure"		
A/F ALPHA-B1	See EC-108, "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)	Revving engine from idle up to 3,00 are met. Engine: After warming up After keeping engine speed betweed idle for 1 minute under no load.	0 - 0.3V ←→ Approx. 0.6 - 1.0V	
HO2S2 MNTR (B1)	Revving engine from idle up to 3,00 are met. Engine: After warming up After keeping engine speed betweed idle for 1 minute under no load.	LEAN ←→ RICH	
VHCL SPEED SE	Turn drive wheels and compare C dication.	Almost the same speed as speedometer indication	
BATTERY VOLT	Ignition switch: ON (Engine stoppe	ed)	11 - 14V
ACCEL SEN 1	Ignition switch: ON	Accelerator pedal: Fully released	0.5 - 1.0V
ACCEL CENT	(Engine stopped)	Accelerator pedal: Fully depressed	4.2 - 4.8V
ACCEL SEN 2*1	Ignition switch: ON	Accelerator pedal: Fully released	0.5 - 1.0V
ACCEL SEN 2	(Engine stopped)	Accelerator pedal: Fully depressed	4.2 - 4.8V
TD OFN 4 D4	Ignition switch: ON	Accelerator pedal: Fully released	More than 0.36V
TP SEN 1-B1	(Engine stopped) • Shift lever: D (CVT), 1st (M/T)	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 (CVT), 1st (M/T)	Accelerator pedal: Fully depressed	Less than 4.75V
INT/A TEMP SE	Ignition switch: ON	Indicates intake air temperature	
START SIGNAL	 Ignition switch: ON → START → 0 	$OFF \to ON \to OFF$	
CLSD THL POS	Ignition switch: ON	Accelerator pedal: Fully released	ON
GLOD THE FOO	(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, idle the engine	Air conditioner switch: ON (Compressor operates.)	ON

ECM

Monitor Item	C	Values/Status		
D/N DOCL CW	Ignition quitable ON	Shift lever: P or N (CVT), Neutral (M/T)	ON	
P/N POSI SW	Ignition switch: ON	Selector lever: Except above	OFF	
DIAMOT CLONIAL	Engine: After warming up, idle the	Steering wheel: Not being turned	OFF	
PW/ST SIGNAL	engine	Steering wheel: Being turned	ON	
	- Ignition 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	
GNITION SW	• Ignition switch: $ON \rightarrow OFF \rightarrow ON$		$ON \to OFF \to ON$	_
IFATED FAMI OW	Engine: After warming up, idle the	Heater fan switch: ON	ON	_
HEATER FAN SW	engine	Heater fan switch: OFF	OFF	_
	- Ignition quitable 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	_
NJ PULSE-B1	 Shift lever: P or N (CVT), Neutral (M/T) Air conditioner switch: OFF No load 	2,000 rpm	1.9 - 2.9 msec	
	Engine: After warming up	Idle	10° - 20° BTDC	_
GN TIMING	 Shift lever: P or N (CVT), Neutral (M/T) Air conditioner switch: OFF No load 	2,000 rpm	25° - 45° BTDC	-
	Engine: After warming up	Idle	0%	_
PURG VOL C/V	 Shift lever: P or N (CVT), Neutral (M/T) Air conditioner switch: OFF No load 	2,000 rpm	20% - 90%	_
	Engine: After warming up	Idle	−5° - 5°CA	_
NT/V TIM(B1)	 Shift lever: P or N (CVT), Neutral (M/T) Air conditioner switch: OFF No load 	2,000 rpm	Approx. 0° - 20°CA	
	Engine: After warming up	Idle	0%	_
NT/V SOL(B1)	 Shift lever: P or N (CVT), Neutral (M/T) Air conditioner switch: OFF No load 	2,000 rpm	Approx. 0% - 60%	_
	- Engine: Afterwarming up idle the	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	_	

Monitor Item	C	ondition	Values/Status
		Engine coolant temperature is 97°C (207°F) or less	OFF
	Engine: After warming up, idle the engine Air conditioner switch: OFF	Engine coolant temperature between 98°C (208°F) and 99°C (210°F) or more	LOW
COOLING FAN		Engine coolant temperature between 100°C (212°F) or more	HIGH
COOLING I AIN	Engine: After warming up, idle the engine	Engine coolant temperature is 97°C (207°F) or less	ON
	 Air conditioner switch: ON Refrigerant pressure is less than	Engine coolant temperature between 97°C (207°F) and 99°C (210°F) or more	MID
	1,280 kPa (12.80 bar, 13.05 kg/ cm ² , 185.6 psi)	Engine coolant temperature between 100°C (212°F) or more	HIGH
HO2S2 HTR (B1)	- Engine: After warming up	fter the following conditions are met. on 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	(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
IDL A/V LEARN	Engine: running	Idle air volume learning has not been performed yet.	YET
IDE /V V EL/MIN	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 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
		MAIN switch: Released	OFF
CANCEL SW	Ignition switch: ON	CANCEL switch: Pressed	ON
-	3	CANCEL switch: Released	OFF
RESUME/ACC SW	Ignition switch: ON	RESUME/ACCELERATE switch: Pressed	ON
	g	RESUME/ACCELERATE switch: Released	OFF
SET SW	Ignition switch: ON	SET/COAST switch: Pressed	ON
	.g.m.on omton. Off	SET/COAST switch: Released	OFF
BRAKE SW1	Ignition switch: ON	Brake pedal: Fully released (CVT) Brake pedal and clutch pedal: Fully released (M/T)	ON
(ASCD brake switch)	ighton omton. Of	Brake pedal: Slightly depressed (CVT) Brake pedal and/or clutch pedal: Slightly depressed (M/T)	OFF

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< ECU DIAGNOSIS INFORMATION >

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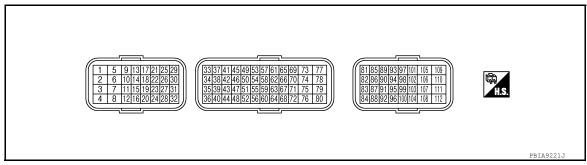
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Monitor Item	C	Values/Status			
BRAKE SW2	Ignition switch: ON	Brake pedal: Fully released	OFF		
(Stop lamp switch)	• Ignition switch. ON	Brake pedal: Slightly depressed	ON		
VHCL SPD CUT	Ignition switch: ON		NON		
LO SPEED CUT	Ignition switch: ON		NON		
AT OD MONITOR	Ignition switch: ON	OFF			
AT OD CANCEL	Ignition switch: ON	Ignition switch: ON			
CRUISE LAMP	Ignition switch: ON	MAIN switch: Pressed at the 1st time \rightarrow at the 2nd time	$ON \rightarrow OFF$		
	MAIN switch: ON	ASCD: Operating	ON		
SET LAMP	When vehicle speed: Between 40 km/h (25 MPH) and 180 km/h (112 MPH)	ASCD: Not operating	OFF		
A/F ADJ B1	Engine: running	-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 in the engine room left side near battery.
- Specification data are reference values and are measured between each terminal and ground.
- Pulse signal is measured by CONSULT-III.

CAUTION:

Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECMs transistor. Use a ground other than ECM terminals, such as the ground.

Term	inal No.	Wire	Description			Value	M
+	_	color	Signal name	Input/ Output	Condition	(Approx.)	
2	Ground	L	Throttle control motor power supply	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)	Ν
4	Ground	LG	A/F sensor 1 heater	Output	[Engine is running]Warm-up conditionIdle speed	2.9 - 8.8V★ 50mSec/div 5V/div JMBIA0082GB	O P

Termi	inal No.		Description				
+	_	Wire color	Signal name	Input/ Output	Condition	Value (Approx.)	
5	Ground	GR	Throttle control motor (Open)	Output	 [Ignition switch: ON] Engine stopped Shift lever: D (CVT), 1st (M/T) Accelerator pedal: Fully depressed 	0 - 14V★ 1mSec/div 5V/div JMBIA0083GB	
6	Ground	BR	Throttle control motor (Close)	Output	[Ignition switch: ON] • Engine stopped • Shift lever: D (CVT), 1st (M/T) • Accelerator pedal: Fully released	0 - 14V★ 1mSec/div 5V/div JMBIA0084GB	
9 10		O LG	Ignition signal No. 3 Ignition signal No. 2	Output	Output :	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	0 - 0.1V★ 20mSec/div 2V/div JMBIA0085GB
11 21	Ground	Y BR	Ignition signal No. 1 Ignition signal No. 4			[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	0 - 0.2V★ 20mSec/div 2V/div JMBIA0086GB
12 16	Ground	GR B	ECM ground	_	[Engine is running] • Idle speed	Body ground	
13	Ground	Y	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 	10V★ 50mSec/div 5V/div JMBIA0037GB	
					[Ignition switch: ON] • Engine stopped [Engine is running] • Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14V)	
14	Ground	B/R	B/R Fuel pump relay	Output	[Ignition switch: ON] • For 1 second after turning ignition switch ON [Engine is running]	0 - 1.0V	
					[Engine is running]More than 1 second after turning ignition switch ON	BATTERY VOLTAGE (11 - 14V)	

Termi	inal No.	Wire	Description			Value									
+	_	color	Signal name	Input/ Output	Condition	(Approx.)									
15	Ground	R	Throttle control motor relay	Output	[Ignition switch: $ON \rightarrow OFF$]	0 - 1.0V ↓ BATTERY VOLTAGE (11 - 14V) ↓ 0V									
					[Ignition switch: ON]	0 - 1.0V									
24	Ground	SB	ECM relay (Self shut-off)	Output	[Engine is running][Ignition switch: OFF]A few seconds after turning ignition switch OFF	0 - 1.0V									
			(Jeli Silut-Oli)		[Ignition switch: OFF]More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14V)									
					[Engine is running] • Idle speed	BATTERY VOLTAGE (11 - 14V)★ 50mSec/div									
25	Ground	Р	EVAP canister purge volume control solenoid valve			20V/div JMBIA0087GB BATTERY VOLTAGE (11 - 14V)★									
					 [Engine is running] Engine speed: About 2,000 rpm (More than 100 seconds after starting engine.) 	50mSec/div 10V/div JMBIA0088GB									
						BATTERY VOLTAGE									
					[Engine is running]Warm-up conditionIdle speed	(11 - 14V)★ 50mSec/div									
29 30		LG W	Fuel injector No. 4 Fuel injector No. 3		NOTE: The pulse cycle changes depending on rpm at idle	10V/div JMBIA0089GB									
30 31 32 Great	Ground	0 V	Fuel injector No. 2 Fuel injector No. 1	Output		BATTERY VOLTAGE									
		v			[Engine is running] • Warm-up condition	(11 - 14V)★ 50mSec/div									
														Engine speed: 2,000 rpm	10V/div JMBIA0090GB

Term	inal No.	\A/:	Description			Value
+	_	Wire	Signal name	Input/ Output	Condition	Value (Approx.)
33	Ground	BR	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 - 1.0V
35	Ground	В	Sensor ground (Heated oxygen sensor 2)	_	[Engine is running]Warm-up conditionIdle speed	0V
36	Ground	G	Sensor ground (Throttle position sensor)	_	[Engine is running]Warm-up conditionIdle speed	0V
0.7	01	1	Throttle position sensor		[Ignition switch: ON] • Engine stopped • Shift lever: D (CVT), 1st (M/T) • Accelerator pedal: Fully released	More than 0.36V
37	Ground	В	1	Input	 [Ignition switch: ON] Engine stopped Shift lever: D (CVT), 1st (M/T) Accelerator pedal: Fully depressed 	Less than 4.75V
		_	Throttle position sensor		[Ignition switch: ON] • Engine stopped • Shift lever: D (CVT), 1st (M/T) • Accelerator pedal: Fully released	Less than 4.75V
38	Ground	R	2	Input	 [Ignition switch: ON] Engine stopped Shift lever: D (CVT), 1st (M/T) Accelerator pedal: Fully depressed 	More than 0.36V
39	Ground	L	Refrigerant pressure sensor	Input	 [Engine is running] Warm-up condition Both A/C switch and blower fan motor switch: ON (Compressor operates) 	1.0 - 4.0V
40	Ground	GR	Sensor ground (Refrigerant pressure sensor)	_	[Engine is running]Warm-up conditionIdle speed	0V
			Power steering pressure		[Engine is running] • Steering wheel: Being turned	0.5 - 4.0V
41	Ground	SB	sensor	Output	[Engine is running] • Steering wheel: Not being turned	0.4 - 0.8V
42	Ground	Y	Battery current sensor	Input	[Engine is running]	0 - 4.8V
44	Ground	В	Sensor ground (Battery current sensor)	_	[Engine is running]Warm-up conditionIdle speed	0V
45	Ground	G	A/F sensor 1	Input	[Ignition switch: ON]	2.2V
46	Ground	Р	Engine coolant temper- ature sensor	Input	[Engine is running]	0 - 4.8V Output voltage varies with engine coolant temperature.
47	Ground	W	Sensor power supply (Throttle position sensor)	_	[Ignition switch: ON]	5V

Term	ninal No.	\ <i>\(\lambda\)</i> :=0	Description			Value
+	_	Wire color	Signal name	Input/ Output	Condition	Value (Approx.)
48	Ground	LG	Sensor ground (Power steering pressure sensor)	_	[Engine is running]Warm-up conditionIdle speed	ov
49	Ground	L	A/F sensor 1	Input	[Engine is running] • Warm-up condition • Engine speed: 2,000 rpm	1.8V Output voltage varies with air fuel ratio.
50	Ground	0	Intake air temperature sensor	Input	[Engine is running]	0 - 4.8V Output voltage varies with intake air temperature.
51	Ground	BR	Sensor power supply (Battery current sensor)	_	[Ignition switch: ON]	5V
52	Ground	SB	Sensor ground (Engine coolant temperature sensor)	_	[Engine is running]Warm-up conditionIdle speed	0V
55	Ground	Υ	Sensor power supply (Power steering pressure sensor)	_	[Ignition switch: ON]	5V
56	Ground	R	Sensor ground (Mass air flow sensor, Intake air temperature sensor)	_	[Engine is running] • Warm-up condition • Idle speed	0V
58	Ground	GR	Mass air flow sensor	Input	[Engine is running]Warm-up conditionIdle speed	0.9 - 1.1V
30	Ground	OIX	ividas dil now sensor	mput	[Engine is running]Warm-up conditionEngine speed: 2,500 rpm	1.4 - 1.7V
59	Ground	0	Sensor power supply [Camshaft position sen- sor (PHASE)]	_	[Ignition switch: ON]	5V
60	Ground	W	Sensor ground [Crankshaft position sensor (POS)]	_	[Engine is running]Warm-up conditionIdle speed	0V
61	Ground	W	Knock sensor	Input	[Engine is running] • Idle speed	2.5V
64	Ground	L	Sensor ground [Camshaft position sensor (PHASE)]	_	[Engine is running]Warm-up conditionIdle speed	0V
65	Cround	R	Crankshaft position sen-	Incut	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	3.0V★ 1mSec/div 2V/div JMBIA0091GB
00	Ground	K	sor (POS)	Input	[Engine is running] • Engine speed: 2,000 rpm	3.0V★ 1mSec/div 2V/div JMBIA0092GB

Termi	inal No.		Description			
+	_	Wire color	Signal name	Input/ Output	Condition	Value (Approx.)
67	Ground	_	Sensor ground (Knock sensor)	_	[Engine is running]Warm-up conditionIdle speed	0V
69	Ground	Y	Camshaft position sen-	Input	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	1.0 - 4.0★ 10mSec/div 2V/div JMBIA0093GB
	Glodila	·	sor (PHASE)	mpa.	[Engine is running] • Engine speed is 2,000 rpm	1.0 - 4.0★ 10mSec/div 2V/div JMBIA0094GB
72	Ground	V	Sensor power supply (Refrigerant pressure sensor)	_	[Ignition switch: ON]	5V
76	Ground	L	Sensor power supply [Crankshaft position sensor (POS)]	_	[Ignition switch: ON]	5V
77	Ground	LG	Power supply for ECM (Back-up)	Input	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14V)
					[Engine is running]Warm-up conditionIdle speed	0V
78	Ground	Р	Intake valve timing control solenoid valve	Output	[Engine is running]Warm-up conditionEngine speed: 2,000rpm	7 - 10V* 2mSec/div 5V/div JMBIA0095GB
			Accelerator pedal posi-		[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully released	0.5 - 1.0V
81	Ground	W	tion sensor 1	Input	[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully depressed	4.2 - 4.8V
		d O Accelerator pedal position sensor 2		[Ignition switch: ON] Engine stopped Accelerator pedal: Fully released	0.25 - 0.5V	
82	Ground		Input	[Ignition switch: ON] Engine stopped Accelerator pedal: Fully depressed	2.0 - 2.5V	

Term	inal No.	\\/iro	Description			Volue
+	_	Wire color	Signal name	Input/ Output	Condition	Value (Approx.)
83	Ground	GR	Sensor power supply (Accelerator pedal position sensor 1)	_	[Ignition switch: ON]	5V
84	Ground	В	Sensor ground (Accelerator pedal position sensor 1)	_	[Engine is running]Warm-up conditionIdle speed	0V
					[Ignition switch: ON] • ASCD steering switch: OFF	4V
					[Ignition switch: ON] • MAIN switch: Pressed	0V
85	Ground	G/Y	ASCD steering switch	Input	[Ignition switch: ON] • CANCEL switch: Pressed	1V
					[Ignition switch: ON] • RESUME/ACCELERATE switch: Pressed	3V
					[Ignition switch: ON] • SET/COAST switch: Pressed	2V
87	Ground	BR	Sensor power supply (Accelerator pedal position sensor 2)	_	[Ignition switch: ON]	5V
88	_	0	Data link connector	Input/ Output	_	_
92	Ground	R	Sensor ground (ASCD steering switch)	_	[Engine is running]Warm-up conditionIdle speed	ov
					[Ignition switch: OFF]	0V
93	Ground	Υ	Ignition switch	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
94	_	GR	Engine speed signal output	Output	_	_
95	Ground	Υ	Fuel tank temperature sensor	Input	[Engine is running]	0 - 4.8V Output voltage varies with fuel tank temperature.
97	_	Р	CAN communication line	Input/ Output	_	_
98	_	L	CAN communication line	Input/ Output	_	_
100	Ground	G	Sensor ground (Accelerator pedal position sensor 2)	_	[Engine is running]Warm-up conditionIdle speed	0V
102	Ground	R/B	PNP signal	Input	[Ignition switch: ON] • Shift lever: P or N (CVT), Neutral (M/T)	BATTERY VOLTAGE (11 - 14V)
					[Ignition switch: ON] • Shift lever: Except above	0V
104	Ground	Р	Sensor ground (Fuel tank temperature sensor)	_	[Engine is running]Warm-up conditionIdle speed	0V
105	Ground	V	Power supply for ECM	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)

< ECU DIAGNOSIS INFORMATION >

Termi	inal No.	Wire	Description			Value
+	_	color		Input/ Output	Condition	(Approx.)
106	Ground	SB	Olas Issues it is	Input	[Ignition switch: OFF] • Brake pedal: Fully released	0V
100	Ground	36	Stop lamp switch	iliput	[Ignition switch: OFF] • Brake pedal: Slightly depressed	BATTERY VOLTAGE (11 - 14V)
107 108	Ground	B B	ECM ground	_	[Engine is running] • Idle speed	Body ground
109	Ground	W	EVAP canister vent control valve	Output	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14V)
110	Ground	nd G/B A	ASCD brake switch	loout	 [Ignition switch: ON] Brake pedal: Slightly depressed (CVT) Brake pedal and clutch pedal: Slightly depressed (M/T) 	0V
110	Ground	G/b	ASCD DIAKE SWILLI	Input	 [Ignition switch: ON] Brake pedal: Fully released (CVT) Brake pedal and/or clutch pedal: Fully released (M/T) 	BATTERY VOLTAGE (11 - 14V)
111 112	Ground	B B	ECM ground	_	[Engine is running] • Idle speed	Body ground

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

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.	<u>EC-269</u>

DTC RELATED ITEM

DTC No.	Detected items	Engine operating 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 than 2,400 rpm due to the fuel cut.

OTC No.	Detected items	Engine operating condition in fail-safe mode			
P0117 P0118	Engine coolant tempera- ture sensor circuit	Engine coolant temperature will be determined by ECM based on the following condition. CONSULT-III displays the engine 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 engine starting	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	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			
P2135		condition. So, the acceleration will be poor.			
P0500	Vehicle speed sensor	The cooling fan operates (High) wh	ile 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 control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) 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.			
P2118	Throttle control motor	ECM stops the electric throttle cont fixed opening (approx. 5 degrees) to	rol actuator control, throttle valve is maintained at a 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:0000000006391844

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 U1010 CAN communication P0102 P0103 Mass air flow sensor P0117 P0118 Engine coolant temperature sensor P0122 P0123 P0222 P0223 P1225 P1226 P2135 Throttle position sensor P0327 P0328 Knock sensor P0335 Crankshaft position sensor (POS) P0340 Camshaft position sensor (PHASE) P0500 Vehicle speed sensor P0643 Sensor power supply P0605 ECM P0850 Park/neutral position (PNP) switch P1610 - P1615 NATS P2122 P2123 P2127 P2128 P2138 Accelerator pedal position sensor
2	 P0075 Intake valve timing control solenoid valve P0550 Power steering pressure sensor P0603 ECM power supply P1217 Engine over temperature (OVERHEAT) P1805 Brake switch P2101 Electric throttle control function P2118 Throttle control motor P2100 P2103 Throttle control motor relay
3	P0011 Intake valve timing control P1564 ASCD steering switch P1572 ASCD brake switch P1574 ASCD vehicle speed sensor P1715 Input speed sensor P2119 Electric throttle control actuator

DTC Index

×:Applicable —: Not applicable

DTC	·*1	Items	Trip	MIL	Reference page
CONSULT-III	ECM* ²	(CONSULT-III screen terms)	Пр	IVIIL	Reference page
U1000	1000 ^{*3}	CAN COMM CIRCUIT	2	_	EC-119
U1001	1001 ^{*3}	CAN COMM CIRCUIT	2	_	EC-119
U1010	1010	CONTROL UNIT(CAN)	2	_	EC-120
P0000	0000	NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	_	_	_
P0011	0011	INT/V TIM CONT-B1	2	_	EC-121
P0075	0075	INT/V TIM V/CIR-B1	2	×	EC-125
P0102	0102	MAF SEN/CIRCUIT-B1	1	×	EC-128
P0103	0103	MAF SEN/CIRCUIT-B1	1	×	EC-128
P0117	0117	ECT SEN/CIRC	2	×	EC-133
P0118	0118	ECT SEN/CIRC	2	×	EC-133
P0122	0122	TP SEN 2/CIRC-B1	1	×	EC-136
P0123	0123	TP SEN 2/CIRC-B1	1	×	EC-136
P0222	0222	TP SEN 1/CIRC-B1	1	×	EC-139
P0223	0223	TP SEN 1/CIRC-B1	1	×	EC-139

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DTC*1		Items	T-i-	B 411	Deference ness
CONSULT-III	ECM* ²	(CONSULT-III screen terms)	Trip	MIL	Reference page
P0327	0327	KNOCK SEN/CIRC-B1	2	_	EC-142
P0328	0328	KNOCK SEN/CIRC-B1	2	_	EC-142
P0335	0335	CKP SEN/CIRCUIT	2	×	EC-144
P0340	0340	CMP SEN/CIRC-B1	2	×	EC-148
P0500	0500	VEH SPEED SEN A	2	×	EC-152
P0550	0550	PW ST P SEN/CIRC	2	_	EC-154
P0603	0603	ECM BACK UP/CIRCUIT	2	×	EC-157
P0605	0605	ECM	1 or 2	× or —	EC-159
P0643	0643	SENSOR POWER/CIRC	1	×	EC-161
P0850	0850	P-N POS SW/CIRCUIT	2	×	EC-164
P1212	1212	TCS/CIRC	2	_	EC-167
P1217	1217	ENG OVER TEMP	1	×	EC-168
P1225	1225	CTP LEARNING-B1	2	_	EC-172
P1226	1226	CTP LEARNING-B1	2	_	EC-174
P1564	1564	ASCD SW	1	_	EC-176
P1572	1572	ASCD BRAKE SW	1	_	EC-179
P1574	1574	ASCD VHL SPD SEN	1	_	EC-190
P1610	1610	LOCK MODE	2	_	SEC-281
P1611	1611	ID DISCORD, IMMU-ECM	2	_	SEC-286
P1612	1612	CHAIN OF ECM-IMMU	2	_	SEC-287
P1615	1615	DIFFERENCE OF KEY	2	_	SEC-285
P1715	1715	IN PULY SPEED	2	_	EC-192
P1805	1805	BRAKE SW/CIRCUIT	1	×	EC-193
P2100	2100	ETC MOT PWR-B1	1	×	EC-198
P2101	2101	ETC FNCTN/CIRC-B1	1	×	EC-200
P2103	2103	ETC MOT PWR	1	×	EC-198
P2118	2118	ETC MOT-B1	1	×	EC-204
P2119	2119	ETC ACTR-B1	1	×	EC-206
P2122	2122	APP SEN 1/CIRC	1	×	EC-208
P2123	2123	APP SEN 1/CIRC	1	×	EC-208
P2127	2127	APP SEN 2/CIRC	1	×	EC-211
P2128	2128	APP SEN 2/CIRC	1	×	EC-211
P2135	2135	TP SENSOR-B1	1	×	EC-215
P2138	2138	APP SENSOR	1	×	EC-218

^{*1: 1}st trip DTC No. is the same as DTC No.

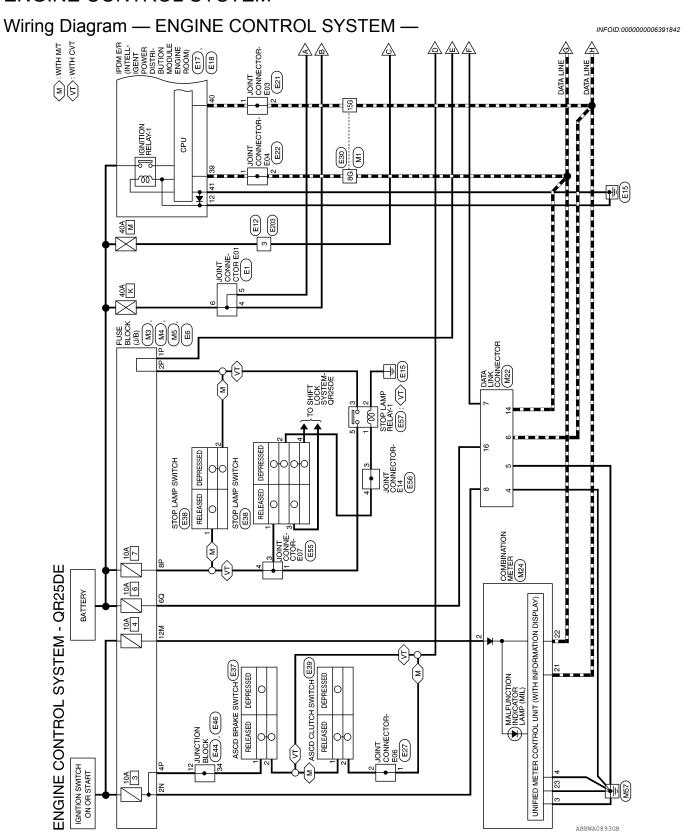
^{*2:} In Diagnostic Test Mode II (Self-diagnostic results), this number is controlled by NISSAN.

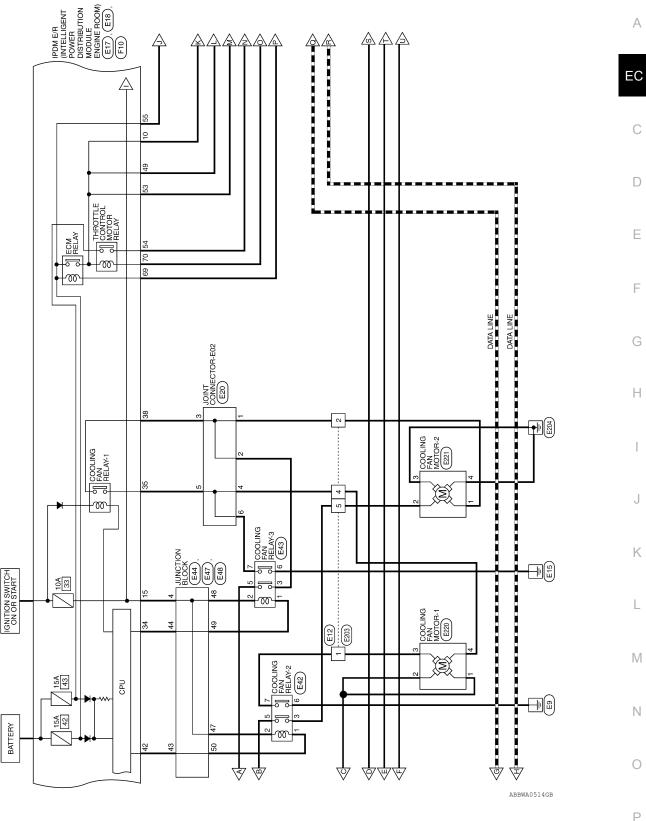
^{*3:} The troubleshooting for this DTC needs CONSULT-III.

< WIRING DIAGRAM > [QR25DE]

WIRING DIAGRAM

ENGINE CONTROL SYSTEM





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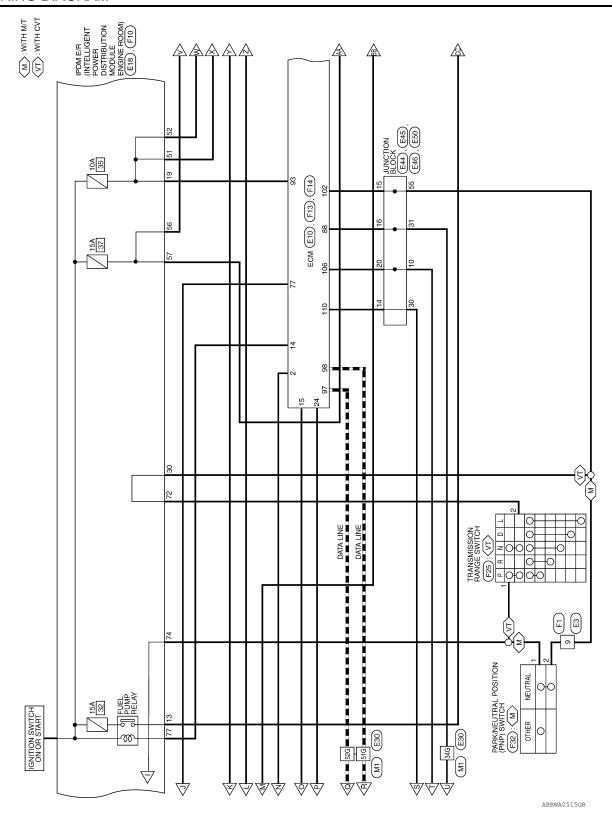
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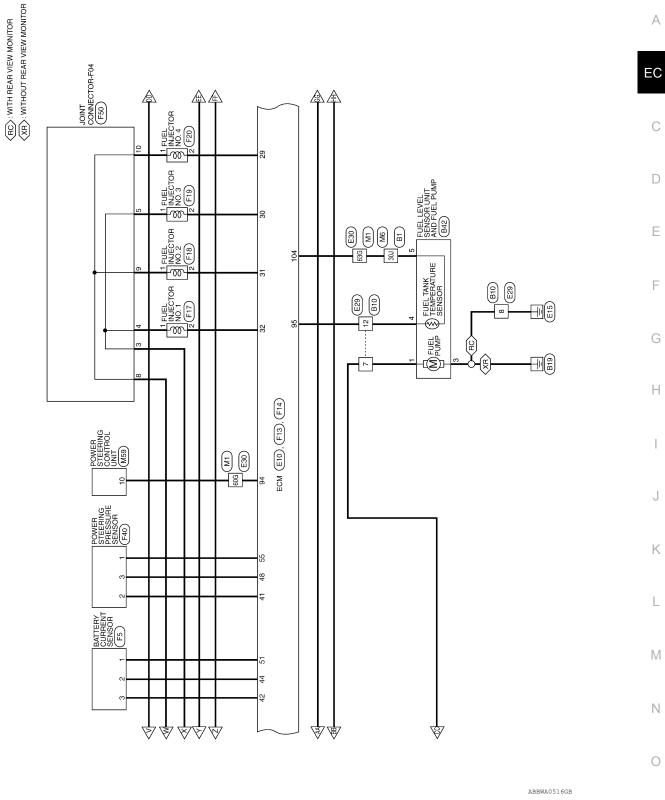
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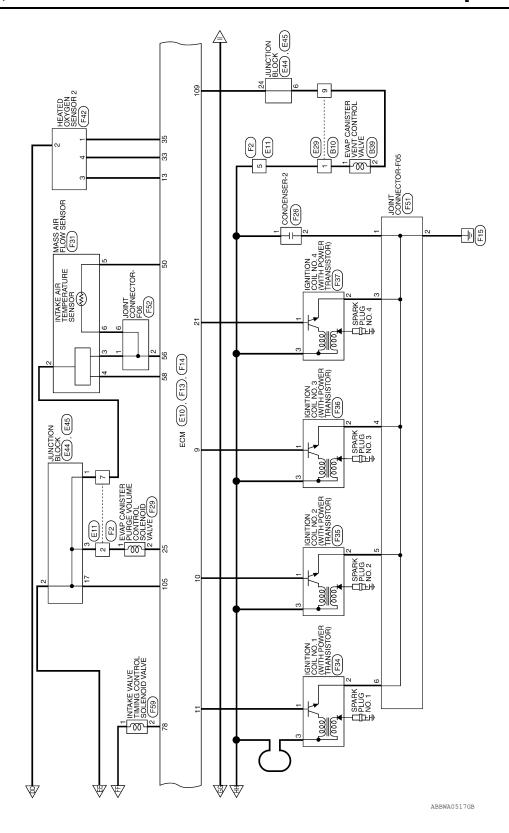


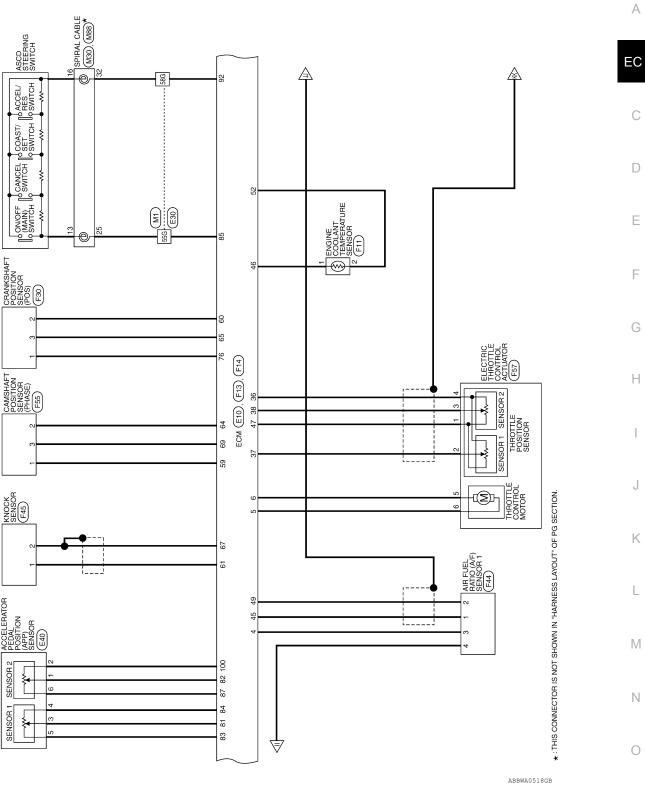
EC-291 Revision: June 2012 2011 Altima GCC

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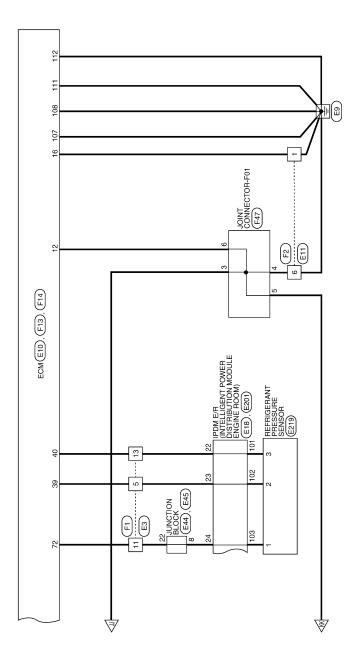
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	Connector No. M3 Connector Name FUSE BLOCK (J/B) Connector Color WHITE M.A. Mine Signal Name ZN G	
:S - QR25DE	Terminal No. Wire Signal Name 8G P	
ENGINE CONTROL SYSTEM CONNECTORS - QR25DE	Connector No. M1 Connector Name WIRE TO WIRE Connector Color WHITE Connector Color WHITE Son	

Connector No. M4 Connector Name FUSE BLOCK (J/B) Connector Color WHITE #0	Connector No. M5	Connector Name FUSE BLOCK (J/B)	Connector Color WHITE	[新] [5M 4M [Terminal No. Wire Signal Name	- O M21
		(2)			ame	

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ENGINE CONTROL SYSTEM

[QR25DE]

Connector No. M24 Connector Name COMBINATION METER Connector Color WHITE	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 17 18 19 20	Terminal No. Wire Signal Name 2 O IGN	3 B GND			23 B GND		Connector No. M88 Connector Name SPIRAL CABLE Connector Color GRAY ALS Terminal No. Wire Signal Name 13 Y ASCD_SW ACCOUNTY ACCOUNTY
ctor No. M22 ctor Name DATA LINK CON ctor Color WHITE	HS 1 2 3 4 5 6 7 8 1	Terminal No. Wire Signal Name 4 B -		0 0 7	0	14 P –	16 Y/R	Connector No. M59 Connector Name POWER STEERING CONTROL UNIT CONTROL UNIT CONTROL UNIT TO WHITE THE TO THE
Connector No. M6 Connector Name WIRE TO WIRE Connector Color WHITE Su su 72 su su su 72 su	172 163 154 154 154 173 173 173 173 173 173 173 173			78J 78J 77J 78J 78J 77J 78J 78J 78J 77J 78J 78	85J 84J 200 1.10 1.00 1.00 1.00 1.00 1.00 1.00	020 000		Connector No. M30 Connector Name SPIRAL CABLE Connector Color GRAY A.S. Terminal No. Wire Signal Name 25 G/Y ASCD_GND ASCD_GND

ENGINE CONTROL SYSTEM

< WIRING DIAGRAM > [QR25DE]

_			Connector Name WIRE TO WIRE	Connector Name	me FUSI	FUSE BLOCK (J/B)
Connector Color WHITE	Connector Color	olor WHITE	! :	Connector Color		
	6	1 2 3	4 5 6 7		7P 6P 5P 4F	7P 6P 5P 4P 3P 2P 1P
H.S.	H.S.	8 9 10 11	8 9 10 11 12 13 14 15 16	οį	6P 15P 14P 13	P12P11P10P 9P 8P
Terminal No. Wire Signal Name	Terminal No.	Color of Wire	Signal Name	Terminal No.	Color of Wire	Signal Name
- × ×	2	GR	ı	4	SB	ı
- \	6	BR	ı	2P	۵	1
- X 9	-	GR	1	4P	Ъ	1
	13	SB	1	8P	Œ	1
Connector No. E10	Terminal No.	Color of Wire	Signal Name	Connector No.). E11	
	6		GNDA-ASCDSW	Connector Name WIRE TO WIRE	me WIRI	E TO WIRE
Corrector Color BLACA	83	; >	IGNSW	Connector Color WHITE	NAH	Щ
	94	GR	TACHO (CABIN)			
H.S.	95	>	上	NEW TOTAL	2 9	7 8 9 10
82 86 90 94 98 102 106 110	96	ı	ı	Ŋ.		
84 88 92 96 100 104 108 112	26	۵	CAN-L			
	86	Г	CAN-H	Terminal No	Color of	Signal Name
Color of	66	-	1		WIFE	
l erminal No. Wire Signal Name	100	ŋ	GNDA-APS2	-	n .	1
	101	1	ı	20 1	، ر	1
82 O APS2	102	œ	NEUT-H	ر د	r	I
GR ,	103	1	ı	ဖ ၂	m (ı
	104	۵	GNDA-TF	`	5	1
85 Y ASCDSW	105	>	VBR			
	106	SB	BRAKE			
87 BR AVCC2-APS2	107	В	GND			
88 O KLINE	108	В	GND			
68	109	>	CDCV			
06	110	ŋ	BNCSW			
91 – –	111	В	GND			
	112	В	GND			

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		Connector No. E20 Connector Name JOINT CONNECTOR-E02 Connector Color WHITE	Terminal No. Color of Signal Name 1 GR
E17 IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) WHITE Columbia C	Signal Name CAN-L CAN-H GND (SIGNAL) MOTOR_FAN_RLY_MID	Signal Name ECM VB GND (POWER) FUEL PUMP START IG-E/R BCM IGNSW PD SENS GND-E/R	PD SENS SIG-E/R PD SENS PWR-E/R CLUTCH I/L SW MOTOR FAN RLY HI MOTOR FAN LO F/L MOTOR FAN
nector No.	Color of Service Color of Wire Service Service	Color of Wire 10 BR 12 B 13 SB 15 W 15 W 19 Y 22 W/R	23 B/R 24 BR/W 30 R/B 34 O/L 35 P 38 R/W
Connector No. E12 Connector Name WIRE TO WIRE Connector Color WHITE	Terminal No. Wire Signal Name Terminal No. Wire Signal Name Z GR	Connector No. E18 Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM) Connector Color WHITE MATTER H.S.	9 10 11 12 13 14 2526272829 3031323334 37 38 35 36 1516171819 2021222324 35 36

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Connector No. E27 Connector Name JOINT CONNECTOR-E06 Connector Color WHITE	[] 4 3 2 1 []	Signal Name	Signal Name
Vo. E27 Vame JOIR		Color of Wire W	Color of Wire P Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y
Connector No. E27 Connector Name JOINT (Connector Color WHITE	H.S.	Terminal No.	7 Terminal No. 86 86 156 516 526 556 556 606 606 636
Connector No. E22 Connector Name JOINT CONNECTOR-E04 Connector Color WHITE		Signal Name	E30 WIRE TO WIRE
o. E22 ame JOIN olor WHI		Color of Wire	Color WHITE
Connector No. E22 Connector Name JOINT (Connector Color WHITE	H.S.	Terminal No.	Connector No. Connector Name Connector Color H.S. H.S.
Connector No. E21 Connector Name JOINT CONNECTOR-E03 Connector Color WHITE	3 2 1 🗍	Signal Name	WHRE TO WIRE WHITE WHITE Tof Signal Name
ne JOIN		Color of Wire	
Connector No. E21 Connector Name JOINT (Connector Color WHITE	原 H.S.	Terminal No.	Connector No. Connector Name Connector Color Terminal No. 7 8 8 8 9 7 12 7 12
			ABBIA0692GB

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Connector No. E38	E38	Connector No. E38	E38
Connector Name	Connector Name STOP LAMP SWITCH (WITH CVT)	Connector Name	Sonnector Name STOP LAMP SWITCH (WITH M/T)
Connector Color WHITE	WHITE	Connector Color BLACK	BLACK
	(E)	管	2 1
H.S.	1 2	H.S.	

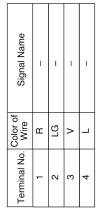
Connector Name ASCD BRAKE SWITCH Connector Color BROWN

E37

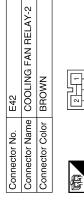
Connector No.

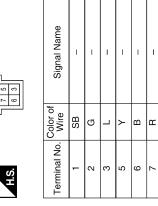
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	Signal Name	ı	_
Color of	Wire	ш	LG
	Terminal No.	-	2





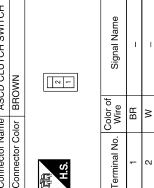




Connector No. E40 Connector Name ACCEL Connector Color BLACK	ACCELERATOR PEDAL POSITION (APP) SENSOR BLACK
H.S.	1 2 3 4 5 6

Signal Name	APS2	GND-A2	APS1	GND-A1	AVCC1	AVCC2
Color of Wire	0	В	Μ	В	GR	BR
Terminal No.	1	2	3	4	5	9

Connector No.	E39
Connector Name	Connector Name ASCD CLUTCH SWITCH
Connector Color BROWN	BROWN



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	Connector Name JUNCTION BLOCK	Ð	77 16	Signal Name	ı	_	_	I	ı	ı	ı	
E45	ne JUNC	or WHI	17 16 C 24 23 22	Solor of Wire	G	В	0	^	SB	GR	>	
Connector No.	Connector Nar	Connector Color WHITE	原 H.S.	Terminal No. Wire	14	15	16	17	20	22	24	
44	Connector Name JUNCTION BLOCK	NWOF	1 10 9 8 7 6	of Signal Name	I	ı	ı	ı	ı	ı	ı	
. E44	me JL	lor BF	12 11	Color o	0	BR	_	≥	≥	ნ	SB	G/B
Connector No.	Connector Na	Connector Color BROWN	H.S.	Terminal No. Wire	-	2	င	4	9	8	10	12
			1				<u> </u>	<u> </u>			7	
	COOLING FAN RELAY-3	NWC	2	Signal Name	ı	1	1	1	1	ı		
. E43		lor BROWN		Color of Wire	0	>	GR	>	В	۵		
tor No.	tor Name	tor Color		al No.							1	

Connector No.	1	E47		Connector No.	. E48	8	
ector Na	me	JUNCTIO	Connector Name JUNCTION BLOCK	 Connector Na	UC am	Connector Name JUNCTION BLOCK	
Connector Color WHITE	lor	WHITE		Connector Color		WHITE	
Ä.S.		42 41 41 41 43	43 43	面 H.S.	200	49 48 47	
Terminal No. Wire	Color		Signal Name	 Terminal No. Wire	Color of Wire	Signal Name	
43	SB		1	47	G	ı	
44	0		ı	48	>	ı	
				49	0	ı	
				50	SB	ı	

	Connector Name JUNCTION BLOCK	ITE	27 26 25 37 36 55 54 33 32	Signal Name	_	_	_
E46	me JUI	or WF	31 30 29 28 40 39 38 37	Color of Wire	×	0	٦
Connector No.	Connector Nai	Connector Color WHITE	赋为 H.S.	Terminal No.	30	31	34

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	4						
	Connector Name JOINT CONNECTOR-E14	TE	4 3 2 1	Signal Name	ı	I	
. E56	me JOII	lor WH		Color of Wire	ГG	ГG	
Connector No.	Connector Na	Connector Color WHITE	H.S.	Terminal No. Wire	က	4	
	:TOR-E07			Signal Name			
E55	Connector Name JOINT CONNECTOR-E07	WHITE	4 3 2 1				
S	Jame J	Solor		Color Wir	>	ш.	Ж
Connector No. E55	Connector I	Connector Color WHITE	高 H.S.	Terminal No. Wire	-	ဇ	4
	ame JUNCTION BLOCK	HTE	26 55	Signal Name	ı		
o. E50	ume JUI	olor WHITE		Color of Wire	BR		

Terminal No. 55

3	WIRE TO WIRE	ITE	(a) (b) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	Signal Name	I	I	1	ı	1
E203		lor WHITE		Color of Wire	æ	B/W	₽/A	ΓB	_
Connector No.	Connector Name	Connector Color	原 H.S.	Terminal No.	-	2	က	4	2

						1	
01	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	WHITE	98 97 96 95 94 93 92 91	Signal Name	PD_SENS_GND	PD_SENS_SIG	PD_SEND_PWR
, E201			98 97 9	Color of Wire	0/L	B/B	۵
Connector No.	Connector Name	Connector Color	崎 H.S.	Terminal No.	101	102	103

		STOP LAMP RELAY-1	Ш		- L		Signal Name	1	l	ı	
İ	. E57		lor BLUE]	Color of Wire	ГG	В	>	
	Connector No.	Connector Name	Connector Color		H.S.		Terminal No.	-	2	3	

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(2 - (0))	Signal Name	+ O7	+ H	· I	- OJ
	Color of Wire	M/H	٦	В	В
H.S.	Terminal No.	1	2	3	4

Connector No.	Connector No. E220
Connector Name	COOLING FAIN MOTOR-
Corniector Color GHAT	ghar
Œ	



61	REFRIGERANT PRESSURE SENSOR	BLACK		Signal Name	AVCC2	SIGNAL	GND
E219		_		Color of Wire	۵	В	8
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	-	2	က

Signal Name	+ 07	+ I	÷	- 07	
Color of Wire	B/W	7	В	В	
Ferminal No.	-	2	3	4	

Signal Name	+ O7	+ H	÷	- O7	
Color of Wire	A/A	Y/A	ч	8/1	
Terminal No.	1	2	3	4	

Signal Name	AVCC2	SIGNAL	GND	
Color of Wire	Ь	ш	Α	
Terminal No.		2	ဇ	

	BATTERY CURRENT SENSOR	ÓK	<u>2</u>	Signal Name	AVCC1	GND	SIGNAL
52		lor BLACK		Color of Wire	BB	В	\
Connector No.	Connector Name	Connector Color	咸司 H.S.	Terminal No.	-	2	3

WIRE TO WIRE WHITE 3	I
S S S S S S S S S S	>
Connector No. Connector Name Connector Color H.S. Terminal No. W	2

ime WIRE TO WIRE lor WHITE 7 6 5 4
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	[일	l	١,	Į	Ш	12
	WIRE TO WIRE	WHITE			4	15 14 13 12 11
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正	>	>		lt	9	15
	Connector Name	×		ľ	7	16
o.	au	Connector Color	'	_		
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ō	5	ō				
反	돐	ᅜ	l i			
l e	Ĕ	≝			1	U
Connector No.	ō	ō		A	F	Œ
0	ပ	ပ		1	9	_

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H.S.

Signal Name	1	-	1	ı
Color of Wire	٦	M	۸	GR
Terminal No.	2	6	11	13

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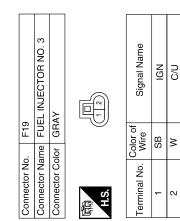
F11 ENGINE COOLANT	TEMPERATURE SENSOR	GRAY		<u> </u>	3			of Signal Name		۸۸ از ن	GND			of Signal Name	I	1	GND-PHASE#1	POS	1	.D GNDA-KNK 1	ı	PHASE#1	I	ı	AVCC2-PDPRES	1	1	ı	AVCC2-POS	BATT	CVTC#1	ı	1
								Color of	A C	- H	SB			Color of Wire		1	_	В	1	SHIELD	_	>	1	1	>	1	1	ı	_	LG	۵	1	1
Connector No.		Connector Color		唇	H.S.			Terminal No.	,	- c	N			Terminal No.	62	63	64	65	99	29	89	69	70	71	72	73	74	75	9/	77	78	79	80
Signal Name	ENG SOL	INJECTOR #1	INJECTOR #2	ENG SOL	ETC	ECM BAT	O2 SENS #1	O2 SENS #2	SSOFF	MOTRLY	NPSW	START IG EGI	FPR	Signal Name	ı	GNDA-CURSEN	AF+1	WL	AVCC1-TPS-B1	GNDA-PSPRES	AF-1	TA1	AVCC1-CURSEN	GNDA-TW	1	1	AVCC1-PSPRES	GNDA-TA1	1	QA1+	AVCC1-PHASE#1	GND-POS	KNK1
Color of Wire	>	SB	>	>	ЯĐ	PT	н	0	as	5	8	٦	GR	Color of Wire	1	В	9	Ь	M	PT		0	BR	SB	1	1	>	۳	ı	GR	0	>	>
Terminal No.	49	51	52	53	54	22	56	57	69	70	72	74	77	Terminal No.	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	09	61
		(F)								74/75/76/77/78 81 82	64 65 66 67 68 79 80				T		(<u></u>				T						<u> </u>	T	T
10 IOM E/B (INTELLICENT	POWER DISTRIBUTION	ODULE ENGINE ROOF	WHITE							58 6970717273 74	59 60 61 62 63	. 11		F13 FCM	BROWN			53 57 61 65 69 73	-	35 39 43 47 51 55 59 63 67 71 75 79 36 40 44 48 52 56 60 64 68 72 76 80			of Signal Name		5 1	GNDA-02SR2	GNDA-TPS-B1	TPS1-B1	TPS2-B1	PDPRES	GNDA-PDPRES		CURSEN
		\rightarrow								56 57	50 51					4		33 37 41 45 49	34 38 42 4	36 49 43 4	₽		Color of	BB		В	o o	В	<u>د</u>	_	GR	SB	>
Connector No.	Connector Name		Connector Color			<u>۲</u>				53 54 55	47 48 49			Connector No.	Connector Color			S o	1	_	ツ		Terminal No.	33	34	35	39	37	388	39	40	41	42

Signal Name	I	IGN #4	ı	_	SSOF	EVAP	ı	ı	-	7# CNI	E# fNI	Z# [N]	1# CNI
Color of Wire	ı	BR	ı	1	SB	Ь	ı	ı	1	БЛ	Μ	0	۸
Ferminal No.	20	21	22	23	24	25	26	27	28	29	30	31	32

Signal Name	1	ı	IGN #3	IGN #2	IGN #1	GND	O2HR1	FPR	MOTRLY-B1	GND	ı	ı	1
Color of Wire	I	ı	0	ΓG	>	GR	>	B/R	ш	В	I	I	ı
Terminal No.	7	8	6	10	+	12	13	14	15	16	17	18	19

Connector No.	F14								
Connector Name	ECM	_							
Connector Color	GRAY	≽							
		L						G	
	1	-	9 13 17 21 25	17	72	ĸ	53	_	
5	2	-	10 14 18	18	ಬ	26	30		
	3 7	Ξ	11 15	19	19 23 27	22	31		
	8		12 16 20 24 28	20	24	28	32	_	
							П	7	

Signal Name	_	VMOT-B1	ı	AFH1	MOTOR1-B1	MOTOR2-B1	
Color of Wire	_	٦	ı	LG	GR	BR	
Terminal No.	1	2	ဇ	4	5	9	



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	FUEL INJECTOR NO. 2	ΑY		Signal Name	IGN	C/N
. F18		lor GRAY		Color of Wire	>	0
Connector No.	Connector Name	Connector Color	赋 H.S.	Terminal No.	-	2

	FUEL INJECTOR NO. 1	AY		Signal Name	IGN	n/o
. F17		lor GRAY		Color of Wire	SB	۸
Connector No.	Connector Name	Connector Color	原则 H.S.	Terminal No.	1	2

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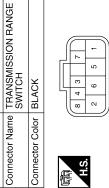
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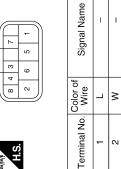
No. F26	Connector Name CONDENSER-2	Sonnector Color WHITE
Connector No	Connector N	Connector C

F25

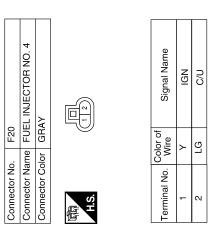
Connector No.

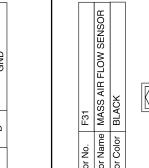
-2	Signal Name	VBR	GND
	Color of Wire	>	В
H.S.	Terminal No.	1	2





N

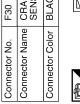






MASS AIR FLOW SENSO	BLACK	2 2 1	Signal Name	VB	GND	QA+	TA+	TA-
		9	Color of Wire	BR	В	GR	0	>
Connector Name	Connector Color	原 H.S.	Terminal No.	2	3	4	5	9

-)		
CRANKSHAFT POSITION	SENSOR (POS)	BLACK	





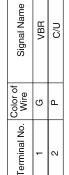
Signal Nar	AVCC2	GND	POS
Color of Wire	٦	M	В
Terminal No.	1	2	3

gnal Name

F29	EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE	ır BLUE	
Connector No.	Connector Name	Connector Color BLUE	







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Connector Name | IGNITION COIL NO. 2 (WITH POWER TRANSISTOR)

IGNITION COIL NO. 1 (WITH POWER TRANSISTOR)

Connector Name Connector Color

F34

Connector No.

GRAY

Connector No.

GRAY

Connector Color

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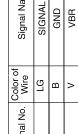
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	Name
	<u>a</u>





Signal Name

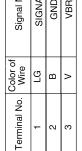
Color of Wire

Terminal No.

SIGNAL GND

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> 2 က





Connector No.	F40
Connector Name	Connector Name POWER STEERING PRESSURE SENSOR
Connector Color BLACK	BLACK



IGNITION COIL NO. 4 (WITH POWER TRANSISTOR)	AY	Signal Name	SIGNAL	GND	ABV
<u> </u>	GRAY	Color of Wire	BR	В	>
Name	Color	S≥	m m		
ž	Š	9.			



F37

Connector No.

0	Color of Wire	BR	В	۸
H.S.	Terminal No.	1	2	3

Signal Name

Color of Wire

Terminal No.

OUTPUT AVCC1

> SB 2

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GND

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IGNITION COIL NO. 3 (WITH POWER TRANSISTOR)

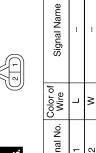
Connector Name Connector Color

Connector No.

	Signal Name	SIGNAL	GND	VBB
	Color of Wire	0	В	۸
崎南 H.S.	Terminal No.	-	2	3



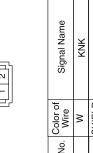
F32	Connector Name PARK/NEUTRAL POSIT (PNP) SWITCH	BLACK	
Connector No.	Connector Name	Connector Color BLACK	

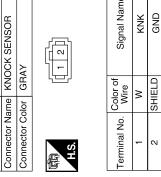




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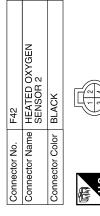
Connector No.	F45
Connector Name	Connector Name KNOCK SENSOR
Connector Color GRAY	GRAY

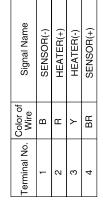




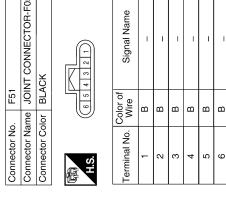
F44	Connector Name AIR FUEL RATIO (A/F) SENSOR 1	GRAY	
Connector No.	Connector Name	Connector Color GRAY	







No. F51	nnector Name JOINT CONNECTOR-F05	nnector Color BLACK	
nnector No.	nnector Nar	nnector Col	



	JOINT CONNECTOR-F04	BLACK	8 8 7 7 8 9 8 7 7 8 9 8 9 7 9 9 9 9 9 9	Signal Name	1	ı	ı	ı	ı	I
. F50			10 01	Color of Wire	SB	SB	SB	>	\	>
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	က	4	2	8	6	10

Connector No.	F47
Connector Name	Connector Name JOINT CONNECTOR-F01
Connector Color	BLACK
(中)	6 5 4 4 3 2 1

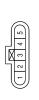
JOINT CONNECTOR-F01	\CK	4 3 2 1	Signal Name	1	_	_	1
	lor BLACK	9	Color of Wire	SHIELD	GR	SHIELD	GR
Connector Name	Connector Color	明 H.S.	Terminal No.	3	4	2	9

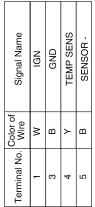
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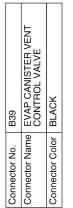
Terminal No. Color Terminal No. Color Terminal No. With Te	Signal Name		Connector No.		F52 JOINT CONNECTOR-F06	CTOR-F06		Connector No.	<u>e</u>	F55 CAMSHAF SENSOR (F55 CAMSHAFT POSITION SENSOR (PHASE)		Connec	Connector No.		F57 ELECTRIC THROTTLE	TLE
Signal Name	Signal Name		Connector C		 			Connecto	-	BLACK	(-)		Connec	ctor Color	-		
Figure Signal Name Terminal No. Color of Signal Name Sig	Terminal No. Oxford Signal Name		是 H.S.		8 8			用.S.		1 2 3			品.S.H			2	
1 0 AVCC1 1 W	1		Terminal No.			l Name		Terminal			Signal Name		Termina		olor of Vire	Signal Na	me
Fig.	FB		-	ш				-	0	_	AVCC1				>	INPUT	
Y	FE9 Connector No. B1 Connector No. B2 Connector No. B2 Connector No. B3 Connector No. B3 Connector No.		2	æ				2	1		GND		2		В	OUTPU	11
F59 Signal Name Connector No. B1 Signal Name Connector Color WHITE Connector Color WHITE Signal Name Connector Color Color	F59 Connector Name WIPE TO WIPE		9	>				က	 		PHASE		က		æ	OUTPU	T2
F59 Connector No. B1 Connector No. B1 Connector No. B1 Connector No. B1 Connector No. B2 Connector No. Connector No.	F59	_					7]	4		ŋ	GND	
F59 Connector No B1 Terminal No Color of Sign Connector No B1 Connector Name WIRE TO WIRE Signal Name Connector Name WIRE TO WIRE Signal Name F59 Connector Name WIPE TO WIPE												5		BR	MOTOF	15	
F59 Connector No. B1 Terminal No. Color of Connector Name WIRE TO WIRE SOUR B Connector Name WIRE TO WIRE SOUR B Connector Color WHITE Sour F59 Terminal No. Connector No. B1 Terminal No. Color of Signal Name Connector Color WHTE Connector Colo												9		GR	MOTOF	11	
NITAKE VALVE TIMING Connector Color WHITE CONTROL SOLENOID CONNECTOR CONTROL SOLENOID CONTROL	Connector Name VALVE Connector Color WHITE Connector Color Connector C		Connector N					Connecto		B1	L		Termina		lor of Vire	Signal Name	
GRAY GRAY Vire V V VB V C/U	GRAY C 1 2 1 1 1 1 1 1 1 1		Connector N		AKE VALVI NTROL SO	E TIMING LENOID		Connecto		WIRE 10	MI TI		30		В	1	
Color of Signal Name Wire V VB P C/U	Color of Signat Name V VB Sal 31/1 22/1 22/1 22/1 22/1 22/1 22/1 22/1		Connector C		AX SS 1			H.S.		33 43	5J 6J 7J 8J 9J 12J 13J 14J 15J 16J 1	[2]					
No N	1 V VB 2 P C/U 471 484 684 572 584 484 584 485 484 584 585 5		Terminal No.			al Name				3) 19) 20) 2	22J 23J 24J 25J	[8]					
NO d	2 P C/U 472 482 583 584 584 584 584 584 584 584 584 584 584		-	>		/B			Ĺ	38J 39J 40J 41J	42J 43J 44J 45J 46J						
			a	۵		0/2	\Box			481 501 571 721	Sal Sal						

Revision: June 2012 EC-309 2011 Altima GCC

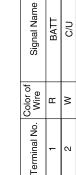
B42	Connector Name FUEL LEVEL SENSOR UNIT AND FUEL PUMP	GRAY	
Connector No.	Connector Name	Connector Color GRAY	





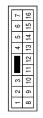








B10	WIRE TO WIRE	WHITE	
Connector No.	Connector Name WIRE TO WIRE	Connector Color WHITE	





Signal Name	1	1	-	ı	1
Color of Wire	В	8	В	Μ	>
Terminal No.	-	2	8	6	12

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ENGINE CONTROL SYSTEM SYMPTOMS

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SYMPTOM DIAGNOSIS

ENGINE CONTROL SYSTEM SYMPTOMS

Symptom Table EC

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
Warranty	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-250
	Fuel pressure regulator system	3	3	4	4	4	4	4	4	4		4			EC-323
	Fuel injector circuit	1	1	2	3	2		2	2			2			EC-247
	Evaporative emission system	3	3	4	4	4	4	4	4	4		4			EC-241
Air	Positive crankcase ventilation system	3	3	4	4	4	4	4	4	4		4	1		EC-270
	Incorrect idle speed adjustment						1	1	1	1		1			EC-15
	Electric throttle control actuator	1	1	2	3	3	2	2	2	2		2		2	EC-200 EC-206
Ignition	Incorrect ignition timing adjustment	3	3	1	1	1		1	1			1			EC-15
	Ignition circuit	1	1	2	2	2		2	2			2			EC-264
Main po	wer supply and ground circuit	2	2	3	3	3		3	3		2	3			EC-115
Mass air	r flow sensor circuit	4			2										EC-128
Engine o	coolant temperature sensor circuit	1			3		3			3					EC-133
Air fuel r	ratio (A/F) sensor 1 circuit				3										EC-228
Throttle	position sensor circuit		1	2		2	2	2	2	2		2			EC-136 EC-139 EC-172 EC-174 EC-215
Accelera	ator pedal position sensor circuit			3	2	1									EC-208 EC-211 EC-218
Knock s	ensor circuit			2								3			EC-142
Cranksh	aft position sensor (POS) circuit	2	2												EC-144
Camsha	ft position sensor (PHASE) circuit	3	2												EC-148
Vehicle s	speed signal circuit		2	3		3						3			EC-152
Power s	teering pressure sensor circuit		2					3	3						EC-154

[QR25DE]

		SYMPTOM												
	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	
ECM	2	2	3	3	3	3	3	3	3	3	3			EC-157 EC-159
Intake valve timing control solenoid valve circuit		3	2		1	3	2	2	3		3			EC-125
PNP signal circuit			3		3		3	3			3			EC-164
Refrigerant pressure sensor circuit		2				3			3		4			EC-271
Electrical load signal circuit							3							EC-239
Air conditioner circuit	2	2	3	3	3	3	3	3	3		3		2	<u>HAC-4</u> <u>HAC-107</u>
ABS actuator and electric unit (control unit)			4											BRC-15 BRC-81

^{1 - 6:} The numbers refer to the order of inspection. (continued on next table)

SYSTEM — ENGINE MECHANICAL & OTHER

ENGINE CONTROL SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

[QR25DE]

							S	/MPT	ОМ							Α
		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	EC C
											_					
	ymptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	НА		F
Fuel	Fuel tank	5				_									FL-14	
	Fuel piping			5	5	5		5	5			5			EM-36	G
	Vapor lock		5												_	O
	Valve deposit Poor fuel (Heavy weight gasoline, Low octane)	5		5	5	5		5	5			5				Н
Air	Air duct														EM-25	
	Air cleaner														EM-25	ı
	Air leakage from air duct (Mass air flow sensor — electric throttle control actuator)		5	5		5		5	5			5			EM-25	
	Electric throttle control actuator	5			5		5			5					EM-26	J
	Air leakage from intake manifold/ Collector/Gasket														<u>EM-25</u>	K
Cranking	Battery	1	1	1		1		1	1					1	PG-140	
	Generator circuit	•	·	·		•		·							CHG-10	
	Starter circuit	3										1			STR-9	L
	Signal plate	6													<u>EM-77</u>	
	PNP signal	4													TM-22 TM-410	M
Engine	Cylinder head	5	5	5	5	5		5	5			5			EM-68	
	Cylinder head gasket	3	J	J	J	3					4	3	3		<u>LIVI 00</u>	Ν
	Cylinder block															
	Piston												4			
	Piston ring	6	6	6	6	6		6	6			6			<u>EM-77</u>	0
	Connecting rod															
	Bearing															Р
	Crankshaft															
Valve mecha-	Timing chain														EM-53	
nism	Camshaft	_	_	_	_	_		_	_			_			EM-41	
	Intake valve timing control	5	5	5	5	5		5	5			5			EM-53	
	Intake valve Exhaust valve												3		<u>EM-53</u>	

			SYMPTOM												
		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-30 EX-5
	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-32 LU-11 LU-13 LU-16
	Oil level (Low)/Filthy oil														LU-9
Cooling	Radiator/Hose/Radiator filler cap														<u>CO-15</u>
	Thermostat									5					<u>CO-20</u>
	Water pump														<u>CO-18</u>
	Water gallery	5	5	5	5	5		5	5		4	5			<u>CO-11</u>
	Cooling fan														<u>CO-17</u>
	Coolant level (Low)/Contaminated coolant									5					<u>CO-11</u>
NATS (Nis	san Anti-Theft System)	1	1												SEC-222

^{1 - 6:} The numbers refer to the order of inspection.

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS > [QR25DE]

NORMAL OPERATING CONDITION

Description INFOID:0000000006391847

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.

This function is different from deceleration control listed under Multiport Fuel Injection (MFI) System, <u>EC-31</u>. "System Description".

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PRECAUTIONS

< PRECAUTION > [QR25DE]

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 AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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 "SRS AIR BAG".
- Never 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.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000008680966

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

Connect both battery cables.

NOTE:

Supply power using jumper cables if battery is discharged.

- Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
- Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
- 4. Perform the necessary repair operation.
- 5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)

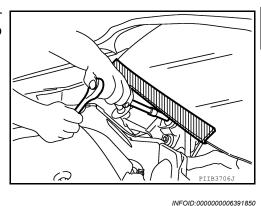
PRECAUTIONS

< PRECAUTION > [QR25DE]

6. Perform self-diagnosis check of all control units using CONSULT.

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 to prevent damage to windshield.



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

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-57</u>, "<u>Description</u>" (COUPE) or <u>PG-129</u>, "<u>Description</u>" (SEDAN).
- 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.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the ECM before returning the vehicle to the customer.

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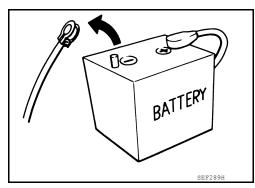
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General Precautions

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.



[QR25DE]

INFOID:0000000006391852

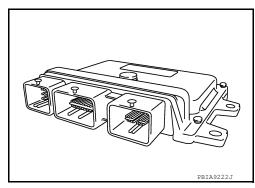
- · Do not disassemble ECM.
- If a battery cable is disconnected, the memory will return to the ECM value.

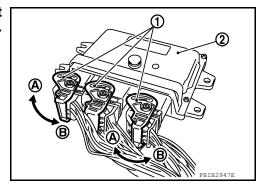
The ECM will now start to self-control at its initial value. Engine operation can vary slightly when the terminal is disconnected. However, this is not an indication of a malfunction. Do not replace parts because of a slight variation.

- 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
- When connecting ECM harness connector (1), fasten (B) it securely with a lever as far as it will go as shown in the figure.



A. Loosen

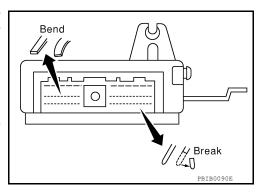




- When connecting or disconnecting pin connectors into or from ECM, take care not to damage pin terminals (bend or break).
 - Make sure that there are not any bends or breaks on ECM pin terminal, when connecting pin connectors.
- Securely connect ECM harness connectors.
 A poor connection can cause an extremely high (surge) volt-

age to develop in coil and condenser, thus resulting in damage to ICs.

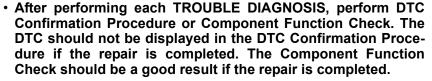
- Keep engine control system harness at least 10 cm (4 in) away from adjacent harness, to prevent engine control system malfunctions due to receiving external noise, degraded operation of ICs, etc.
- Keep engine control system parts and harness dry.

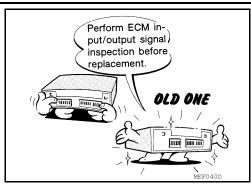


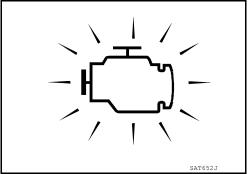
< PRECAUTION > [QR25DE]

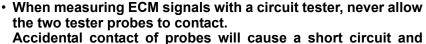
 Before replacing ECM, perform ECM Terminals and Reference Value inspection and make sure ECM functions properly.
 Refer to <u>EC-274</u>, "<u>Reference Value</u>".

- 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).



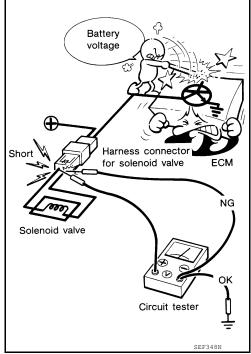






damage the ECM power transistor.

- Do not operate fuel pump when there is no fuel in lines.
- Tighten fuel hose clamps to the specified torque.



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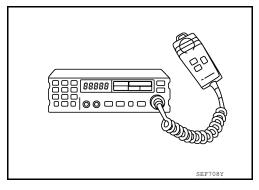
PRECAUTIONS

< PRECAUTION > [QR25DE]

- · 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

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PREPARATION

PREPARATION

Special Service Tools

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Tool number Tool name		Description	
KV10118400 Fuel tube adapter		Measuring fuel pressure	
	PBIB3043E		

Commercial Service Tools

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	Description
	Removing fuel tube quick connectors in engine room
PBIC0198E	
	Checking fuel tank vacuum relief valve opening pressure
S-NT815	
	Removing and installing engine coolant temperature sensor
19 mm (0.75 in) More than More than 32 mm 32 mm	
	S-NT815

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PREPARATION

< PREPARATION > [QR25DE]

Tool name (SPX-North America 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 anti-seize 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 specification MIL-A-907)	S-NT779	Lubricating oxygen sensor thread cleaning tool when reconditioning exhaust system threads.

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PERIODIC MAINTENANCE

FUEL PRESSURE

Inspection INFOID:0000000006391855 EC

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.
- Turn ignition switch OFF.

With CONSULT-III

- 1. Remove fuel pump fuse located in IPDM E/R.
- 2. Start engine.
- After engine stalls, crank it two or three times to release all fuel pressure.
- 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 L32 models do not have fuel return system.
- Be careful not to scratch or get the fuel hose connection area dirty when servicing, so that the quick connector o-ring maintains sealability.
- Use fuel pressure gauge and fuel pressure adapter [SST: (KV10118400)] to check fuel pressure.
- 1. Release fuel pressure to zero.
- Remove fuel hose using quick connector release (commercial service tool).
 - Do not twist or kink fuel hose because it is plastic hose.
 - Do not remove fuel hose from guick connector.
 - Keep fuel hose connections clean.
- 3. Install fuel pressure adapter [SST: (KV10118400)] (B) and fuel pressure gauge (A) as shown in figure.
 - · Do not distort or bend fuel rail tube when installing fuel pressure adapter [SST: (KV10118400)].
 - · When reconnecting fuel hose (1), check the original fuel hose for damage and abnormality.
- 4. Turn ignition switch ON (reactivate fuel pump), and check for fuel leakage.
- Start engine and check for fuel leakage.
- Read the indication of fuel pressure gauge.
 - · During fuel pressure check, check for fuel leakage from fuel connection every 3 minutes.

At idling: Approximately 350 kPa (3.5 bar, 3.57 kg/cm², 51 psi)

- 7. If result is unsatisfactory, go to next step.
- 8. Check the following.
 - Fuel hoses and fuel tubes for clogging
 - Fuel filter for clogging
 - Fuel pump
 - Fuel pressure regulator for clogging

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FUEL PRESSURE

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If OK, replace "fuel filter and fuel pump assembly". If NG, repair or replace.

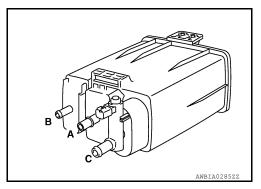
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EVAPORATIVE EMISSION SYSTEM

Inspection INFOID:0000000006391856

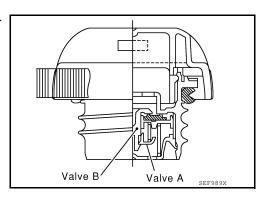
1. Visually inspect EVAP vapor lines for improper attachment and for cracks, damage, loose connections, chafing and deterioration.

- 2. Check EVAP canister as follows:
- a. Block port (B).
- b. Blow air into port (A) and check that it flows freely out of port (C).
- c. Release blocked port (B).
- d. Apply vacuum pressure to port (B) and check that vacuum pressure exists at the ports (A) and (C).
- e. Block port (A) and (B).
- f. Apply pressure to port (C) and check that there is no leakage.



Inspect fuel tank filler cap vacuum relief valve for clogging, sticking, etc.

a. Wipe clean valve housing.



b. Check valve opening pressure and vacuum.

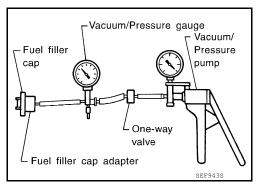
Pressure: 15.3 - 20.0 kPa (0.153 - 0.200 bar, 0.156 -

0.204 kg/cm², 2.22 - 2.90 psi)

Vacuum: -6.0 to -3.3 kPa (-0.060 to -0.033 bar, -

0.061 to -0.034 kg/cm², -0.87 to -0.48 psi)

c. If out of specification, replace fuel filler cap as an assembly.



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SERVICE DATA AND SPECIFICATIONS (SDS)

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[QR25DE]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Idle Speed

Transmission	Condition	Specification
CVT	No load* (in P or N position)	650 ± 50 rpm
M/T	No load* (in Neutral position)	650 ± 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

INFOID:0000000006391858

Transmission	Condition	Specification
CVT	No load* (in P or N position)	15 ± 5° BTDC
M/T	No load* (in Neutral 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

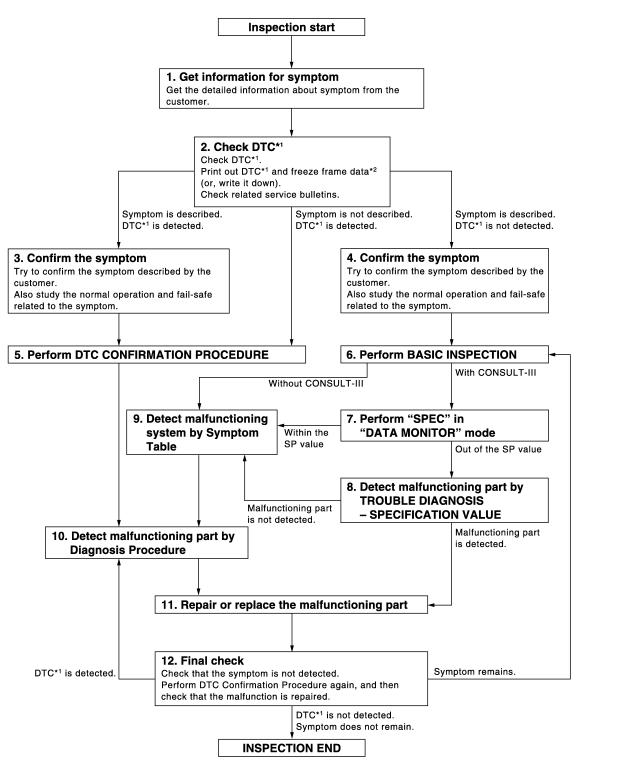
< BASIC INSPECTION > [VQ35DE]

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

OVERALL SEQUENCE



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

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

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION > [VQ35DE]

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-329, "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.)
- Erase DTC. (Refer to EC-420, "On Board Diagnosis Function" or EC-423, "CONSULT-III Function".)
- Study the relationship between the cause detected by DTC and the symptom described by the customer. (Symptom Table is useful. Refer to EC-689, "Symptom Table".)
- 3. Check related service bulletins for information.

Is any symptom described and any DTC detected?

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

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

Symptom is not described, DTC is displayed>>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-693</u>, "<u>Description</u>" and <u>EC-656</u>, "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 <u>EC-693</u>, "<u>Description</u>" and <u>EC-656</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-658</u>, "<u>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-42, "Intermittent Incident".

6.PERFORM BASIC INSPECTION

Perform EC-331, "BASIC INSPECTION: Special Repair Requirement".

Do you have CONSULT-III?

DIAGNOSIS AND REPAIR WORK FLOW

IVQ35DE1 < BASIC INSPECTION > YES >> GO TO 7. NO >> GO TO 9. Α 7.PERFORM "SPEC" OF "DATA MONITOR" MODE (P) With CONSULT-III EC Make sure that "MAS A/F SE-B1", "B/FUEL SCHDL", and "A/F ALPHA-B1", "A/F ALPHA-B2" are within the SP value using CONSULT-III in "SPEC" of "DATA MONITOR" mode. Refer to EC-430, "Component Function Check". Are they within the SP value? YES >> GO TO 9. NO >> GO TO 8. D $oldsymbol{\delta}$.DETECT MALFUNCTIONING PART BY TROUBLE DIAGNOSIS - SPECIFICATION VALUE Detect malfunctioning part according to EC-431, "Diagnosis Procedure". Is malfunctioning part detected? Е YES >> GO TO 11. NO >> GO TO 9. F $oldsymbol{9}.$ DETECT MALFUNCTIONING SYSTEM BY SYMPTOM TABLE Detect malfunctioning system according to EC-689, "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 DIAGNOSTIC PROCEDURE Н Inspect according to Diagnostic Procedure of the system. The Diagnostic Procedure in EC section described based on open circuit inspection. A short circuit inspection is also required for the circuit check in the Diagnostic Procedure. For details, refer to Circuit Inspection in GI-45, "Circuit Inspection". Is malfunctioning part detected? YES >> GO TO 11. NO >> Monitor input data from related sensors or check voltage of related ECM terminals using CON-SULT-III. Refer to EC-643, "Reference Value". K 11. REPAIR OR REPLACE THE MALFUNCTIONING PART Repair or replace the malfunctioning part. 2. Reconnect parts or connectors disconnected during Diagnostic Procedure again after repair and replace-Check DTC. If DTC is displayed, erase it, refer to EC-420, "On Board Diagnosis Function" or EC-423, "CONSULT-III Function". M >> GO TO 12. 12. FINAL CHECK Ν When DTC was detected in step 2, perform DTC Confirmation Procedure or Overall 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? Р YES-1 >> DTC is detected: GO TO 10. YES-2 >> Symptom remains: GO TO 6. >> Before returning the vehicle to the customer, make sure to erase unnecessary DTC in ECM. (Refer to EC-420, "On Board Diagnosis Function" or EC-423, "CONSULT-III Function".) Diagnostic Work Sheet INFOID:0000000006391860

Revision: June 2012 EC-329 2011 Altima GCC

DESCRIPTION

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION > [VQ35DE]

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.

KEY POINTS

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

SEF907L

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. 		
	☐ 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 ☐ High idle ☐ Low idle ☐ Others []		
	☐ Driveability	□ Stumble □ Surge □ Knock □ Lack of power □ Intake backfire □ Exhaust backfire □ Others [] □ At the time of start □ While idling □ While accelerating □ While decelerating □ Just after stopping □ While loading		
	☐ Engine stall			
Incident occur	rrence	☐ Just after delivery ☐ Recently ☐ In the morning ☐ At night ☐ In the daytime		
Frequency	Frequency		ditions	
Weather conditions				
	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 conditions		hway		
Driving conditions		Not affected At starting While idling At racing While accelerating While cruising While decelerating While turning (RH/LH) Vehicle speed Vehicle speed		
		30 40 50 60 MPH		
Malfunction indicator lamp				

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[VQ35DE] < BASIC INSPECTION >

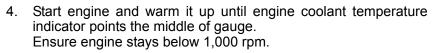
INSPECTION AND ADJUSTMENT BASIC INSPECTION

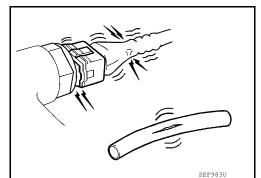
BASIC INSPECTION: Special Repair Requirement

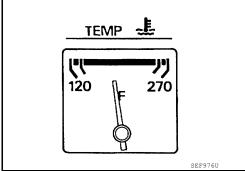
INFOID:0000000006391861

1.INSPECTION START

- 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.



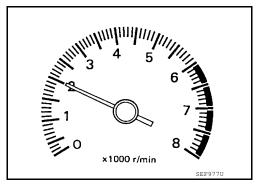




- Run engine at about 2,000 rpm for about 2 minutes under no
- Make sure that no DTC is displayed with CONSULT-III or ECM [Diagnostic Test Mode II (self-diagnostic results)].

Is any DTC detected?

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



2.REPAIR OR REPLACE

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

>> GO TO 3

3.CHECK TARGET IDLE SPEED

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

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< BASIC INSPECTION > [VQ35DE]

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.

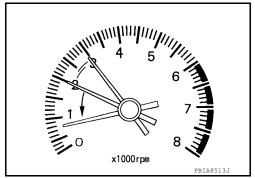
Check idle speed.

For procedure, refer to <u>EC-334</u>, "IDLE <u>SPEED</u>: <u>Special Repair</u> Requirement".

For specification, refer to EC-704, "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-335</u>, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 5.

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

Perform EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 6.

6. PERFORM IDLE AIR VOLUME LEARNING

Perform EC-336, "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

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

For procedure, refer to EC-334, "IDLE SPEED: Special Repair Requirement".

For specification, refer to EC-704, "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 EC-505, "Diagnosis Procedure".
- Check crankshaft position sensor (POS) and circuit. Refer to EC-501, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 9.

NO >> 1. Repair or replace.

2. 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 SEC-13, "ECM RE-COMMUNICATING FUNCTION : Special Repair Requirement" (SEDAN models).

>> GO TO 4.

10. CHECK IGNITION TIMING

IVQ35DE1 < BASIC INSPECTION > Run engine at idle. Check ignition timing with a timing light. Α For procedure, refer to EC-335, "IGNITION TIMING: Special Repair Requirement". For specification, refer to EC-704, "Ignition Timing". Is the inspection result normal? EC YFS >> INSPECTION END NO >> GO TO 11. 11. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING Stop engine. 2. Perform EC-335, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement". D >> GO TO 12. Е 12.perform throttle valve closed position learning Perform EC-336. "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement". >> GO TO 13. 13. PERFORM IDLE AIR VOLUME LEARNING Perform EC-336, "IDLE AIR VOLUME LEARNING: Special Repair Requirement". Is Idle Air Volume Learning carried out successfully? YES >> GO TO 14. Н NO >> Follow the instruction of Idle Air Volume Learning. Then GO TO 4. 14. CHECK TARGET IDLE SPEED AGAIN Start engine and warm it up to normal operating temperature. Check idle speed. For procedure, refer to EC-334, "IDLE SPEED: Special Repair Requirement". For specification, refer to EC-704, "Idle Speed". Is the inspection result normal? YES >> GO TO 15. NO >> GO TO 17. 15. CHECK IGNITION TIMING AGAIN Run engine at idle. Check ignition timing with a timing light. For procedure, refer to EC-335, "IGNITION TIMING: Special Repair Requirement". For specification, refer to EC-704, "Ignition Timing". Is the inspection result normal? YES >> INSPECTION END NO >> GO TO 16. Ν 16 . CHECK TIMING CHAIN INSTALLATION Check timing chain installation. Refer to EM-170, "Installation". Is the inspection result normal? YES >> GO TO 17. NO >> 1. Repair the timing chain installation. GO TO 4. Р 17. DETECT MALFUNCTIONING PART Check the following. Check camshaft position sensor (PHASE) and circuit. Refer to EC-505, "Diagnosis Procedure". • Check crankshaft position sensor (POS) and circuit. Refer to EC-501, "Diagnosis Procedure". Is the inspection result normal?

YES

>> GO TO 18.

< BASIC INSPECTION > [VQ35DE]

NO >> 1. Repair or replace.

2. GO TO 4.

18. 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.)

 Perform initialization of NATS system and registration of all NATS ignition key IDs. Refer to <u>EC-334</u>, <u>"ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement"</u>.

>> GO TO 4.

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Description

INFOID:0000000006391862

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 SEC-13, "ECM RE-COMMUNICATING FUNCTION: Special Repair Requirement" (COUPE models) or SEC-227, "ECM RE-COMMUNICATING FUNCTION: Special Repair Requirement" (SEDAN models).

>> GO TO 2

2.PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-335, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 4.

4. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-336, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END

IDLE SPEED

IDLE SPEED: Description

INFOID:0000000006391864

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

IDLE SPEED: Special Repair Requirement

INFOID:0000000006391865

1. CHECK IDLE SPEED

(P)With CONSULT-III

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

⊗Without CONSULT-III

Check idle speed by installing the pulse type tachometer clamp on the loop wire or on suitable high-tension wire which installed between No. 1 ignition coil and No. 1 Spark plug.

< BASIC INSPECTION > [VQ35DE]

>> 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".

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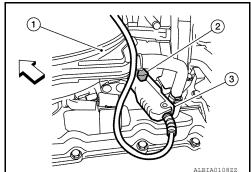
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IGNITION TIMING: Special Repair Requirement

1. CHECK IGNITION TIMING

- 1. Slide the harness protector of ignition coil No.1 (2) to clear the wires.
 - 1 : Intake manifold collector3 : Timing light pick-up lead
 - ⟨□ : Vehicle front
- 2. Attach timing light to the ignition coil No.1 wires as shown in the figure.



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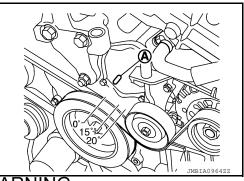
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2011 Altima GCC

- 3. Check ignition timing.
 - A : Timing indicator
 - >> INSPECTION END



ACCELERATOR PEDAL RELEASED POSITION LEARNING

ACCELERATOR PEDAL RELEASED POSITION LEARNING: Description INFOID-000000000391868

Accelerator Pedal Released Position Learning is an operation 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

EC-335

1.START

- 1. Make sure that accelerator pedal is fully released.
- Turn ignition switch ON and wait at least 2 seconds.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON and wait at least 2 seconds.
- 5. Turn ignition switch OFF and wait at least 10 seconds.

>> END

Revision: June 2012

THROTTLE VALVE CLOSED POSITION LEARNING

ION LEARNING

< BASIC INSPECTION > [VQ35DE]

THROTTLE VALVE CLOSED POSITION LEARNING: Description

Throttle Valve Closed Position Learning is an operation 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:0000000006391871

1.START

- 1. 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:0000000006391872

Idle Air Volume Learning is a function of ECM to learn the idle air volume that keeps 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:0000000006391873

1.PRECONDITIONING

Before performing Idle Air Volume Learning, 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)
- · Selector lever: P or N
- · Electric load switch: OFF

(Air conditioner, headlamp, rear window defogger)

- Apply parking brake
- · Set lighting switch to the 1st position
- Steering wheel: Neutral (Straight-ahead position)
- Vehicle speed: Stopped
- Transmission: Warmed-up
- With CONSULT-III: Drive vehicle until "ATF TEMP SE" 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.PERFORM IDLE AIR VOLUME LEARNING

(I) With CONSULT-III

- Perform <u>EC-335</u>, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".
- Perform <u>EC-336</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.
- Touch "START" and wait 20 seconds.

Is "CMPLT" displayed on CONSULT-III screen?

YES >> GO TO 4.

NO >> GO TO 5.

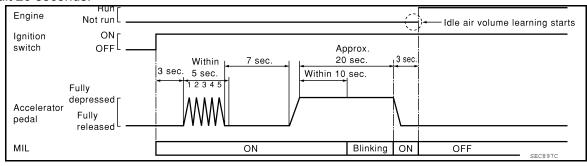
[VQ35DE] < BASIC INSPECTION >

$\overline{3}$.PERFORM 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 EC-335, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".
- Perform EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".
- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- Repeat the following procedure quickly five times within 5 seconds.
- Fully depress the accelerator pedal.
- Fully release the accelerator pedal.
- 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.
- 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.

For procedure, refer to EC-334, "IDLE SPEED: Special Repair Requirement" and EC-335, "IGNITION TIM-ING: Special Repair Requirement".

For specification, refer to EC-704, "Idle Speed" and EC-704, "Ignition Timing".

Is the inspection result normal?

YFS >> INSPECTION END

NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART-I

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.

O.DETECT MALFUNCTIONING PART-II

When the above three items check out OK, 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-430, "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:

EC-337 Revision: June 2012 2011 Altima GCC EC

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< BASIC INSPECTION > [VQ35DE]

- · Engine stalls.
- · Erroneous idle.

>> INSPECTION END

MIXTURE RATIO SELF-LEARNING VALUE CLEAR

MIXTURE RATIO SELF-LEARNING VALUE CLEAR: Description

INFOID:0000000006391874

This describes show 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

NEOID:000000000630187

1.START

(P) With CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. Select "SELF-LEARNING CONT" in "WORK SUPPORT" mode with CONSULT-III.
- Clear mixture ratio self-learning value by touching "CLEAR".

W Without CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF.
- Disconnect mass air flow sensor harness connector, and restart and run engine for at least 5 seconds at idle speed.
- 4. Stop engine and reconnect mass air flow sensor harness connector.
- 5. Make sure that DTC P0102 is displayed.
- 6. Erase the DTC memory. Refer to EC-420, "On Board Diagnosis Function".
- 7. Make sure that DTC P0000 is displayed.

>> END

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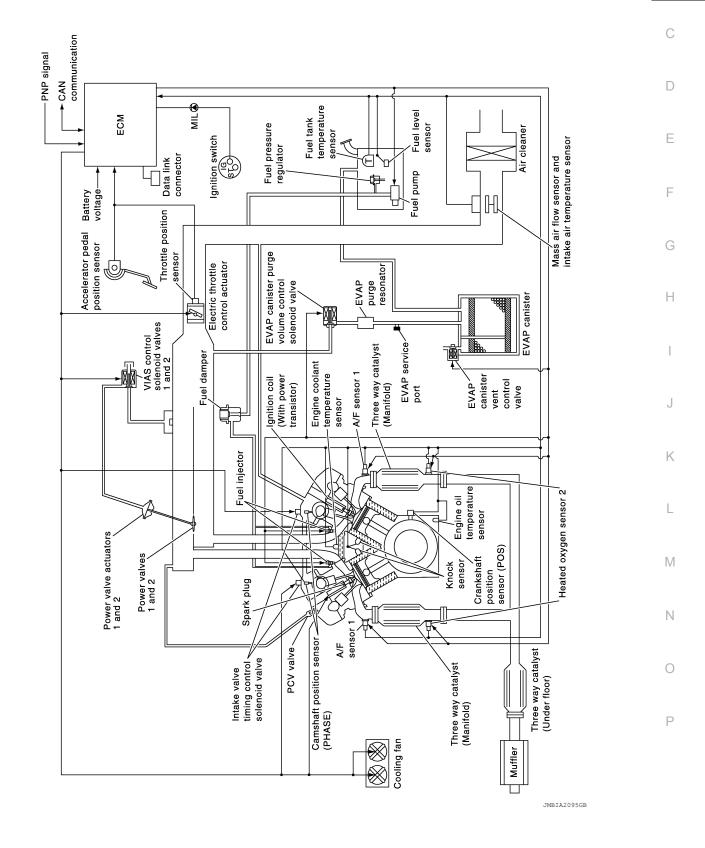
SYSTEM DESCRIPTION

ENGINE CONTROL SYSTEM

System Diagram

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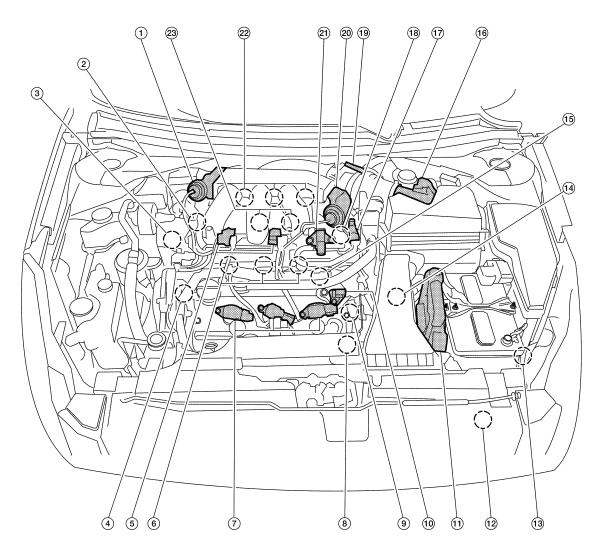
System Description

INFOID:0000000006391877

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

Component Parts Location

INFOID:0000000006391878



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- Power valve actuator 1
- Intake valve timing control solenoid 5. valve (bank 2)
- Ignition coil (with power transistor) and spark plug (bank 2)
- 10. Camshaft position sensor (PHASE) (bank 2)
- 13. Battery current sensor
- 16. Mass air flow sensor (with intake air 17. EVAP service port temperature sensor)

- Intake valve timing control solenoid 3. valve (bank 1)
- VIAS control solenoid valves 1 and 2 6.
- 8. Crankshaft position sensor (POS)
- 11. ECM
- 14. Transmission range switch

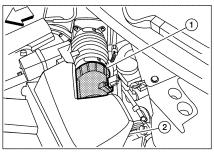
- Power steering pressure sensor
- Fuel injector (bank 2)
- Engine coolant temperature sensor
- 12. Refrigerant pressure sensor
- 15. Condenser-2
- 18. Camshaft position sensor (PHASE) (bank 1)

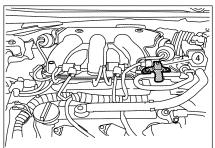
ENGINE CONTROL SYSTEM

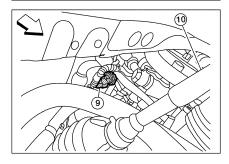
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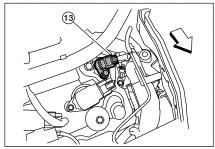
- 19. Electric throttle control actuator
- 20. Power valve actuator 2
- 21. EVAP canister purge volume control solenoid valve

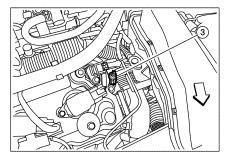
- 22. Ignition coil (with power transistor) and spark plug (bank 1)
- 23. Knock sensor

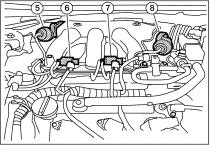


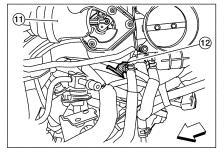












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- Mass air flow sensor (with intake air 2. temperature sensor)
- EVAP canister purge volume control 5. solenoid valve
- VIAS control solenoid valve 2
- 10. Tie rod (RH)

Power valve actuator 1

Air cleaner case

- Power valve actuator 2
- 11. Power valve actuator 2
- Engine coolant temperature sensor
- VIAS control solenoid valve 1
- Power steering pressure sensor
- 12. Camshaft position sensor (PHASE) (bank 1)

13. Camshaft position sensor (PHASE) (bank 2)

: Vehicle front

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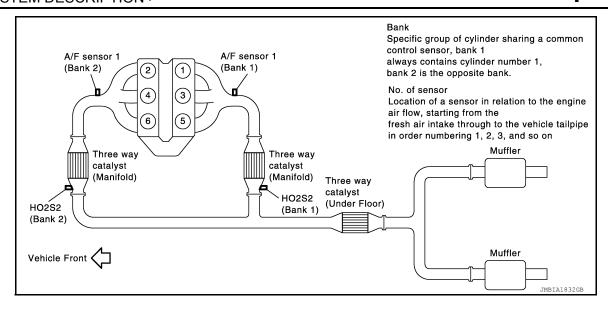
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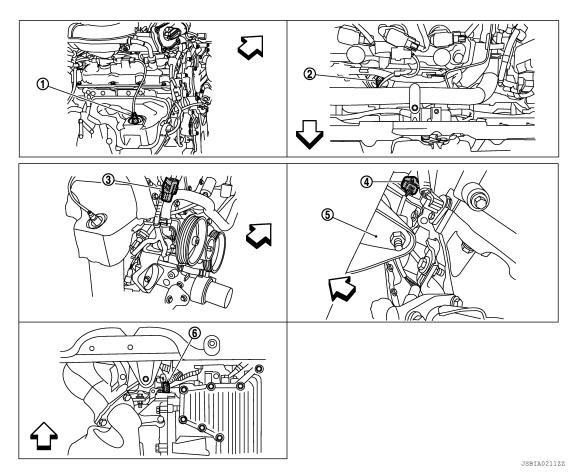
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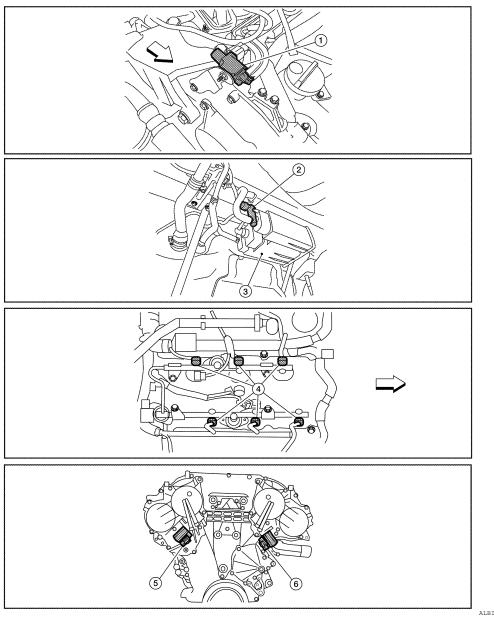




- A/F sensor 1 (bank 1)
- 2. A/F sensor 1 (bank 2)
- HO2S2 (bank 2) harness connector 5.
- Front engine mount

- 3. HO2S2 (bank 1) harness connector
- Crankshaft position sensor (POS) 6.

: Vehicle front



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- Electronic controlled engine mount control solenoid valve
- 4. Fuel injector harness connector
- : Vehicle front

- EVAP canister vent control valve (view with rear suspension member removed)
- Intake valve timing control solenoid 6. valve (bank 1)
- 3. EVAP canister
 - Intake valve timing control solenoid valve (bank 2)

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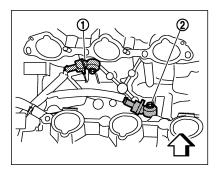
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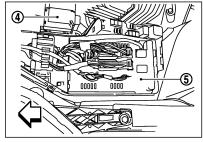
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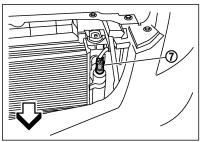
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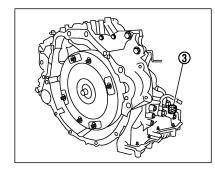
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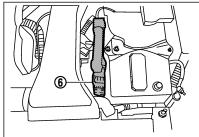
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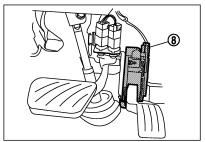






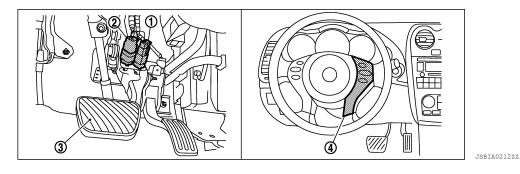






- Knock sensor (bank 2) 1.
- 4. Battery
- Refrigerant pressure sensor (shown with front grill removed)

- 2. Knock sensor (bank 1)
- 5. IPDM E/R
- 8. Accelerator pedal position sensor
- Transmission range switch
- 6. **ECM**



- ASCD brake switch
- ASCD steering switch
- Stop lamp switch
- Brake pedal

Component Description

INFOID:0000000006391879

Component	Reference
A/F sensor 1	EC-471, "Description"
A/F sensor 1 heater	EC-447, "Description"
Accelerator pedal position sensor	EC-585, "Description"

ENGINE CONTROL SYSTEM

< SYSTEM DESCRIPTION >

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Component	Reference	
ASCD brake switch	EC-551, "Description"	A
ASCD steering switch	EC-548, "Description"	
Battery current sensor	EC-536, "Description"	EC
Camshaft position sensor (PHASE)	EC-504, "Description"	
Cooling fan motor	EC-603, "Description"	
Crankshaft position sensor (POS)	EC-500. "Description"	С
Electric throttle control actuator	EC-583, "Description"	
Electronic controlled engine mount	EC-610, "Description"	D
Engine coolant temperature sensor	EC-465, "Description"	
EVAP canister purge volume control solenoid valve	EC-508, "Description"	
Fuel injector	EC-616. "Description"	E
Fuel pump	EC-619, "Description"	
Heated oxygen sensor 2	EC-623. "Description"	
Heated oxygen sensor 2 heater	EC-456, "Description"	
Ignition signal	EC-629, "Description"	
Intake air temperature sensor	EC-465, "Description"	G
Intake valve timing control solenoid valve	EC-453, "Description"	
Knock sensor	EC-497, "Description"	
Mass air flow sensor	EC-456, "Description"	—— П
PCV valve	EC-635, "Description"	
Power steering pressure sensor	EC-513. "Description"	
Power valves 1 and 2	EC-639, "Description"	
Refrigerant pressure sensor	EC-636, "Description"	
Stop lamp switch	EC-570, "Description"	
TCM	EC-524, "Description"	
Throttle control motor	EC-580, "Description"	K
Throttle control motor relay	EC-574, "Description"	
Throttle position sensor	EC-468, "Description"	
VIAS control solenoid valve 1	EC-565, "Description"	L
VIAS control solenoid valve 2	EC-567, "Description"	

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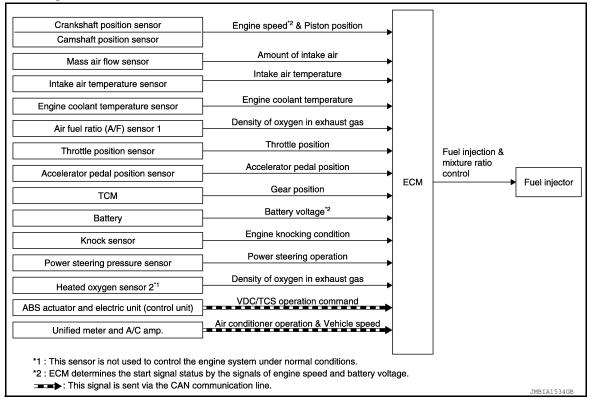
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MULTIPORT FUEL INJECTION SYSTEM

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*3		Fuel injector
Camshaft position sensor (PHASE)	Piston position		
Mass air flow sensor	Amount of intake air	1	
Intake air temperature sensor	Intake air temperature	1	
Engine coolant temperature sensor	Engine coolant temperature	1	
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas	1	
Throttle position sensor	Throttle position		
Accelerator pedal position sensor	Accelerator pedal position		
TCM	Gear position		
Battery	Battery voltage*3	control	
Knock sensor	Engine knocking condition	-	
Power steering pressure sensor	Power steering operation		
Heated oxygen sensor 2*1	Density of oxygen in exhaust gas		
ABS actuator and electric unit (control unit)	VDC/TCS operation command*2		
Unified mater and A/C area	Air conditioner operation*2		
Unified meter and A/C amp.	Vehicle speed*2	1	

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

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

[VQ35DE]

*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.

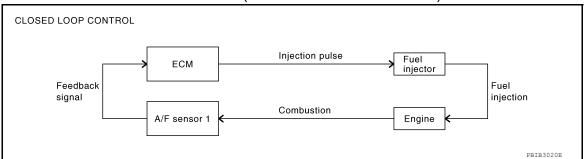
<Fuel increase>

- During warm-up
- When starting the engine
- During acceleration
- Hot-engine operation
- When selector lever position 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 drivability and emission control. The three way catalyst (manifold) can 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-471, "Description". 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

< SYSTEM DESCRIPTION >

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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.

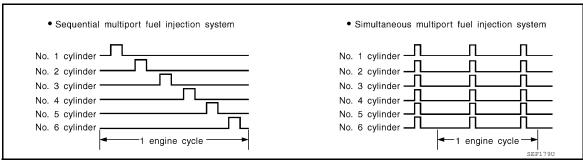
Accordingly, the difference between the basic and theoretical mixture ratios is monitored in this system. This is then computed in terms of "injection pulse duration" to automatically compensate for the difference between the two ratios.

"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 over time to compensate for continual deviation of the "short-term fuel trim" from the central value. Continual 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 ignition order. This system is used when the engine is running.
- Simultaneous Multiport Fuel Injection System
 - Fuel is injected simultaneously into all six cylinders twice each engine cycle. In other words, pulse signals of the same width are simultaneously transmitted from the ECM.
 - The six injectors will then receive the signals 2 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.

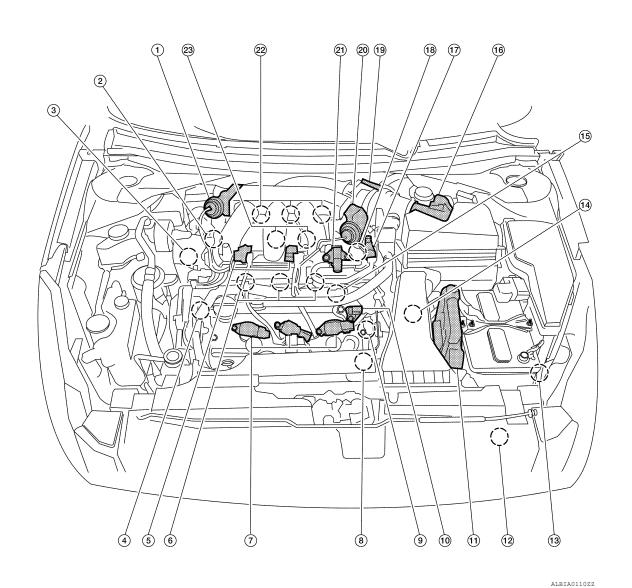
FUEL SHUT-OFF

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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Component Parts Location

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- Power valve actuator 1
- Intake valve timing control solenoid valve (bank 2)
- Ignition coil (with power transistor) 7. and spark plug (bank 2)
- 10. Camshaft position sensor (PHASE) (bank 2)
- 13. Battery current sensor
- 16. Mass air flow sensor (with intake air 17. EVAP service port temperature sensor)
- 19. Electric throttle control actuator
- 22. Ignition coil (with power transistor) and spark plug (bank 1)

- Intake valve timing control solenoid 3. valve (bank 1)
- 5. VIAS control solenoid valves 1 and 2 6.
- 8. Crankshaft position sensor (POS)
- 11. ECM
- 14. Transmission range switch
- 20. Power valve actuator 2
- 23. Knock sensor

- Power steering pressure sensor
 - Fuel injector (bank 2)
- 9. Engine coolant temperature sensor
- 12. Refrigerant pressure sensor
- 15. Condenser-2
- 18. Camshaft position sensor (PHASE) (bank 1)
- solenoid valve

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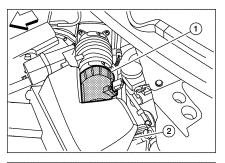
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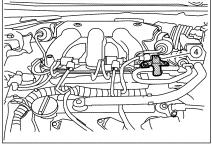
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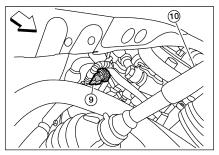
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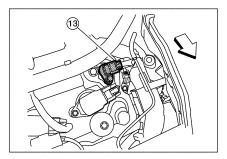
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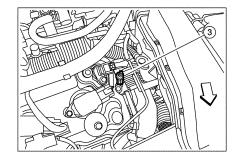
21. EVAP canister purge volume control

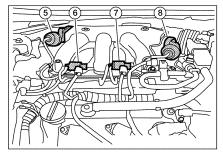


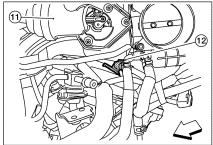












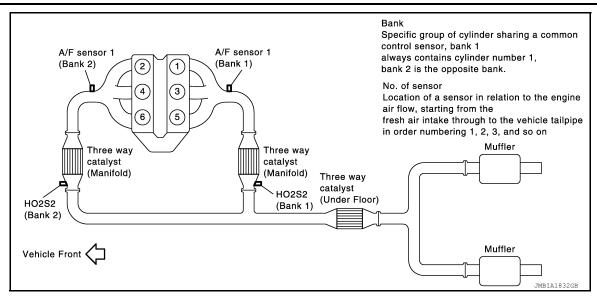
- Mass air flow sensor (with intake air 2. temperature sensor)
- 4. EVAP canister purge volume control 5. solenoid valve
- 7. VIAS control solenoid valve 2
- 10. Tie rod (RH)
- 13. Camshaft position sensor (PHASE) (bank 2)
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 → : Vehicle front

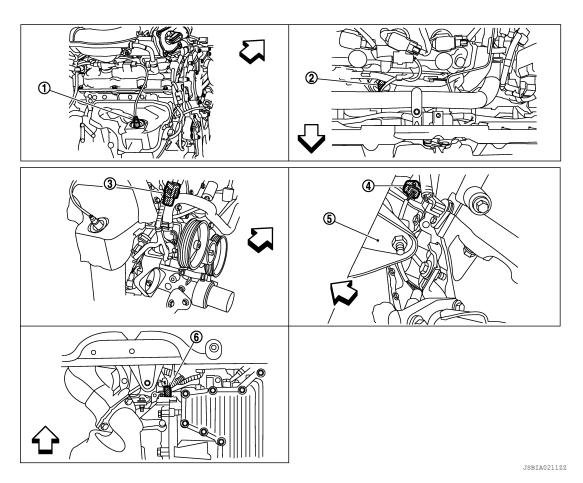
- Air cleaner case
- 5. Power valve actuator 1
- B. Power valve actuator 2
- 11. Power valve actuator 2
- 3. Engine coolant temperature sensor

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- 6. VIAS control solenoid valve 1
- 9. Power steering pressure sensor
- 12. Camshaft position sensor (PHASE) (bank 1)

MULTIPORT FUEL INJECTION SYSTEM





1. A/F sensor 1 (bank 1)

2. A/F sensor 1 (bank 2)

4. HO2S2 (bank 2) harness connector 5.

5. Front engine mount

: Vehicle front

3. HO2S2 (bank 1) harness connector

6. Crankshaft position sensor (POS)

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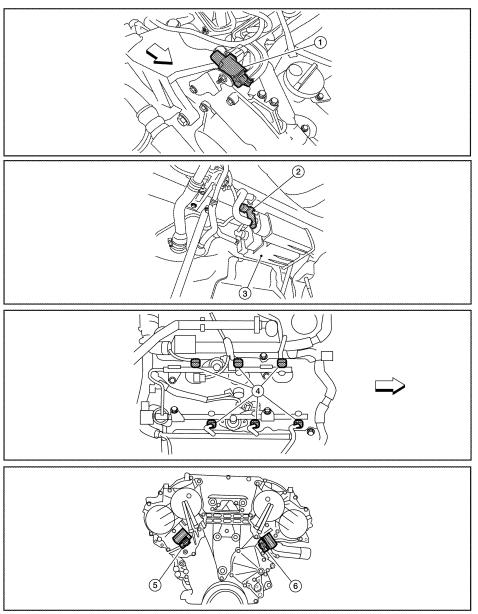
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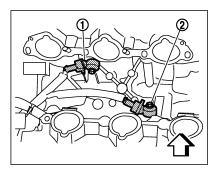
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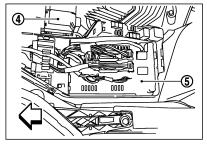


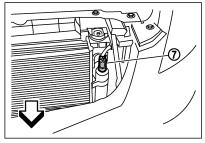
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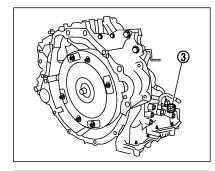
- Electronic controlled engine mount control solenoid valve
- 4. Fuel injector harness connector
- : Vehicle front

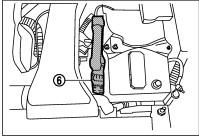
- EVAP canister vent control valve (view with rear suspension member removed)
- . Intake valve timing control solenoid 6. valve (bank 1)
- 3. EVAP canister
 - Intake valve timing control solenoid valve (bank 2)

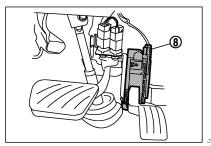








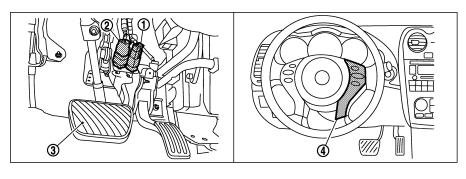




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- Knock sensor (bank 2) 1.
- 4. Battery
- Refrigerant pressure sensor (shown with front grill removed)

- 2. Knock sensor (bank 1)
- 5. IPDM E/R
- 8. Accelerator pedal position sensor
- 3. Transmission range switch
- 6. **ECM**



- ASCD brake switch
- ASCD steering switch

Stop lamp switch

3. Brake pedal

Component Description

Component	Reference
A/F sensor 1	EC-471, "Description"
Accelerator pedal position sensor	EC-585, "Description"
Camshaft position sensor (PHASE)	EC-504, "Description"

EC-353 2011 Altima GCC Revision: June 2012

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MULTIPORT FUEL INJECTION SYSTEM

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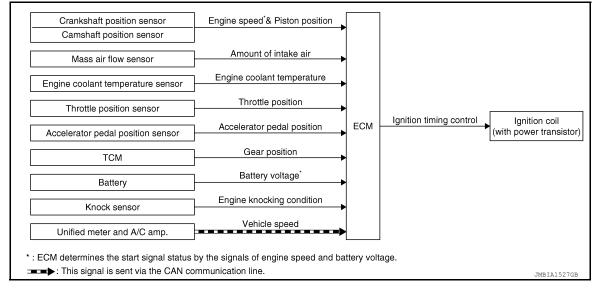
Component	Reference
Crankshaft position sensor (POS)	EC-500, "Description"
Engine coolant temperature sensor	EC-465, "Description"
Fuel injector	EC-616. "Description"
Heated oxygen sensor 2	EC-623, "Description"
Intake air temperature sensor	EC-462, "Description"
Knock sensor	EC-497, "Description"
Mass air flow sensor	EC-456, "Description"
Power steering pressure sensor	EC-513, "Description"
TCM	EC-524, "Description"
Throttle position sensor	EC-468, "Description"

[VQ35DE]

ELECTRIC IGNITION SYSTEM

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*2		
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	Ignition coil
Accelerator pedal position sensor	Accelerator pedal position	control	(with power transistor)
TCM	Gear position		
Battery	Battery voltage*2		
Knock sensor	Engine knocking		
Unified meter and A/C amp.	Vehicle speed*1		

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

SYSTEM DESCRIPTION

Ignition order: 1 - 2 - 3 - 4 - 5 - 6

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

Revision: June 2012

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

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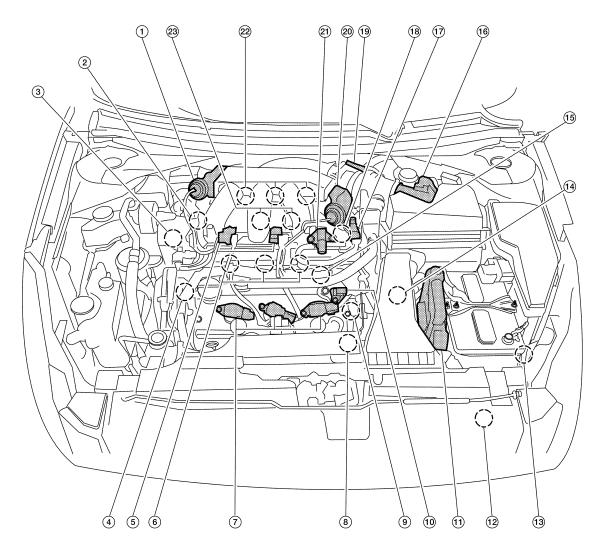
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^{*2:} ECM determines the start signal status by the signals of engine speed and battery voltage.

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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- Power valve actuator 1
- Intake valve timing control solenoid valve (bank 2)
- Ignition coil (with power transistor) 7. and spark plug (bank 2)
- 10. Camshaft position sensor (PHASE) (bank 2)
- 13. Battery current sensor
- 16. Mass air flow sensor (with intake air 17. EVAP service port temperature sensor)

- Intake valve timing control solenoid valve (bank 1)
- 5. VIAS control solenoid valves 1 and 2 6.
- 8. Crankshaft position sensor (POS)
- 11. ECM
- 14. Transmission range switch

- Power steering pressure sensor
- Fuel injector (bank 2)
- Engine coolant temperature sensor
- Refrigerant pressure sensor
- 15. Condenser-2
- 18. Camshaft position sensor (PHASE) (bank 1)

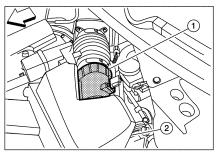
ELECTRIC IGNITION SYSTEM

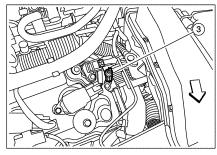
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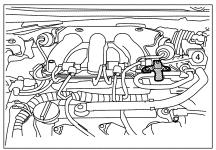
- 19. Electric throttle control actuator
- 20. Power valve actuator 2
- 21. EVAP canister purge volume control

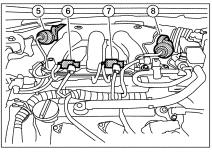
- 22. Ignition coil (with power transistor) and spark plug (bank 1)
- 23. Knock sensor

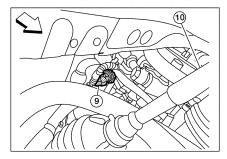
solenoid valve

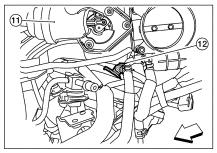


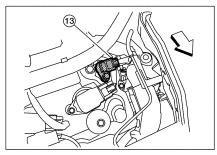












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- Mass air flow sensor (with intake air 2. temperature sensor)
- EVAP canister purge volume control 5. solenoid valve
- VIAS control solenoid valve 2

- Air cleaner case
- Power valve actuator 1
- Power valve actuator 2
- 11. Power valve actuator 2
- Engine coolant temperature sensor
- VIAS control solenoid valve 1
- Power steering pressure sensor
- 12. Camshaft position sensor (PHASE) (bank 1)

10. Tie rod (RH)

13. Camshaft position sensor (PHASE) (bank 2)

: Vehicle front

EC-357 Revision: June 2012 2011 Altima GCC EC

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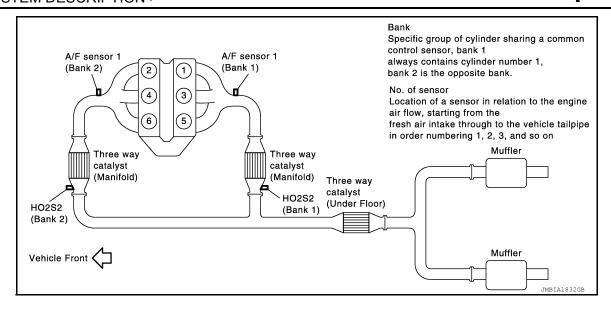
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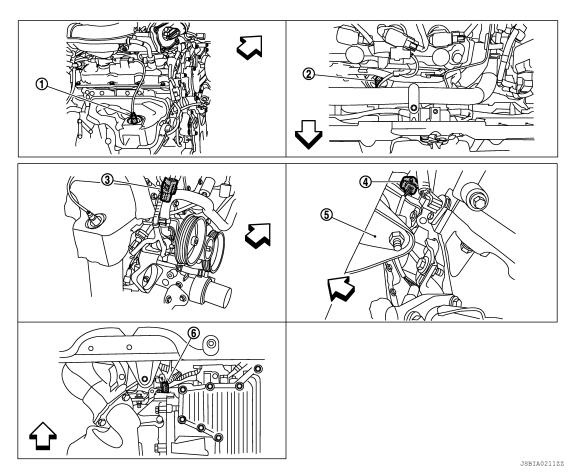
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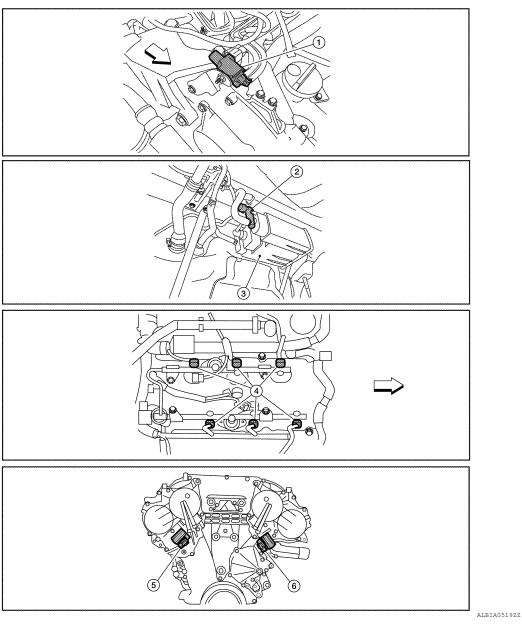
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- A/F sensor 1 (bank 1)
- 2. A/F sensor 1 (bank 2)
- HO2S2 (bank 2) harness connector 5.
- Front engine mount
- : Vehicle front

- 3. HO2S2 (bank 1) harness connector
- Crankshaft position sensor (POS) 6.



- 1. Electronic controlled engine mount control solenoid valve
- Fuel injector harness connector
- : Vehicle front

- EVAP canister vent control valve (view with rear suspension member removed)
- Intake valve timing control solenoid 6. valve (bank 1)
- EVAP canister 3.
 - Intake valve timing control solenoid valve (bank 2)

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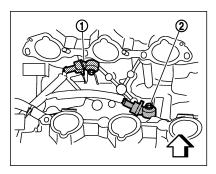
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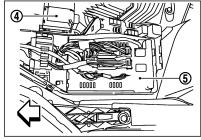
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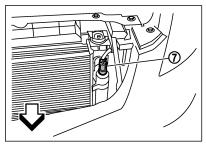
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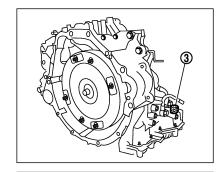
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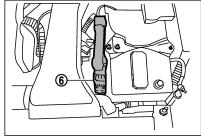
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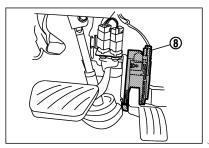








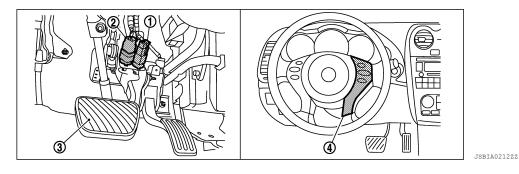




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- 1. Knock sensor (bank 2)
- 4. Battery
- 7. Refrigerant pressure sensor (shown with front grill removed)

- 2. Knock sensor (bank 1)
- 5. IPDM E/R
- 8. Accelerator pedal position sensor
- 3. Transmission range switch
- 6. ECM



- 1. ASCD brake switch
- 4. ASCD steering switch
- Stop lamp switch
- 3. Brake pedal

Component Description

INFOID:0000000006391887

Component	Reference
Accelerator pedal position sensor	EC-585, "Description"
Camshaft position sensor (PHASE)	EC-504, "Description"
Crankshaft position sensor (POS)	EC-500, "Description"

ELECTRIC IGNITION SYSTEM

< SYSTEM DESCRIPTION >

[VQ35DE]

Component	Reference
Engine coolant temperature sensor	EC-465, "Description"
Ignition signal	EC-629, "Description"
Knock sensor	EC-497, "Description"
Mass air flow sensor	EC-456, "Description"
TCM	EC-524, "Description"
Throttle position sensor	EC-468, "Description"

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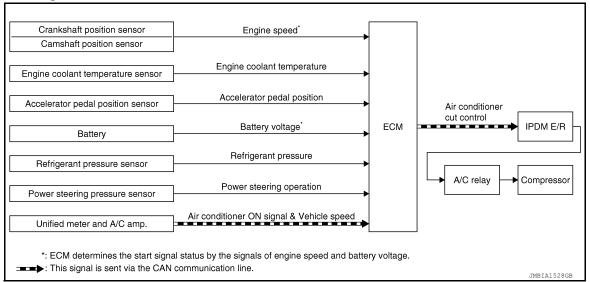
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[VQ35DE]

AIR CONDITIONING CUT 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*2			
Engine coolant temperature sensor	Engine coolant temperature			
Accelerator pedal position sensor	Accelerator pedal position		IPDM E/R	
Battery	Battery voltage*2	Air conditioner	↓ Air conditioner relay	
Refrigerant pressure sensor	Refrigerant pressure	cut control	1	
Power steering pressure sensor	Power steering operation		Compressor	
Unified meter and A/C amp.	Air conditioner ON signal*1			
	Vehicle speed*1			

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

SYSTEM DESCRIPTION

This system improves engine operation when the air conditioner is used.

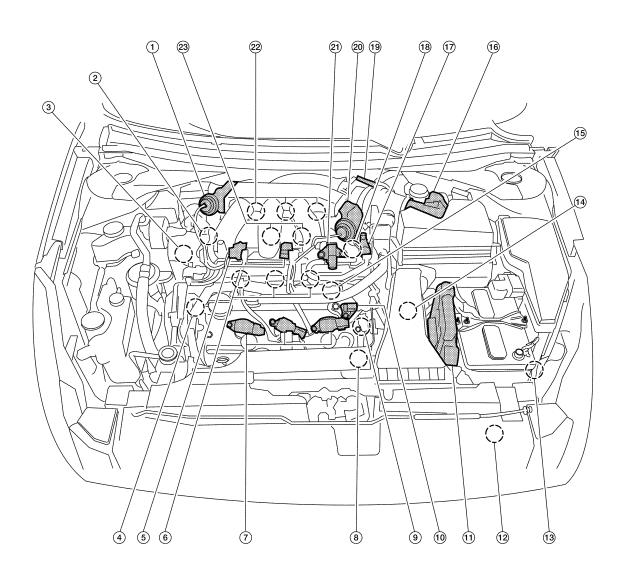
Under the following conditions, the air conditioner is turned OFF.

- · 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.
- · When refrigerant pressure is excessively low or high.

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

Component Parts Location

INFOID:0000000006391890



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- Power valve actuator 1
- Intake valve timing control solenoid valve (bank 2)
- Ignition coil (with power transistor) 7. and spark plug (bank 2)
- 10. Camshaft position sensor (PHASE) (bank 2)
- 13. Battery current sensor
- 16. Mass air flow sensor (with intake air 17. EVAP service port temperature sensor)
- 19. Electric throttle control actuator
- 22. Ignition coil (with power transistor) and spark plug (bank 1)

- Intake valve timing control solenoid 3. valve (bank 1)
- 5. VIAS control solenoid valves 1 and 2 6.
- 8. Crankshaft position sensor (POS)
- 11. ECM
- 14. Transmission range switch
- 20. Power valve actuator 2
- 23. Knock sensor

- Power steering pressure sensor
- Fuel injector (bank 2)
- 9. Engine coolant temperature sensor
- 12. Refrigerant pressure sensor
- 15. Condenser-2
- 18. Camshaft position sensor (PHASE) (bank 1)
- 21. EVAP canister purge volume control solenoid valve

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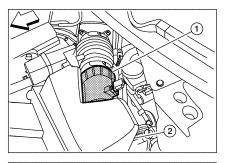
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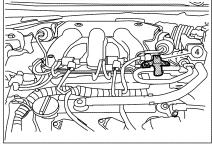
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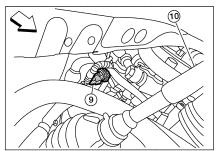
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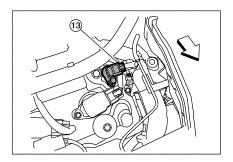
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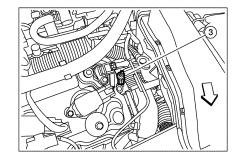
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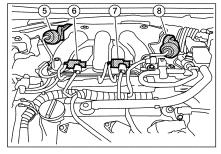


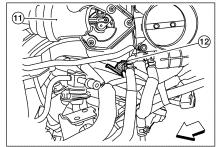










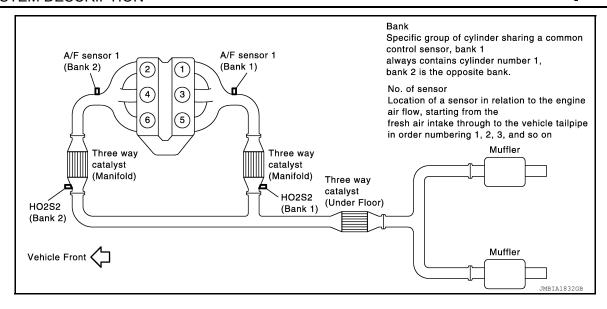


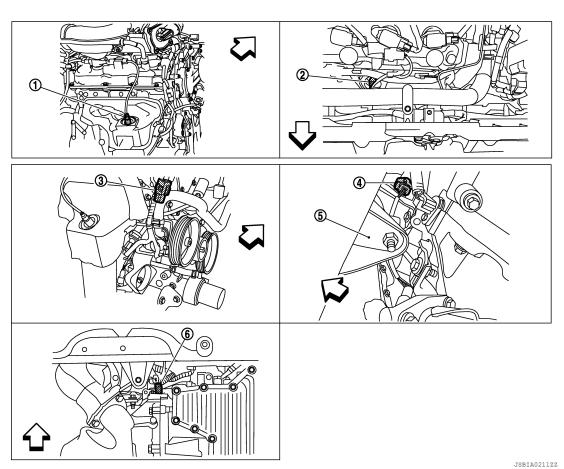
- Mass air flow sensor (with intake air 2. temperature sensor)
- 4. EVAP canister purge volume control 5. solenoid valve
- 7. VIAS control solenoid valve 2
- 10. Tie rod (RH)
- 13. Camshaft position sensor (PHASE) (bank 2)
- ⟨
 → : Vehicle front

- Air cleaner case
- Power valve actuator 1
- 8. Power valve actuator 2
- 11. Power valve actuator 2
- 3. Engine coolant temperature sensor

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- 6. VIAS control solenoid valve 1
- 9. Power steering pressure sensor
- 12. Camshaft position sensor (PHASE) (bank 1)





- A/F sensor 1 (bank 1)
- 2. A/F sensor 1 (bank 2)
- HO2S2 (bank 2) harness connector 5.

 - Front engine mount
- 3. HO2S2 (bank 1) harness connector
- Crankshaft position sensor (POS) 6.

: Vehicle front

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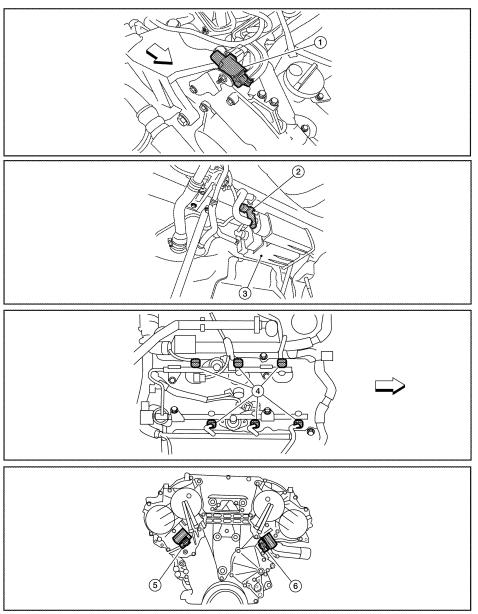
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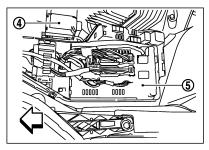
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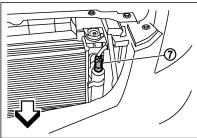


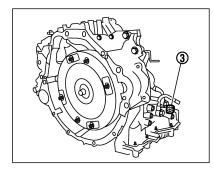
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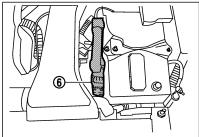
- Electronic controlled engine mount control solenoid valve
- 4. Fuel injector harness connector
- : Vehicle front

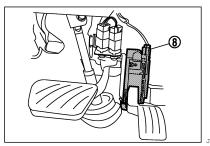
- EVAP canister vent control valve (view with rear suspension member removed)
- Intake valve timing control solenoid 6. valve (bank 1)
- 3. EVAP canister
 - Intake valve timing control solenoid valve (bank 2)









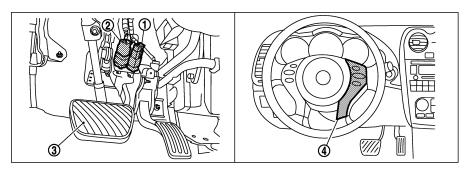


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- 1. Knock sensor (bank 2)
- 4. Battery
- 7. Refrigerant pressure sensor (shown with front grill removed)

- 2. Knock sensor (bank 1)
- 5. IPDM E/R
- 8. Accelerator pedal position sensor
- 3. Transmission range switch
- 6. ECM



- ASCD brake switch
- 4. ASCD steering switch

2. Stop lamp switch

3. Brake pedal

Component Description

Component	Reference
Accelerator pedal position sensor	EC-585, "Description"
Camshaft position sensor (PHASE)	EC-504, "Description"
Crankshaft position sensor (POS)	EC-500, "Description"

Revision: June 2012 EC-367 2011 Altima GCC

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AIR CONDITIONING CUT CONTROL

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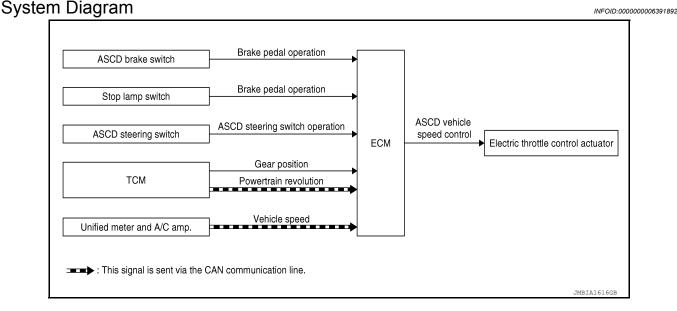
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Component	Reference
Engine coolant temperature sensor	EC-465, "Description"
Power steering pressure sensor	EC-513, "Description"
Refrigerant pressure sensor	EC-636. "Description"

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

[VQ35DE] < SYSTEM DESCRIPTION >

AUTOMATIC SPEED CONTROL DEVICE (ASCD)



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			
ASCD steering switch	ASCD steering switch operation	ASCD vehicle speed	Electric throttle control	
T014	Gear position	control	actuator	
TCM	Powertrain revolution*			
Unified meter and A/C amp.	Vehicle speed*	=		

^{*:} This signal is sent to the ECM via the 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 210 km/h (130 MPH).

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

The ASCD operation status is indicated by two indicators (CRUISE and SET on the information display) on the combination meter. If any malfunction occurs in the ASCD system, SET indicator blinks and ASCD control is deactivated.

NOTE:

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

SET OPERATION

Press MAIN switch. (CRUISE is indicated on the information display.)

When vehicle speed reaches a desired speed between approximately 40 km/h (25 MPH) and 210 km/h (130 MPH), press SET/COAST switch. (Then SET is indicated on the information display in combination meter.)

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 maintain the new set speed.

CANCEL OPERATION

EC-369 Revision: June 2012 2011 Altima GCC EC

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AUTOMATIC SPEED CONTROL DEVICE (ASCD)

< SYSTEM DESCRIPTION >

[VQ35DE]

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

- CANCEL switch is pressed
- More than 2 switches on ASCD steering switch are pressed at the same time (Set speed will be cleared)
- · Brake pedal is depressed
- Selector lever position is changed to N, P or R
- Vehicle speed decreased to 13 km/h (8 MPH) lower than the set speed
- TCS system is operated
- CVT control system has a malfunction. Refer to EC-561, "Description".

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

- Engine coolant temperature is slightly higher than the normal operating temperature, CRUISE indicator may blink slowly.
 - When the engine coolant temperature decreases to the normal operating temperature, CRUISE indicator 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 indicator will blink quickly. If MAIN switch is turned to OFF while 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 maintain the new set speed.

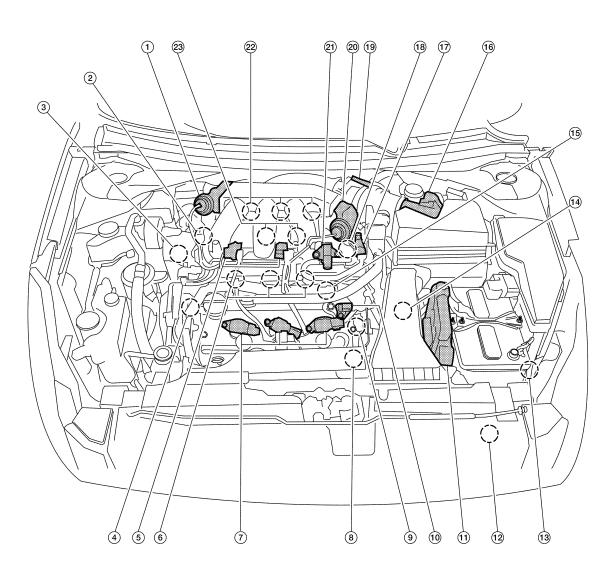
RESUME OPERATION

When the RESUME/ACCELERATE switch is pressed after canceling operation other than pressing the MAIN switch, 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 position is other than P and N
- Vehicle speed is greater than 40 km/h (25 MPH) and less than 210 km/h (130 MPH)

Component Parts Location

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- Power valve actuator 1
- Intake valve timing control solenoid valve (bank 2)
- Ignition coil (with power transistor) 7. and spark plug (bank 2)
- 10. Camshaft position sensor (PHASE) (bank 2)
- 13. Battery current sensor
- 16. Mass air flow sensor (with intake air 17. EVAP service port temperature sensor)
- 19. Electric throttle control actuator
- 22. Ignition coil (with power transistor) and spark plug (bank 1)

- Intake valve timing control solenoid 3. valve (bank 1)
- 5. VIAS control solenoid valves 1 and 2 6.
- 8. Crankshaft position sensor (POS)
- 11. ECM
- 14. Transmission range switch
- 20. Power valve actuator 2
- 23. Knock sensor

Power steering pressure sensor

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- Fuel injector (bank 2)
- 9. Engine coolant temperature sensor
- 12. Refrigerant pressure sensor
- 15. Condenser-2
- 18. Camshaft position sensor (PHASE) (bank 1)
- 21. EVAP canister purge volume control solenoid valve

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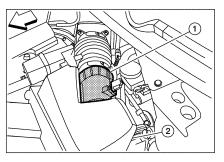
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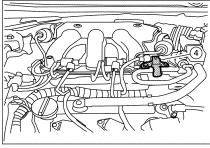
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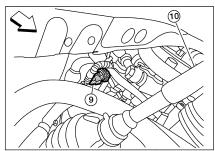
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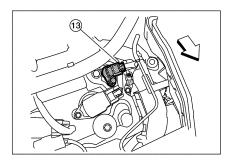
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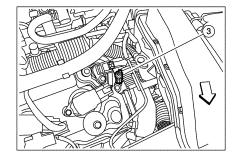
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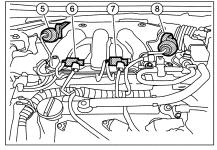


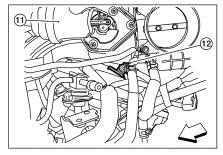












- Mass air flow sensor (with intake air 2. temperature sensor)
- 4. EVAP canister purge volume control 5. solenoid valve
- 7. VIAS control solenoid valve 2
- 10. Tie rod (RH)
- 13. Camshaft position sensor (PHASE) (bank 2)

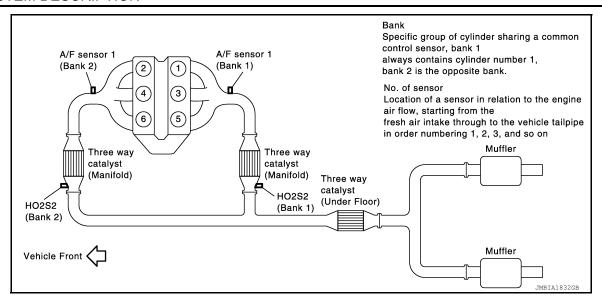
- Air cleaner case
- Power valve actuator 1
- 8. Power valve actuator 2
- 11. Power valve actuator 2
- 3. Engine coolant temperature sensor

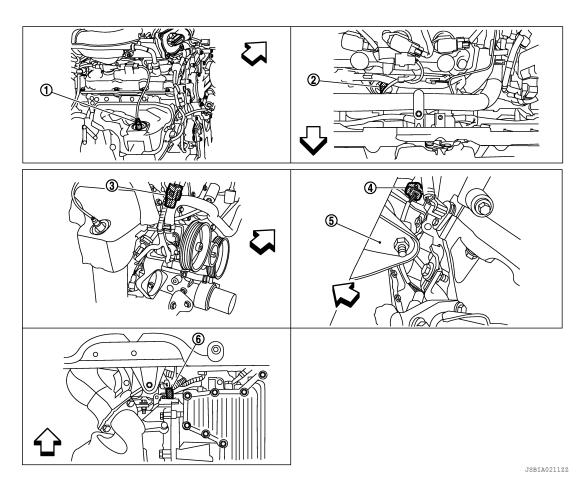
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- 6. VIAS control solenoid valve 1
- 9. Power steering pressure sensor
- 12. Camshaft position sensor (PHASE) (bank 1)

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

< SYSTEM DESCRIPTION > [VQ35DE]





1. A/F sensor 1 (bank 1)

2. A/F sensor 1 (bank 2)

4. HO2S2 (bank 2) harness connector 5.

Front engine mount

: Vehicle front

3. HO2S2 (bank 1) harness connector

6. Crankshaft position sensor (POS)

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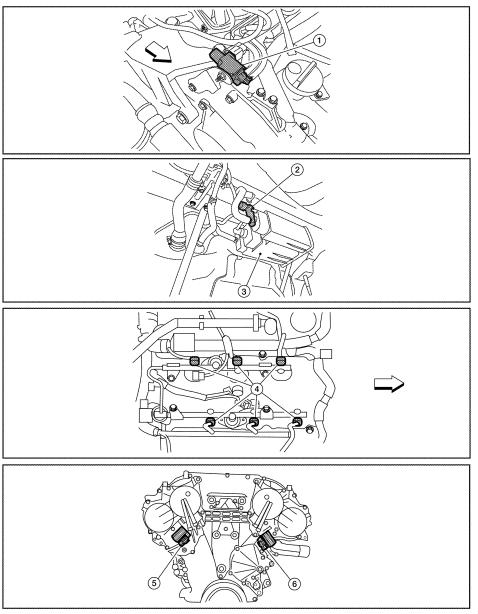
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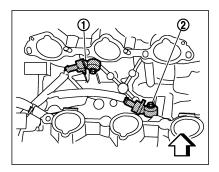
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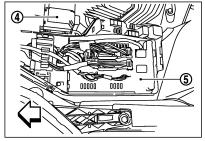


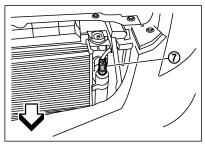
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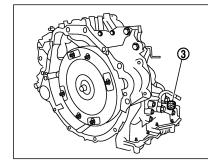
- Electronic controlled engine mount control solenoid valve
- 4. Fuel injector harness connector
- : Vehicle front

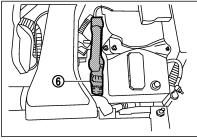
- EVAP canister vent control valve (view with rear suspension member removed)
- Intake valve timing control solenoid 6. valve (bank 1)
- 3. EVAP canister
- Intake valve timing control solenoid valve (bank 2)

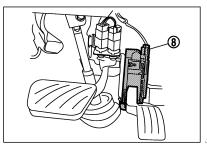








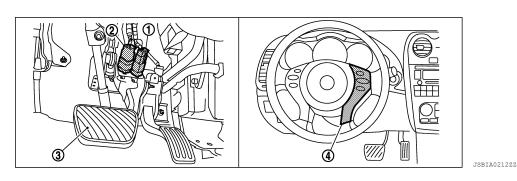




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- 1. Knock sensor (bank 2)
- 4. Battery
- 7. Refrigerant pressure sensor (shown with front grill removed)

- 2. Knock sensor (bank 1)
- 5. IPDM E/R
- 8. Accelerator pedal position sensor
- 3. Transmission range switch
- 6. ECM



- ASCD brake switch
- 4. ASCD steering switch
- 2. Stop lamp switch
- 3. Brake pedal

Component Description

Component	Reference
ASCD brake switch	EC-551, "Description"
ASCD indicator	EC-602, "Description"
ASCD steering switch	EC-548, "Description"

Revision: June 2012 EC-375 2011 Altima GCC

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AUTOMATIC SPEED CONTROL DEVICE (ASCD)

< SYSTEM DESCRIPTION >

[VQ35DE]

Component	Reference
Electric throttle control actuator	EC-583, "Description"
Stop lamp switch	EC-570, "Description"
TCM	EC-524, "Description"

CAN COMMUNICATION

< SYSTEM DESCRIPTION >

[VQ35DE]

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-24, "CAN Communication Signal Chart", about CAN communication for detail.

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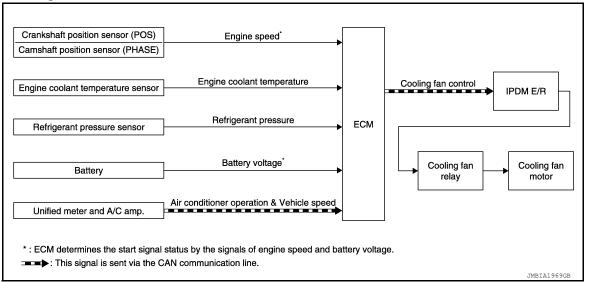
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COOLING FAN CONTROL

System Diagram

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System Description

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INPUT/OUTPUT SIGNAL CHART

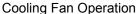
Sensor	Input signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*1		
Engine coolant temperature sensor	Engine coolant temperature		IPDM E/R
Refrigerant pressure sensor	Refrigerant pressure	Cooling fan	↓ Cooling fan relay
Battery	Battery voltage*1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

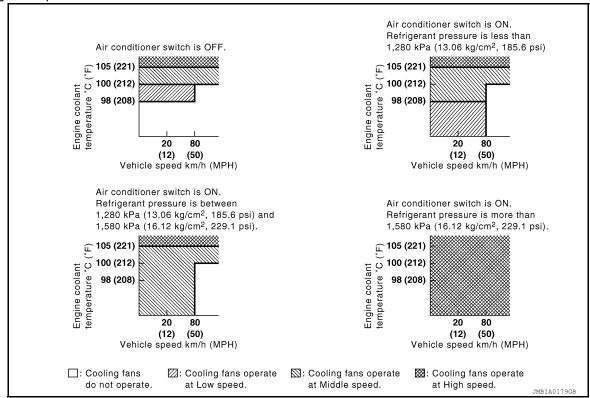
^{*1:} The ECM determines the start signal status by the signals of engine speed and battery voltage.

SYSTEM 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 4-step control [HIGH/MIDDLE/LOW/OFF].

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





Cooling Fan Relay Operation

The ECM controls cooling fan relays in the IPDM E/R via the CAN communication line.

Cooling fan speed	Cooling fan relay		
	1	2	3
Stop (OFF)	OFF	OFF	OFF
Low (LOW)	ON	OFF	OFF
Middle (MID)	OFF	ON	OFF
High (HI)	OFF	ON	ON

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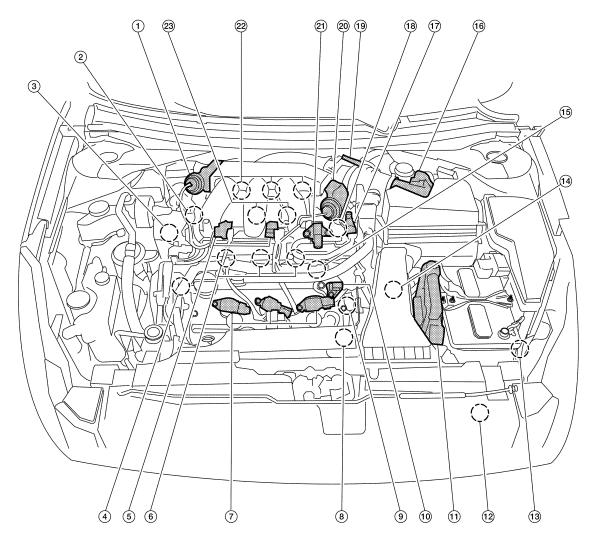
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Component Parts Location

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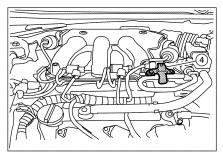


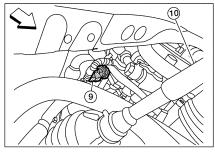
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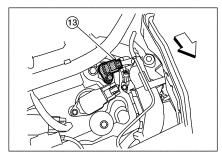
- Power valve actuator 1
- Intake valve timing control solenoid valve (bank 2)
- Ignition coil (with power transistor) 7. and spark plug (bank 2)
- 10. Camshaft position sensor (PHASE) (bank 2)
- 13. Battery current sensor
- 16. Mass air flow sensor (with intake air 17. EVAP service port temperature sensor)
- 19. Electric throttle control actuator
- 22. Ignition coil (with power transistor) and spark plug (bank 1)

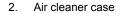
- Intake valve timing control solenoid 3. valve (bank 1)
- 5. VIAS control solenoid valves 1 and 2 6.
- 8. Crankshaft position sensor (POS)
- 11. ECM
- 14. Transmission range switch
- 20. Power valve actuator 2
- 23. Knock sensor

- Power steering pressure sensor
- Fuel injector (bank 2)
- 9. Engine coolant temperature sensor
- 12. Refrigerant pressure sensor
- 15. Condenser-2
- 18. Camshaft position sensor (PHASE) (bank 1)
- 21. EVAP canister purge volume control solenoid valve



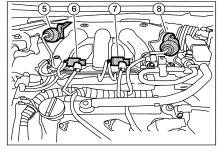


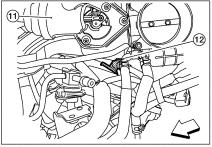




- Power valve actuator 1
- Power valve actuator 2

11. Power valve actuator 2





ALBIA0101ZZ

3. Engine coolant temperature sensor

VIAS control solenoid valve 1

9. Power steering pressure sensor

12. Camshaft position sensor (PHASE) (bank 1)

1. Mass air flow sensor (with intake air 2.

temperature sensor) EVAP canister purge volume control 5. solenoid valve

7. VIAS control solenoid valve 2

10. Tie rod (RH)

13. Camshaft position sensor (PHASE) (bank 2)

: Vehicle front

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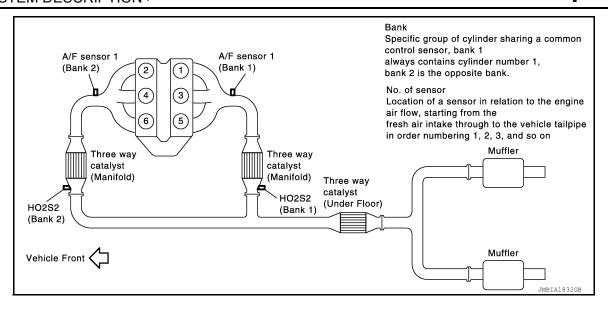
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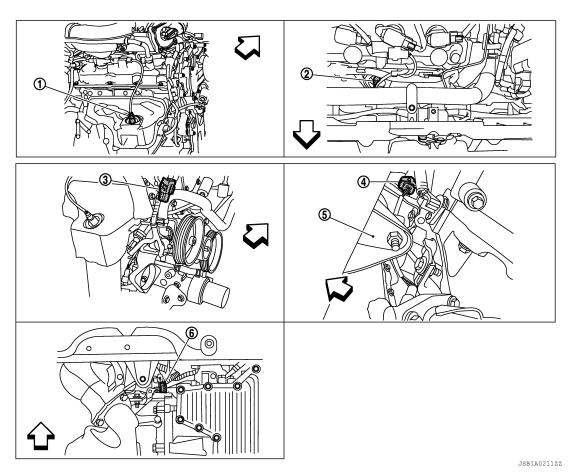
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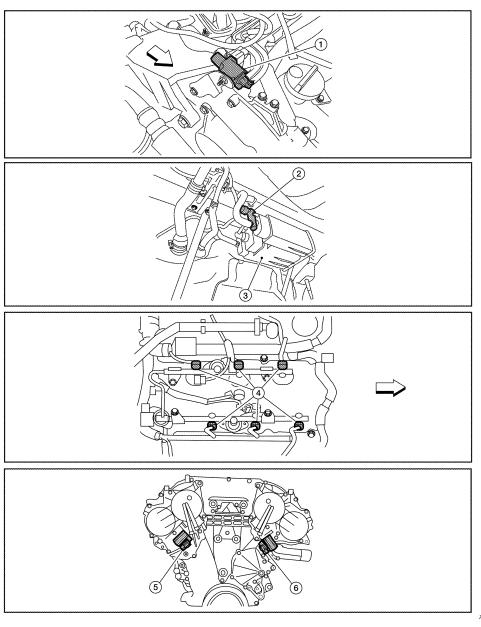
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- A/F sensor 1 (bank 1)
- 2. A/F sensor 1 (bank 2)
- HO2S2 (bank 2) harness connector 5.
- Front engine mount
- 3. HO2S2 (bank 1) harness connector
- Crankshaft position sensor (POS) 6.

: Vehicle front



ALBIA0519ZZ

- Electronic controlled engine mount control solenoid valve
- 4. Fuel injector harness connector
- : Vehicle front

- EVAP canister vent control valve (view with rear suspension member removed)
- Intake valve timing control solenoid 6. valve (bank 1)
- 3. EVAP canister
 - Intake valve timing control solenoid valve (bank 2)

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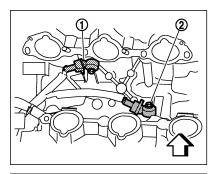
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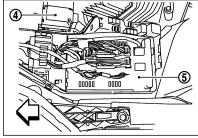
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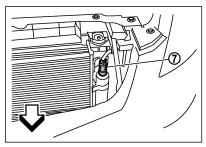
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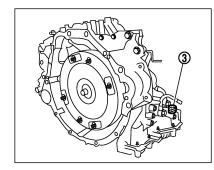
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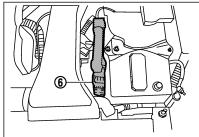
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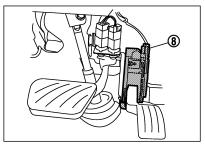






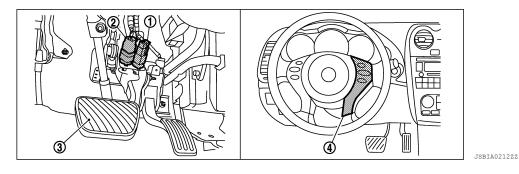






- Knock sensor (bank 2) 1.
- 4. Battery
- Refrigerant pressure sensor (shown with front grill removed)
- $\begin{tabular}{ll} \begin{tabular}{ll} \beg$

- 2. Knock sensor (bank 1)
- 5. IPDM E/R
- 8. Accelerator pedal position sensor
- Transmission range switch
- 6. **ECM**



- ASCD brake switch
- ASCD steering switch
- Stop lamp switch
- Brake pedal

Component Description

INFOID:0000000006391900

Component	Reference
Camshaft position sensor (PHASE)	EC-504, "Description"
Crankshaft position sensor (POS)	EC-500, "Description"
Cooling fan motor	EC-603, "Description"

COOLING FAN CONTROL

< SYSTEM DESCRIPTION >

[VQ35DE]

Component	Reference
Engine coolant temperature sensor	EC-465, "Description"
Refrigerant pressure sensor	EC-636. "Description"

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ELECTRONIC CONTROLLED ENGINE MOUNT

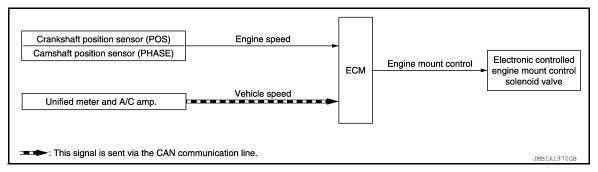
< SYSTEM DESCRIPTION >

[VQ35DE]

ELECTRONIC CONTROLLED ENGINE MOUNT

System Diagram

INFOID:0000000006391901



System Description

INFOID:0000000006391902

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS) Camshaft position sensor (PHASE) Engine speed		Engine mount	Electronic controlled engine mount control solenoid
Unified meter and A/C amp.	Vehicle speed*	COILLOI	valve

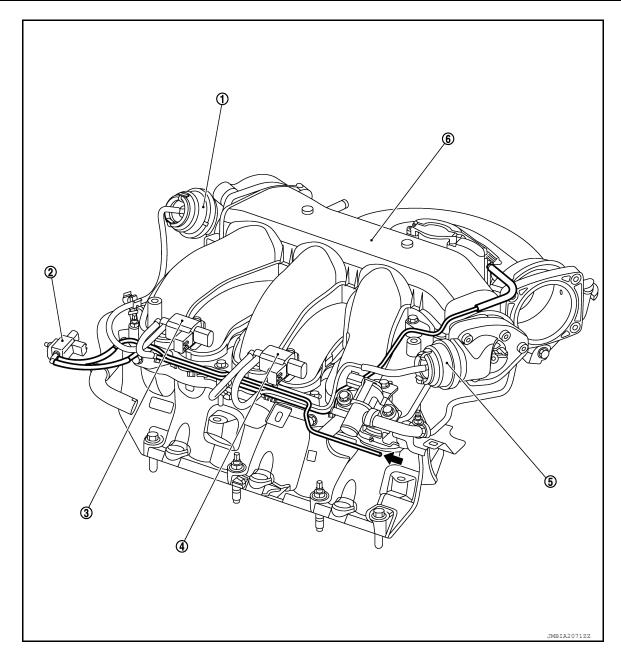
^{*:} This signal is sent to the ECM via the CAN communication line.

SYSTEM DESCRIPTION

The ECM controls the engine mount operation corresponding to the engine speed. The control system has a 2-step control [Soft/Hard]

Vehicle condition	Engine mount control	
Idle (With vehicle stopped)	Soft	
Except above conditions	Hard	

ELECTRONIC CONTROLLED ENGINE MOUNT LINE DRAWING



- Power valve actuator 1
- VIAS control solenoid valve 2

: From next figure

- Electronic controlled engine mount 3. VIAS control solenoid valve 1 control solenoid valve
- 5. Power valve actuator 2
- Intake manifold collector

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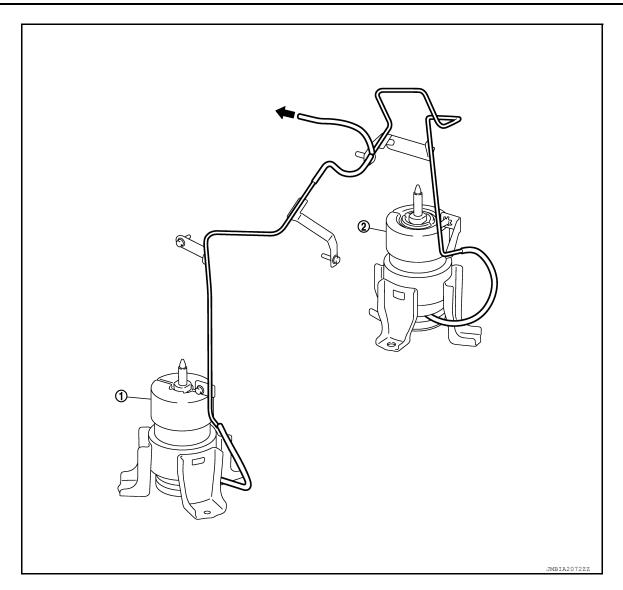
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- Front electronic controlled engine mount
- 2. Rear electronic controlled engine mount
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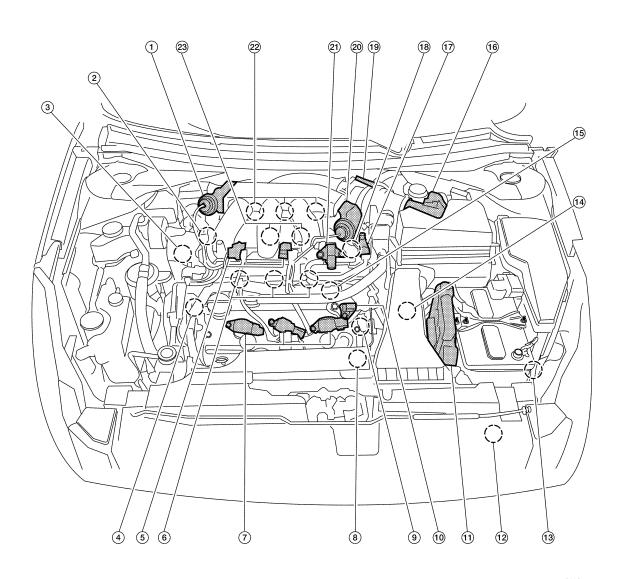
NOTE:

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

[VQ35DE]

Component Parts Location

INFOID:0000000006391903



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1.	Power	vaive	actuator	1

- Intake valve timing control solenoid valve (bank 2)
- Ignition coil (with power transistor) 7. and spark plug (bank 2)
- 10. Camshaft position sensor (PHASE) (bank 2)
- 13. Battery current sensor
- 16. Mass air flow sensor (with intake air 17. EVAP service port temperature sensor)
- 19. Electric throttle control actuator
- 22. Ignition coil (with power transistor) and spark plug (bank 1)

- Intake valve timing control solenoid 3. valve (bank 1)
- 5. VIAS control solenoid valves 1 and 2 6.
- 8. Crankshaft position sensor (POS)
- 11. ECM
- 14. Transmission range switch
- 20. Power valve actuator 2
- 23. Knock sensor

- Power steering pressure sensor
 - Fuel injector (bank 2)
- 9. Engine coolant temperature sensor
- 12. Refrigerant pressure sensor
- 15. Condenser-2
- 18. Camshaft position sensor (PHASE) (bank 1)
- 21. EVAP canister purge volume control solenoid valve

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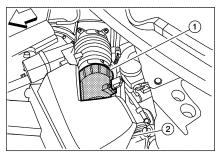
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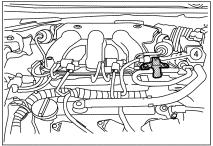
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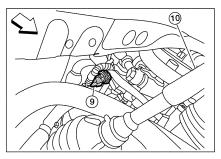
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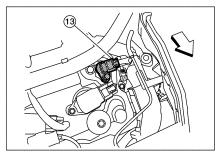
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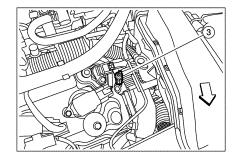
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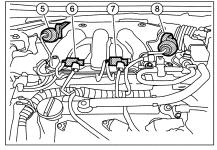


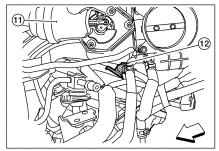












- Mass air flow sensor (with intake air 2. temperature sensor)
- 4. EVAP canister purge volume control 5. solenoid valve
- 7. VIAS control solenoid valve 2
- 10. Tie rod (RH)
- 13. Camshaft position sensor (PHASE) (bank 2)

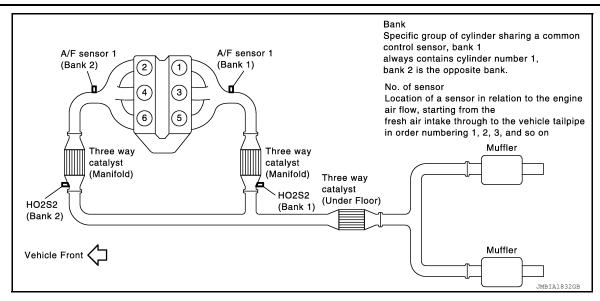
- Air cleaner case
- Power valve actuator 1
- 8. Power valve actuator 2
- 11. Power valve actuator 2
- 3. Engine coolant temperature sensor

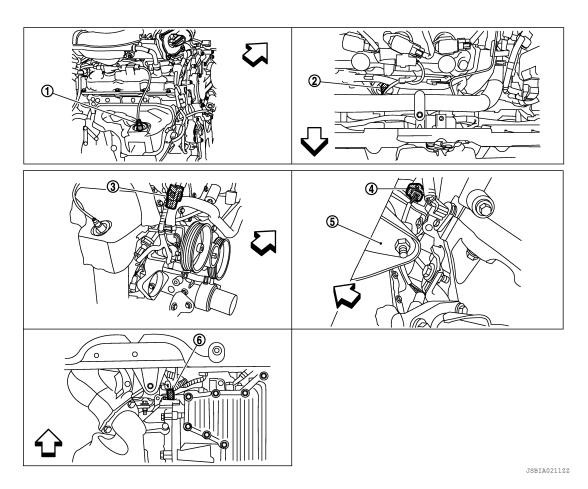
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- 6. VIAS control solenoid valve 1
- 9. Power steering pressure sensor
- 12. Camshaft position sensor (PHASE) (bank 1)

ELECTRONIC CONTROLLED ENGINE MOUNT

< SYSTEM DESCRIPTION > [VQ35DE]





1. A/F sensor 1 (bank 1)

2. A/F sensor 1 (bank 2)

4. HO2S2 (bank 2) harness connector 5.

. Front engine mount

: Vehicle front

3. HO2S2 (bank 1) harness connector

6. Crankshaft position sensor (POS)

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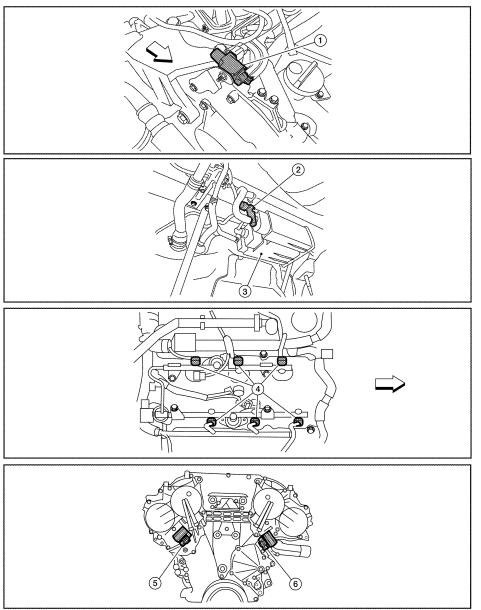
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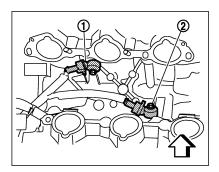
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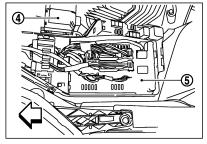


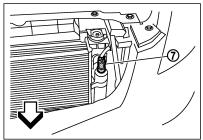
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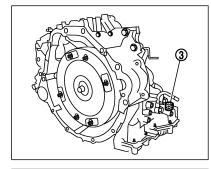
- Electronic controlled engine mount control solenoid valve
- 4. Fuel injector harness connector
- : Vehicle front

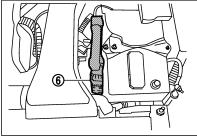
- EVAP canister vent control valve (view with rear suspension member removed)
- Intake valve timing control solenoid 6. valve (bank 1)
- 3. EVAP canister
 - Intake valve timing control solenoid valve (bank 2)

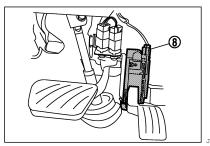








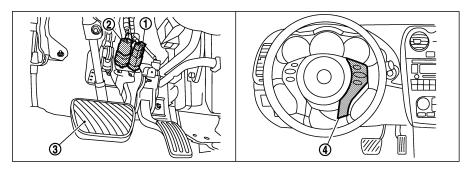




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- Knock sensor (bank 2) 1.
- 4. Battery
- Refrigerant pressure sensor (shown with front grill removed)

- 2. Knock sensor (bank 1)
- 5. IPDM E/R
- 8. Accelerator pedal position sensor
- 3. Transmission range switch
- 6. **ECM**



- ASCD brake switch
- ASCD steering switch

Stop lamp switch

Brake pedal

Component Description

Component Reference Camshaft position sensor (PHASE) EC-504, "Description" Crankshaft position sensor (POS) EC-500, "Description" Electronic controlled engine mount control solenoid valve EC-610, "Description"

EC-393 Revision: June 2012 2011 Altima GCC EC

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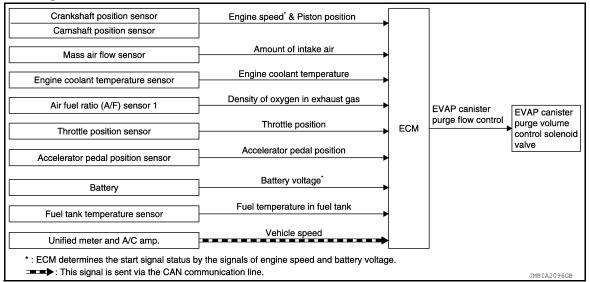
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[VQ35DE]

EVAPORATIVE EMISSION SYSTEM

System Diagram

INFOID:0000000006391905



System Description

INFOID:0000000006391906

INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed*1		
Camshaft position sensor (PHASE)	Piston position		
Mass air flow sensor	Amount of intake air		
Engine coolant temperature sensor	Engine coolant temperature	Density of oxygen in exhaust gas (Mixture ratio feedback signal) EVAP canister	
Air fuel ratio (A/F) sensor 1			
Throttle position sensor	Throttle position	purge flow control	ume control solenoid valve
Accelerator pedal position sensor	Accelerator pedal position		
Battery	Battery voltage*1		
Fuel tank temperature sensor	Fuel temperature in fuel tank		
Unified meter and A/C amp.	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.

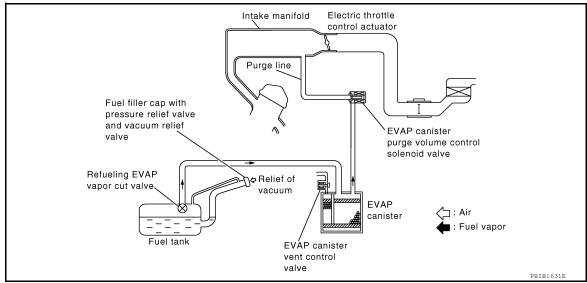
^{*2:} This signal is sent to the ECM via the CAN communication line.

EVAPORATIVE EMISSION SYSTEM

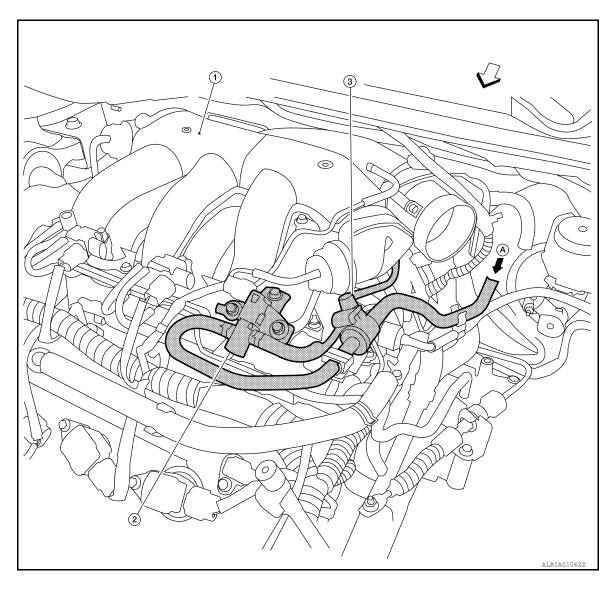
< SYSTEM DESCRIPTION >

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



EVAPORATIVE EMISSION LINE DRAWING



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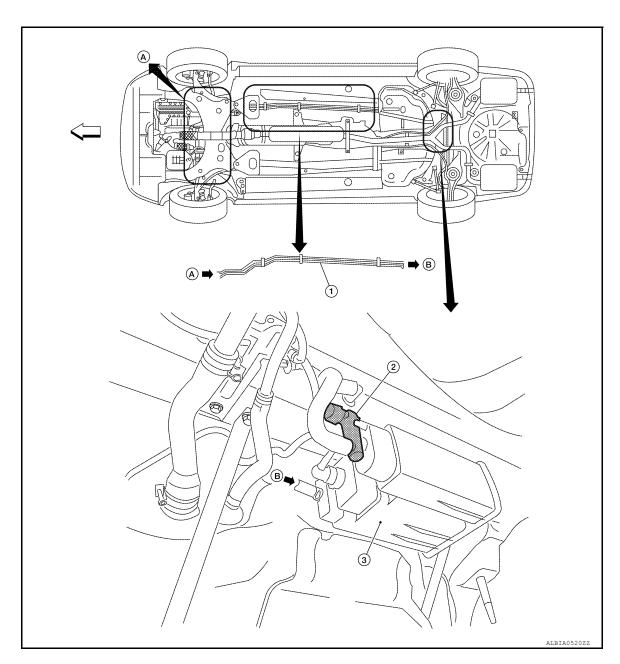
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- 1. Intake manifold collector
- EVAP canister purge volume control 3. EVAP service port solenoid valve
- A. From EVAP canister



- 1. EVAP vapor purge line
- EVAP canister vent control valve (view with rear suspension member removed)
- 3. EVAP canister

- A. To previous figure
- = : To previous figure

NOTE:

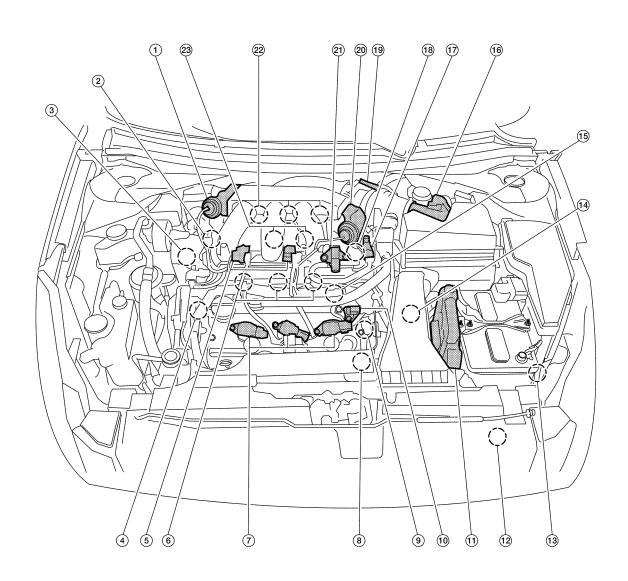
Do not use soapy water or any type of solvent while installing vacuum hose or purge hoses.

B. To/From B in this figure

[VQ35DE]

Component Parts Location

INFOID:0000000006391907



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- Power valve actuator 1
- Intake valve timing control solenoid valve (bank 2)
- Ignition coil (with power transistor) 7. and spark plug (bank 2)
- 10. Camshaft position sensor (PHASE) (bank 2)
- 13. Battery current sensor
- 16. Mass air flow sensor (with intake air 17. EVAP service port temperature sensor)
- 19. Electric throttle control actuator
- 22. Ignition coil (with power transistor) and spark plug (bank 1)

- Intake valve timing control solenoid 3. valve (bank 1)
- 5. VIAS control solenoid valves 1 and 2 6.
- 8. Crankshaft position sensor (POS)
- 11. ECM
- 14. Transmission range switch
- 20. Power valve actuator 2
- 23. Knock sensor

- Power steering pressure sensor
 - Fuel injector (bank 2)
- 9. Engine coolant temperature sensor
- 12. Refrigerant pressure sensor
- 15. Condenser-2
- 18. Camshaft position sensor (PHASE) (bank 1)
- solenoid valve

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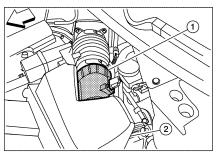
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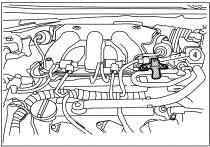
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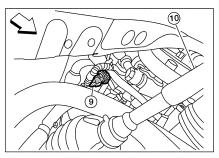
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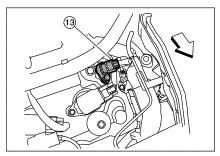
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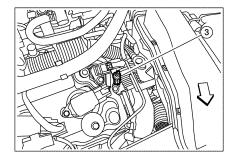
21. EVAP canister purge volume control

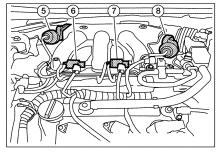


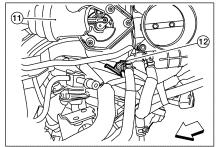










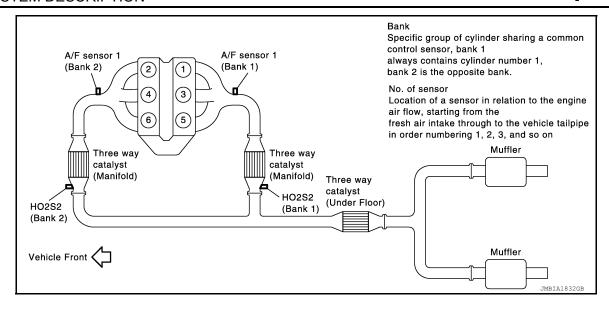


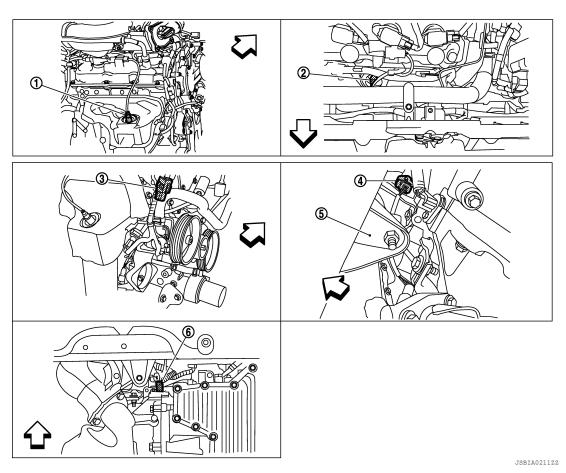
- Mass air flow sensor (with intake air 2. temperature sensor)
- 4. EVAP canister purge volume control 5. solenoid valve
- 7. VIAS control solenoid valve 2
- 10. Tie rod (RH)
- 13. Camshaft position sensor (PHASE) (bank 2)
- ⟨
 → : Vehicle front

- Air cleaner case
- Power valve actuator 1
- B. Power valve actuator 2
- 11. Power valve actuator 2
- 3. Engine coolant temperature sensor

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- 6. VIAS control solenoid valve 1
- 9. Power steering pressure sensor
- 12. Camshaft position sensor (PHASE) (bank 1)





A/F sensor 1 (bank 1)

2. A/F sensor 1 (bank 2)

HO2S2 (bank 2) harness connector 5.

Front engine mount

3. HO2S2 (bank 1) harness connector

Crankshaft position sensor (POS) 6.

: Vehicle front

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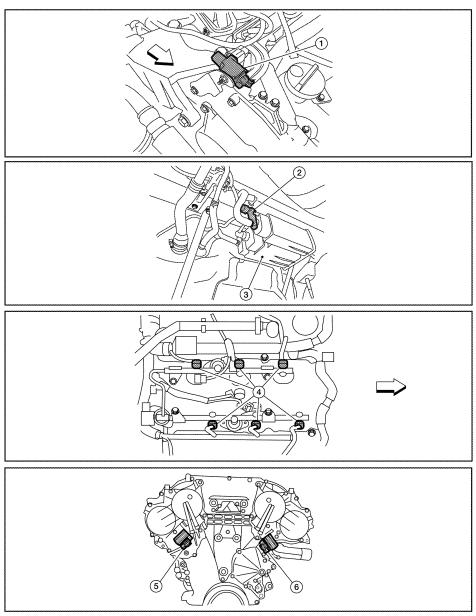
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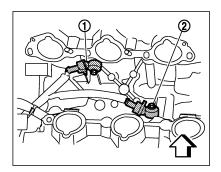
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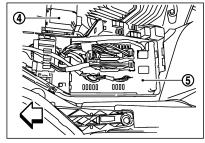


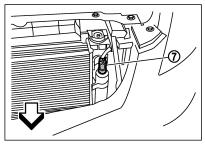
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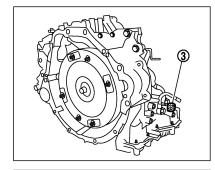
- Electronic controlled engine mount control solenoid valve
- 4. Fuel injector harness connector
- : Vehicle front

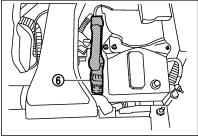
- EVAP canister vent control valve (view with rear suspension member removed)
- Intake valve timing control solenoid 6. valve (bank 1)
- 3. EVAP canister
 - Intake valve timing control solenoid valve (bank 2)

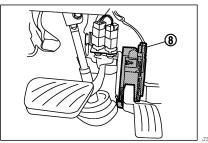






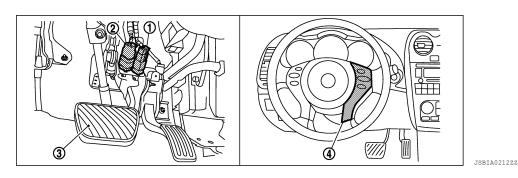






- Knock sensor (bank 2) 1.
- 4. Battery
- Refrigerant pressure sensor (shown with front grill removed)

- 2. Knock sensor (bank 1)
- 5. IPDM E/R
- 8. Accelerator pedal position sensor
- 3. Transmission range switch
- 6. **ECM**



- ASCD brake switch
- ASCD steering switch
- Stop lamp switch
- 3. Brake pedal

Component Description

Component	Reference
A/F sensor 1	EC-471, "Description"
Accelerator pedal position sensor	EC-585, "Description"
Camshaft position sensor (PHASE)	EC-504, "Description"

EC-401 2011 Altima GCC Revision: June 2012

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EVAPORATIVE EMISSION SYSTEM

< SYSTEM DESCRIPTION >

Component	Reference					
Crankshaft position sensor (POS)	EC-500, "Description"					
Engine coolant temperature sensor	EC-465, "Description"					
EVAP canister purge volume control solenoid valve	EC-508, "Description"					
Mass air flow sensor	EC-456, "Description"					
Throttle position sensor	EC-468, "Description"					

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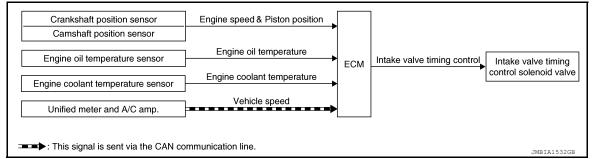
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INTAKE VALVE TIMING CONTROL

System Diagram

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System Description

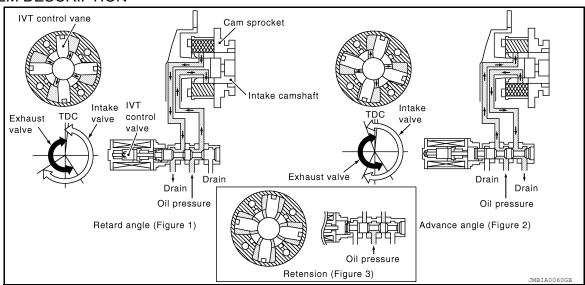
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INPUT/OUTPUT SIGNAL CHART

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 timing control solenoid valve		
Engine oil temperature sensor	Engine oil temperature	Intake valvetiming control			
Engine coolant temperature sensor	Engine coolant temperature		Soletiola valve		
Unified meter and A/C amp.	Vehicle speed*				

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

SYSTEM DESCRIPTION



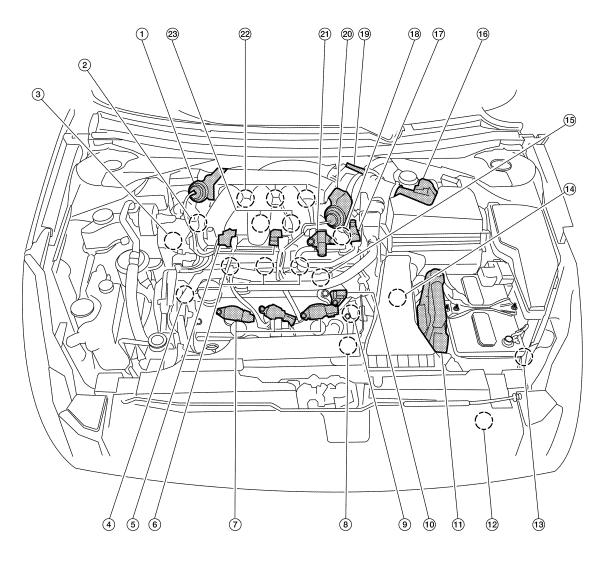
This mechanism hydraulically controls cam phases continuously with the fixed operating angle of the intake valve.

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.

Revision: June 2012 EC-403 2011 Altima GCC

Component Parts Location

INFOID:0000000006391911

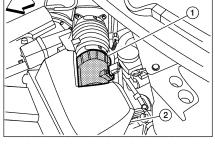


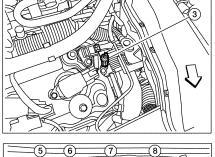
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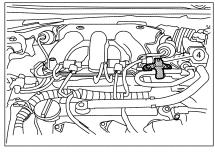
- Power valve actuator 1
- Intake valve timing control solenoid valve (bank 2)
- Ignition coil (with power transistor) 7. and spark plug (bank 2)
- 10. Camshaft position sensor (PHASE) (bank 2)
- 13. Battery current sensor
- 16. Mass air flow sensor (with intake air 17. EVAP service port temperature sensor)
- 19. Electric throttle control actuator
- 22. Ignition coil (with power transistor) and spark plug (bank 1)

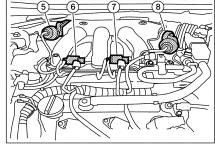
- Intake valve timing control solenoid 3. valve (bank 1)
- 5. VIAS control solenoid valves 1 and 2 6.
- 8. Crankshaft position sensor (POS)
- 11. ECM
- 14. Transmission range switch
- 20. Power valve actuator 2
- 23. Knock sensor

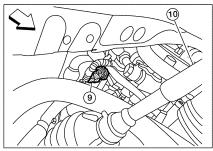
- Power steering pressure sensor
- Fuel injector (bank 2)
- 9. Engine coolant temperature sensor
- 12. Refrigerant pressure sensor
- 15. Condenser-2
- 18. Camshaft position sensor (PHASE) (bank 1)
- 21. EVAP canister purge volume control solenoid valve

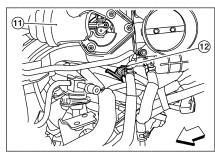


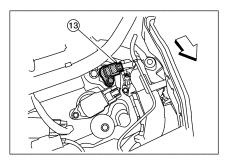












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- Mass air flow sensor (with intake air 2. temperature sensor)
- EVAP canister purge volume control 5. solenoid valve
- 7. VIAS control solenoid valve 2
- 10. Tie rod (RH)
- 13. Camshaft position sensor (PHASE) (bank 2)
- : Vehicle front

- Air cleaner case
- Power valve actuator 1
- Power valve actuator 2
- 11. Power valve actuator 2
- Engine coolant temperature sensor
- VIAS control solenoid valve 1
- 9. Power steering pressure sensor
- 12. Camshaft position sensor (PHASE) (bank 1)

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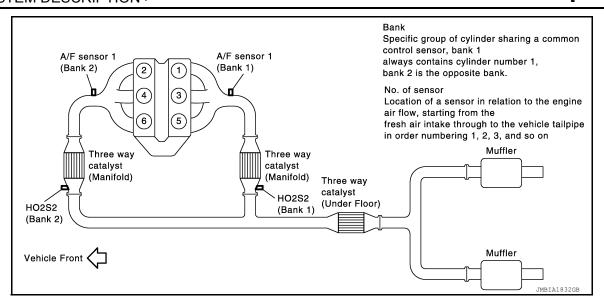
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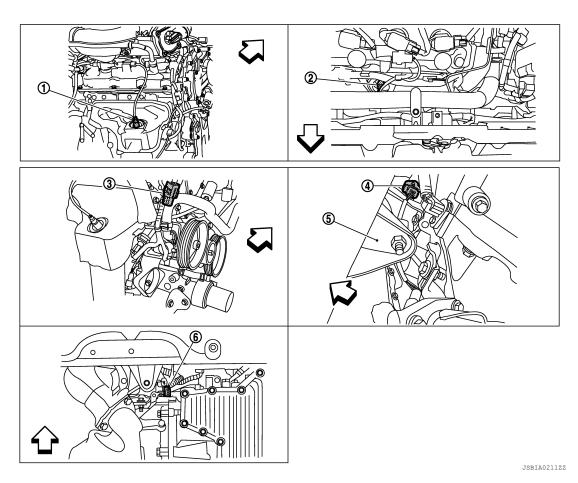
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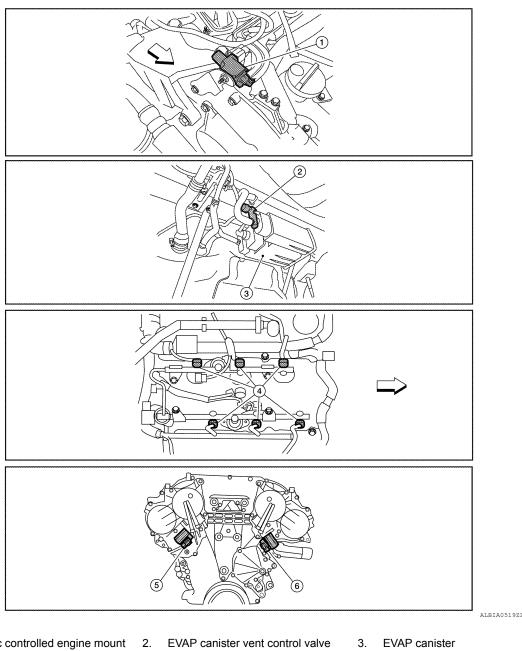
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- A/F sensor 1 (bank 1)
- 2. A/F sensor 1 (bank 2)
- HO2S2 (bank 2) harness connector 5.
- Front engine mount
- 3. HO2S2 (bank 1) harness connector
- Crankshaft position sensor (POS) 6.

: Vehicle front



ALBIA0519ZZ

- 1. Electronic controlled engine mount control solenoid valve
- Fuel injector harness connector
- : Vehicle front

- (view with rear suspension member removed)
- Intake valve timing control solenoid 6. valve (bank 1)
 - Intake valve timing control solenoid valve (bank 2)

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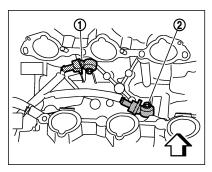
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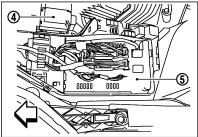
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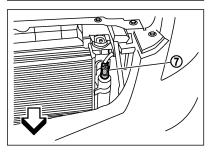
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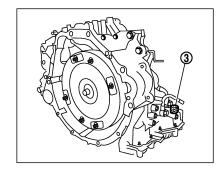
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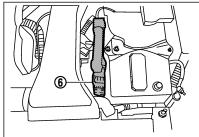
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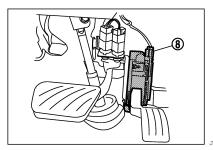








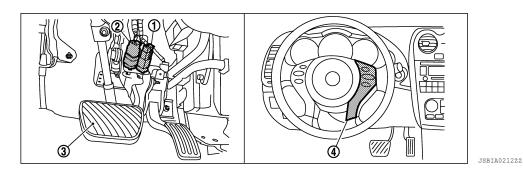




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- 1. Knock sensor (bank 2)
- 4. Battery
- 7. Refrigerant pressure sensor (shown with front grill removed)

- 2. Knock sensor (bank 1)
- 5. IPDM E/R
- 8. Accelerator pedal position sensor
- 3. Transmission range switch
- 6. ECM



- 1. ASCD brake switch
- 4. ASCD steering switch
- 2. Stop lamp switch
- 3. Brake pedal

Component Description

INFOID:0000000006391912

Component	Reference
Camshaft position sensor (PHASE)	EC-504, "Description"
Crankshaft position sensor (POS)	EC-500, "Description"

INTAKE VALVE TIMING CONTROL

< SYSTEM DESCRIPTION >

[VQ35DE]

Component	Reference
Engine coolant temperature sensor	EC-465, "Description"
Intake valve timing control solenoid valve	EC-453. "Description"

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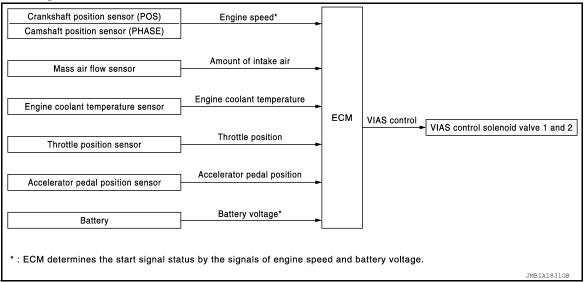
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[VQ35DE]

VARIABLE INDUCTION AIR SYSTEM

System Diagram

INFOID:0000000006391913



System Description

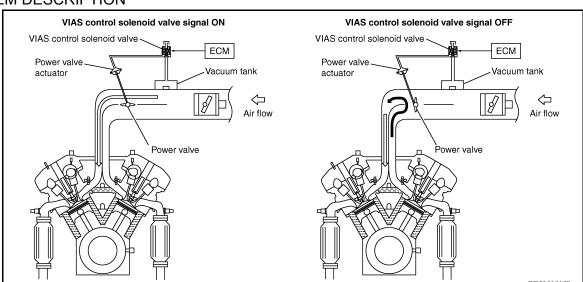
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INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator		
Crankshaft position sensor (POS) Camshaft position sensor (PHASE)	Engine speed*				
Mass air flow sensor	Amount of intake air				
Engine coolant temperature sensor Engine coolant temperature		VIAS control	VIAS control solenoid valve 1 VIAS control solenoid valve 2		
Throttle position sensor	Throttle position		VIAS control solenoid valve 2		
Accelerator pedal position sensor	Accelerator pedal position				
Battery	Battery voltage*				

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

SYSTEM DESCRIPTION



In the medium speed range, the ECM sends the ON signal to the VIAS control solenoid valve. This signal introduces the intake manifold vacuum into the power valve actuator and therefore closes the power valve.

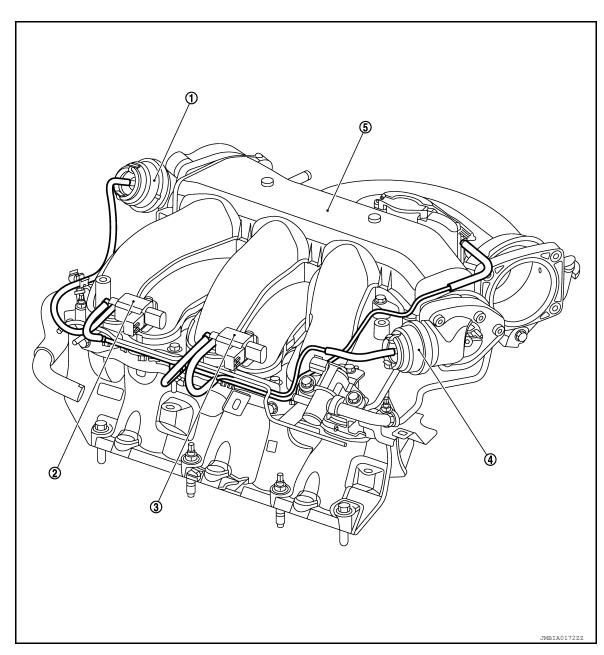
[VQ35DE]

Under this condition, the pressure waves of the exhaust stroke do not disturb the pressure waves of the intake stroke of each opposite bank. Therefore, charging efficiency is increased together with the effect of the long intake passage.

However, in the high speed range, the ECM sends the OFF signal to the VIAS control solenoid valve and the power valves is opened. Under this condition, the pressure waves of intake stroke are resonant with those of each opposite bank exhaust stroke. Therefore, charging efficiency is also increased.

In addition, both valves 1 and 2 are opened or closed in other ranges mentioned above. Thus maximum charging efficiency is obtained for the various driving conditions.

VACUUM HOSE DRAWING



- 1. Power valve actuator 1
- 4. Power valve actuator 2
- VIAS control solenoid valve 1
- Intake manifold collector
- 3. VIAS control solenoid valve 2

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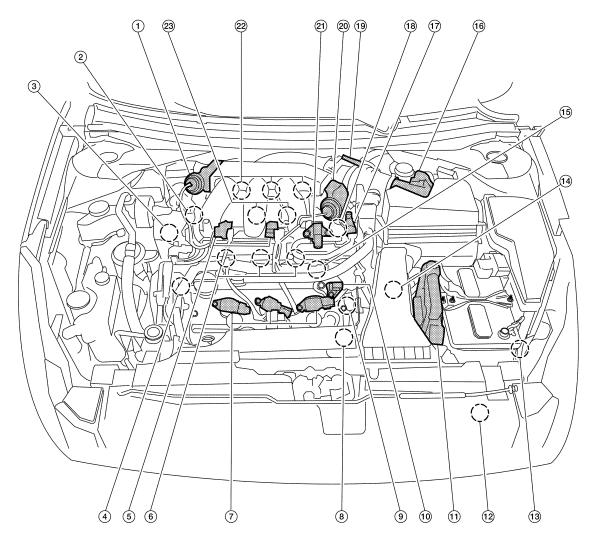
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Component Parts Location

INFOID:0000000006391915



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- Power valve actuator 1
- Intake valve timing control solenoid valve (bank 2)
- Ignition coil (with power transistor) 7. and spark plug (bank 2)
- 10. Camshaft position sensor (PHASE) (bank 2)
- 13. Battery current sensor
- 16. Mass air flow sensor (with intake air 17. EVAP service port temperature sensor)
- 19. Electric throttle control actuator
- 22. Ignition coil (with power transistor) and spark plug (bank 1)

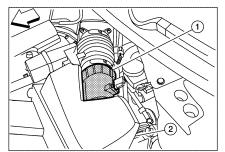
- Intake valve timing control solenoid 3. valve (bank 1)
- 5. VIAS control solenoid valves 1 and 2 6.
- 8. Crankshaft position sensor (POS)
- 11. ECM
- 14. Transmission range switch
- 20. Power valve actuator 2
- 23. Knock sensor

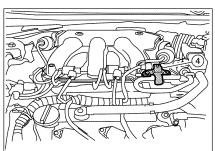
- Power steering pressure sensor
- Fuel injector (bank 2)
- 9. Engine coolant temperature sensor
- 12. Refrigerant pressure sensor
- 15. Condenser-2
- 18. Camshaft position sensor (PHASE) (bank 1)
- 21. EVAP canister purge volume control solenoid valve

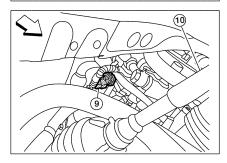
VARIABLE INDUCTION AIR SYSTEM

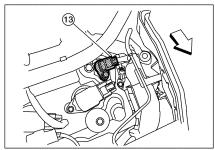
< SYSTEM DESCRIPTION >

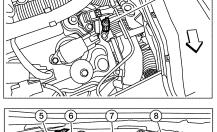
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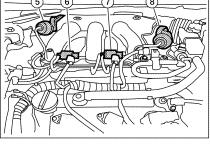


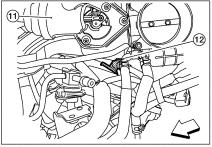








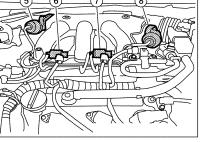


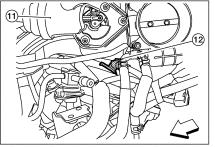


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- Mass air flow sensor (with intake air 2. temperature sensor)
- EVAP canister purge volume control 5. solenoid valve
- 7. VIAS control solenoid valve 2
- 10. Tie rod (RH)
- 13. Camshaft position sensor (PHASE) (bank 2)
- : Vehicle front

- Air cleaner case
- Power valve actuator 1
- Power valve actuator 2
- 11. Power valve actuator 2
- Engine coolant temperature sensor
- VIAS control solenoid valve 1
- 9. Power steering pressure sensor
- 12. Camshaft position sensor (PHASE) (bank 1)





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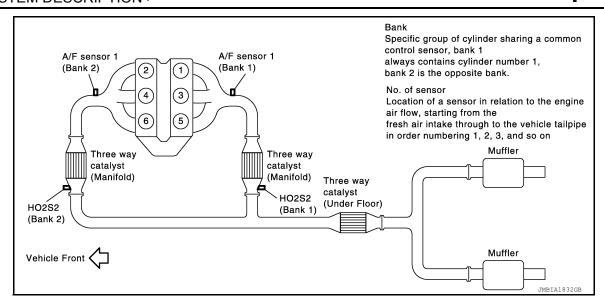
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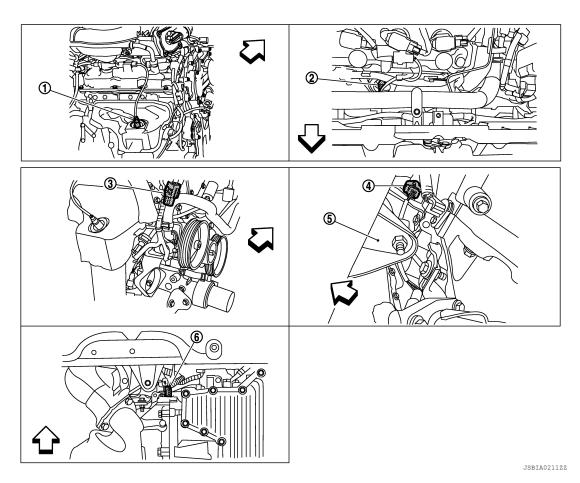
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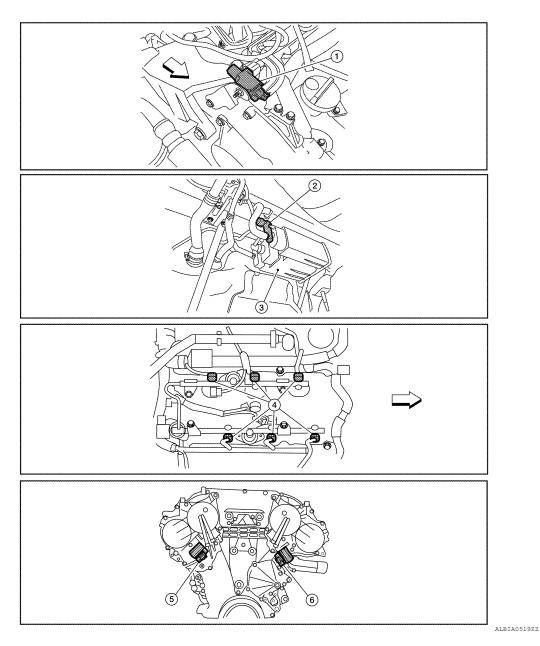
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- A/F sensor 1 (bank 1)
- 2. A/F sensor 1 (bank 2)
- HO2S2 (bank 2) harness connector 5.
- - Front engine mount
- 3. HO2S2 (bank 1) harness connector
- Crankshaft position sensor (POS) 6.

: Vehicle front



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Electronic controlled engine mount control solenoid valve

 EVAP canister vent control valve (view with rear suspension member removed) M

Fuel injector harness connector

. Intake valve timing control solenoid 6. valve (bank 1)

Intake valve timing control solenoid valve (bank 2)

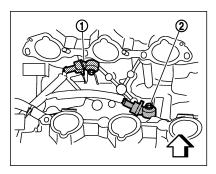
EVAP canister

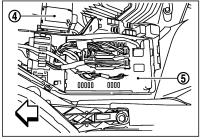
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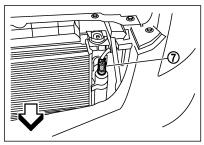
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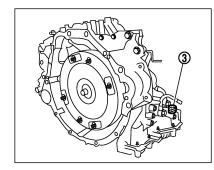
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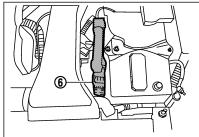
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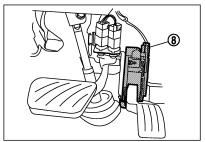








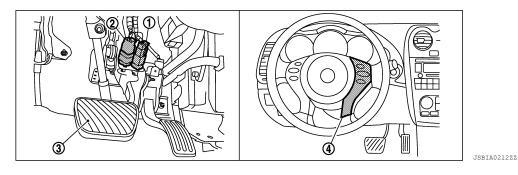




TCDT3027477

- 1. Knock sensor (bank 2)
- 4. Battery
- 7. Refrigerant pressure sensor (shown with front grill removed)

- 2. Knock sensor (bank 1)
- 5. IPDM E/R
- 8. Accelerator pedal position sensor
- 3. Transmission range switch
- 6. ECM



- 1. ASCD brake switch
- 4. ASCD steering switch
- 2. Stop lamp switch
- 3. Brake pedal

Component Description

INFOID:0000000006391916

Component	Reference
Accelerator pedal position sensor	EC-585, "Description"
Camshaft position sensor (PHASE)	EC-504, "Description"
Crankshaft position sensor (POS)	EC-500, "Description"

VARIABLE INDUCTION AIR SYSTEM

< SYSTEM DESCRIPTION > [VQ35DE]

Component	Reference	
Engine coolant temperature sensor	EC-465, "Description"	
Mass air flow sensor	EC-456, "Description"	
Power valve 1 and 2	EC-639. "Description"	
Throttle position sensor	EC-468, "Description"	
VIAS control solenoid valve 1	EC-565, "Description"	
VIAS control solenoid valve 2	EC-567, "Description"	

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ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SYSTEM DESCRIPTION >

[VQ35DE]

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

INFOID:0000000006896771

This system is an on board diagnostic system that records exhaust emission-related diagnostic information and detects a sensors/actuator-related malfunction. A malfunction is indicated by the malfunction indicator lamp (MIL) and stored in ECU memory as a DTC. The diagnostic information can be obtained with the diagnostic tool (GST: Generic Scan Tool).

< SYSTEM DESCRIPTION >

[VQ35DE]

DIAGNOSIS SYSTEM (ECM) DIAGNOSIS DESCRIPTION

DIAGNOSIS DESCRIPTION: 1st Trip Detection Logic and Two Trip Detection Logic

INFOID:0000000006896772

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 illuminate 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 illuminates. The MIL illuminates 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 illuminate or blink the MIL, and store DTC and Freeze Frame data, even in the 1st trip, as shown below.

x: Applicable —: Not applicable

		М	IL		D.	TC	1st trip DTC		
Items	1st trip		2nd	d trip	1st trip	2nd trip	1st trip	2nd trip	
	Blinking	Illuminate	Blinking	Illuminate	displaying	displaying	displaying	displaying	
One trip detection diagnoses (Refer to EC-659, "DTC Index".)	_	×	_	_	×	_	_	_	
Two trip detection diagnoses (Refer to EC-659, "DTC Index".)	_	_	_	×	_	×	×	_	

DIAGNOSIS DESCRIPTION: DTC and Freeze Frame Data

INFOID:0000000006896773

DTC AND 1ST TRIP DTC

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 recur, the 1st trip DTC will not be displayed.

If a malfunction is detected during the 1st trip, the 1st trip DTC is saved 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 saved 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.

For malfunctions in which 1st trip DTCs are displayed, refer to <u>EC-659</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 SAE J1979/ISO 15031-5. 1st trip DTC detection occurs without illuminating the MIL and therefore does not warn the driver of a malfunction.

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-327, "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.

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.

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Priority	Items						
1	Freeze frame data Misfire — DTC: P0300 - P0308						
2	Except the above items						
3	1st trip freeze frame da	ata					

For example, the EGR malfunction (Priority: 2) was detected and the freeze frame data was saved 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.

DIAGNOSIS DESCRIPTION: Malfunction Indicator Lamp (MIL)

INFOID:0000000006896776

When emission related ECU detects a malfunction in the emission control systems components and/or the powertrain control components (which affect vehicle emissions), it turns on/blinks MIL to inform the driver that a malfunction has been detected.

1. The MIL illuminates when ignition switch is turned ON (engine is not running).

NOTE:

Check the MIL circuit if MIL does not illuminate. Refer to <u>EC-</u>634, "Component Function Check".

2. When the engine is started, the MIL should go off.

NOTE:

If MIL continues to illuminate/blink, perform self-diagnoses and inspect/repair accordingly because an emission related ECU has detected a malfunction in the emission control systems components and/or the powertrain control components (which affect vehicle emissions).

On Board Diagnosis Function

INFOID:0000000006896781

ON BOARD DIAGNOSIS ITEM

The on board diagnostic system has the following functions.

Diagnostic test mode	Function
Bulb check	MIL can be checked.
Malfunction warning	If ECM detects a malfunction, it illuminates or blinks MIL to inform the driver that a malfunction has been detected.
Self-diagnostic results	DTCs or 1st trip DTCs stored in ECM can be read.
Accelerator pedal released position learning	ECM can learn the accelerator pedal released position. Refer to EC-335, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Description".
Throttle valve closed position learning	ECM can learn the throttle valve closed position. Refer to EC-336, "THROTTLE VALVE CLOSED PO-SITION LEARNING: Description".
Idle air volume learning	ECM can learn the idle air volume. Refer to EC-336, "IDLE AIR VOLUME LEARNING: Description".
Mixture ratio self-learning value clear	Mixture ratio self-learning value can be erased. Refer to <u>EC-338</u> , "MIXTURE RATIO SELF-LEARN-ING VALUE CLEAR: Description".

BLUB CHECK MODE

Description

This function allows damage inspection in the MIL bulb (blown, open circuit, etc.).

Operation Procedure

Turn ignition switch ON.

[VQ35DE] < SYSTEM DESCRIPTION >

The MIL on the instrument panel should stay ON. If it remains OFF, check MIL circuit. Refer to <a>EC-634, "Diagnosis Procedure".

MALFUNCTION WARNING MODE

Description

In this function ECM turns on or blinks MIL when it detects a malfunction in the emission control system components and/or the powertrain control components (which affect vehicle emissions) to inform the driver that a malfunction has been detected.

Operation Procedure

- Turn ignition switch ON.
- Check that MIL illuminates. If it remains OFF, check MIL circuit. Refer to EC-634, "Diagnosis Procedure".
- Start engine and let it idle.
 - For two trip detection logic diagnoses, ECM turns on MIL when it detects the same malfunction twice in the two consecutive driving cycles.
 - For 1st trip detection logic diagnoses, ECM turns on MIL when it detects a malfunction in one driving cycle.
 - ECM blinks MIL when it detects a malfunction that may damage the three way catalyst (misfire).

SELF-DIAGNOSTIC RESULTS MODE

Description

This function allows to indicate DTCs or 1st trip DTCs stored in ECM according to the number of times MIL is blinking.

How to Set Self-diagnostic Results 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 mal-
- After ignition switch is turned off, ECM is always released from the "Self-diagnostic results" mode.
- Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 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 depressed for approx. 10 seconds until the MIL starts blinking.

NOTE:

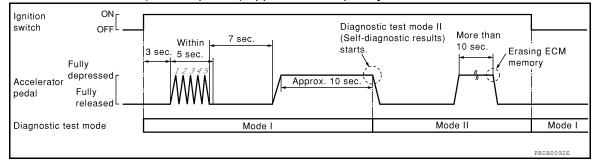
Do not release the accelerator pedal for 10 seconds if MIL starts blinking during this period. This blinking is displaying SRT status and is continued for another 10 seconds.

Fully release the accelerator pedal.

ECM has entered to Self-diagnostic results mode.

NOTE:

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



How to Read Self-diagnostic Results

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 "malfunction warning" mode, it is a DTC; if two or more codes are displayed, they may be either

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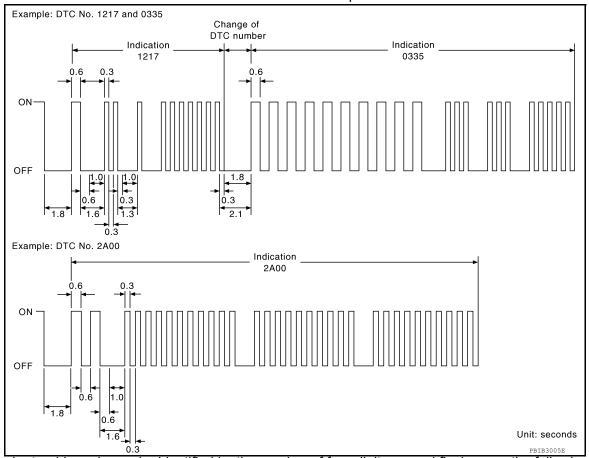
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DTCs or 1st trip DTCs. DTC No. is same as that of 1st trip DTC. These unidentified codes can be identified by using the CONSULT-III or GST. A DTC will be used as an example for how to read a code.



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

Number	0	1	2	3	4	5	6	7	8	9	Α	В	С	D	E	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-seconds) - OFF (0.6-seconds) cycle.

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

In this way, all the detected malfunctions are classified by their DTC numbers. The DTC 0000 refers to no malfunction. Refer to <u>EC-659</u>, "DTC Index".

How to Erase Self-diagnostic Results

By performing this procedure, ECM memory is erased and the following diagnostic information is erased as well.

- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- · Freeze frame data
- 1st trip freeze frame data
- Test values

NOTE:

Also, if a battery terminal is disconnected, ECM memory is erased and the diagnostic information as listed above is erased. (The amount of time required for erasing may vary from a few seconds to several hours.)

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.

< SYSTEM DESCRIPTION >

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- Set ECM in Self-diagnostic results.
- The diagnostic information has been erased from the backup memory in the ECM. Fully depress the accelerator pedal and keep it depressed for more than 10 seconds.
- 7. Fully release the accelerator pedal, and confirm the DTC 0000 is displayed.

CONSULT-III Function

INFOID:0000000006391918

FUNCTION

Diagnostic test mode	Function		
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the in dications on the CONSULT-III unit.		
Self-diagnostic results	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.		
Function test	This mode is used to inform customers when their vehicle condition requires periodic maintenance.		
ECU Identification	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

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
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-DIAG RESULTS MODE

Self Diagnostic Item

Regarding items of DTC and 1st trip DTC, refer to EC-659, "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-659, "DTC_Index".)

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Freeze frame data item*	Description	
FUEL SYS-B1	"Fuel injection system status" at the moment a malfunction is detected is displayed.	
FUEL SYS-B2	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.	
L-FUEL TRM-B2 [%]	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.	
S-FUEL TRM-B2 [%]	 The short-term fuel trim indicates dynamic or instantaneous feedback compensation to the base fuel sched- ule. 	
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.	
INT MANI PRES [kPa]		
COMBUST CONDI- TION	These items are displayed but are not applicable to this model.	

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

DATA MONITOR MODE

Monitored Item

x: 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	ms	"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			When the engine is stopped, a certain
A/F ALPHA-B2	%	The mean value of the air-fuel ratio feedback cor- rection factor per cycle is indicated.	 value is indicated. This data also includes the data for the air-fuel ratio learning control. When engine is running specification range is indicated in "SPEC".
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.

< SYSTEM DESCRIPTION >

Monitored item	Unit	Description	Remarks	
A/F SEN1 (B1)	V	The A/F signal computed from the input signal of		
A/F SEN1 (B2)		the air fuel ratio (A/F) sensor 1 is displayed.		
HO2S2 (B1)	V	The signal voltage of the heated oxygen sensor 2		
HO2S2 (B2)		is displayed.		
HO2S2 MNTR(B1) HO2S2 MNTR(B2)	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		The accelerator pedal position sensor signal volt-	ACCEL SEN 2 signal is converted by	
ACCEL SEN 2	V	age is displayed.	ECM internally. Thus, it differs from ECM terminal voltage signal.	
TP SEN 1-B1		The throttle position sensor signal voltage is dis-	TP SEN 2-B1 signal is converted by	
TP SEN 2-B1	V	played.	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 sen- sor) is indicated.		
EVAP SYS PRES	V	The signal voltage of EVAP control system pressure 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) signal.		
PW/ST SIGNAL	ON/OFF	[ON/OFF] condition of the power steering system (determined by the signal voltage of the power steering pressure sensor) 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.		

Monitored item	Unit	Description	Remarks	
INJ PULSE-B1	msec	Indicates the actual fuel injection pulse width compensated by ECM according to the input sig-	When the engine is stopped, a certain	
INJ PULSE-B2		nals.	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.	
MASS AIRFLOW	g/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 an-		
INT/V TIM (B2)	CA	gle.		
INT/V SOL(B1)		The control value of the intake valve timing con-		
INT/V SOL(B2)	%	trol solenoid valve (determined by ECM according to the input signals) is indicated.The advance angle becomes larger as the value increases.		
VIAS S/V-1	ON/OFF	The control condition of the VIAS control solenoid valve 1 (determined by ECM according to the in- put signals) is indicated. ON: VIAS control solenoid valve 1 is operating. OFF: VIAS control solenoid valve 1 is not operat- ing.		
VIAS S/V-2	ON/OFF	The control condition of the VIAS control solenoid valve 2 (determined by ECM according to the input signals) is indicated. ON: VIAS control solenoid valve 2 is operating. OFF: VIAS control solenoid valve 2 is not operating.		
AIR COND RLY	ON/OFF	The air conditioner relay control condition (determined by ECM according to the input signals) is indicated.		
ENGINE MOUNT	IDLE/TRVL	The control condition of the electronic controlled engine mount (determined by ECM according to the input signals) is indicated. IDLE: Engine speed is below 950 rpm TRVL: Engine speed is above 950 rpm		
FUEL PUMP RLY	ON/OFF	 Indicates the fuel pump relay control condition determined by ECM according to the input sig- nals. 		
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/MID/LOW/ OFF	The control condition of the cooling fan (determined by ECM according to the input signals) is indicated. HI: High speed operation MID: Middle speed operation LOW: Low speed operation OFF: Stop		

< SYSTEM DESCRIPTION >

Monitored item	Unit	Description	Remarks	Λ
HO2S2 HTR (B1)	ONVOEE	Indicates [ON/OFF] condition of heated oxygen Conservation determined by ECM according to		А
HO2S2 HTR (B2)	ON/OFF	sensor 2 heater determined by ECM according to the input signals.		50
VEHICLE SPEED	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from TCM is displayed.		EC
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.		С
ENG OIL TEMP	°C or °F	The engine oil temperature (determined by the signal voltage of the engine oil temperature sensor) is displayed.		D
TRVL AFTER MIL	km or mile	Distance traveled while MIL is activated.		Е
A/F S1 HTR(B1) A/F S1 HTR(B2)	%	 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. 		F
AC PRESS SEN	V	The signal voltage from the refrigerant pressure sensor is displayed.		G
VHCL SPEED SE	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from combination meter is dis- played.		Н
SET VHCL SPD	km/h or mph	The preset vehicle speed is displayed.		11
MAIN SW	ON/OFF	Indicates [ON/OFF] condition from MAIN switch signal.		1
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.		J
SET SW	ON/OFF	Indicates [ON/OFF] condition from SET/COAST switch signal.		K
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.		L
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.		M
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.		0
AT OD MONITOR	ON/OFF	Indicates [ON/OFF] condition of A/T O/D according to the input signal from the TCM.		Р
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.		

< SYSTEM DESCRIPTION >

[VQ35DE]

Monitored item	Unit	Description	Remarks
ALT DUTY SIG	ON/OFF	The control condition of the power generation voltage variable control (determined by ECM according to the input signals) is indicated. ON: Power generation voltage variable control is active. OFF: Power generation voltage variable control is inactive.	
A/F ADJ-B1		Indicates the correction of factor stored in ECM.	
A/F ADJ-B2	_	The factor is calculated from the difference be- tween the target air-fuel ratio stored in ECM and the air-fuel ratio calculated from A/F sensor 1 sig- nal.	
ALT DUTY	%	Indicates the duty ratio of the power generation command value. The ratio is calculated by ECM based on the battery current sensor signal.	
I/P PULLY SPD	rpm	Indicates the engine speed computed from the input speed sensor 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 INJEC- TION	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 TIM- ING	 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 BAL- ANCE	 Engine: After warming up, idle the engine. A/C switch OFF Selector lever: P or N Cut off each 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 "HI", "MID", "LOW" and "OFF" using CON- SULT-III. 	Cooling fan moves and stops.	Harness and connectors Cooling fan motor IPDM E/R
ENG COOLANT TEMP	 Engine: Return to the original trouble condition Change the engine coolant tem- perature using CONSULT-III. 	If trouble symptom disappears, see CHECK ITEM.	 Harness and connectors Engine coolant temperature sensor Fuel injector
FUEL PUMP RE- LAY	 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
VIAS SOL VALVE	Ignition switch: ON Turn solenoid valve "ON" and "OFF" using CONSULT-III and listen to operating sound.	Solenoid valve makes the operating sound.	Harness and connectors Solenoid valve

< SYSTEM DESCRIPTION >

[VQ35DE]

TEST ITEM	CONDITION	JUDGMENT	CHECK ITEM (REMEDY)
VIAS S/V-B2	Ignition switch: ON Turn solenoid valve "ON" and "OFF" using CONSULT-III and listen to operating sound.	Solenoid valve makes the operating sound.	Harness and connectors Solenoid valve
ENGINE MOUNTING	Ignition switch: ON Turn electronic controlled engine mount "IDLE" and "TRVL" with the CONSULT-III.	Electronic controlled engine mount makes the operating sound.	Harness and connectors Electronic controlled engine mount
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 CON- TROL/V	Ignition switch: ON (Engine stopped) Turn solenoid valve "ON" and "OFF" with the CONSULT-III and listen to operating sound.	Solenoid valve makes an operating sound.	Harness and connectors Solenoid valve
V/T ASSIGN AN- GLE	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
ALTERNATOR DUTY	Engine: Idle Change duty ratio using CON- SULT-III.	Battery voltage changes.	Harness and connectors IPDM E/R Alternator

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

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TROUBLE DIAGNOSIS - SPECIFICATION VALUE

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

DTC/CIRCUIT DIAGNOSIS

TROUBLE DIAGNOSIS - SPECIFICATION VALUE

Description INFOID:0000000006391919

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" in "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/B2 (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:0000000006391920

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 (0.983 1.043 bar, 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)
- · Transmission: Warmed-up
- After the engine is warmed up to normal operating temperature, drive vehicle until "ATF TEMP SEN" in "DATA MONITOR" mode of "CVT" system indicates less than 0.9 V.
- Electrical load: Not applied
- Rear window defogger switch, air conditioner switch, lighting switch are OFF. Steering wheel is straight ahead.
- Engine speed: Idle

>> GO TO 2.

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

With CONSULT-III

NOTE:

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

- 1. Perform "EC-331, "BASIC INSPECTION: Special Repair Requirement".
- Select "B/FUEL SCHDL", "A/F ALPHA-B1", "A/F ALPHA-B2" 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 measurement value within the SP value?

YES >> INSPECTION END

NO >> Go to EC-431, "Diagnosis Procedure".

TROUBLE DIAGNOSIS - SPECIFICATION VALUE

< DTC/CIRCUIT DIAGNOSIS >

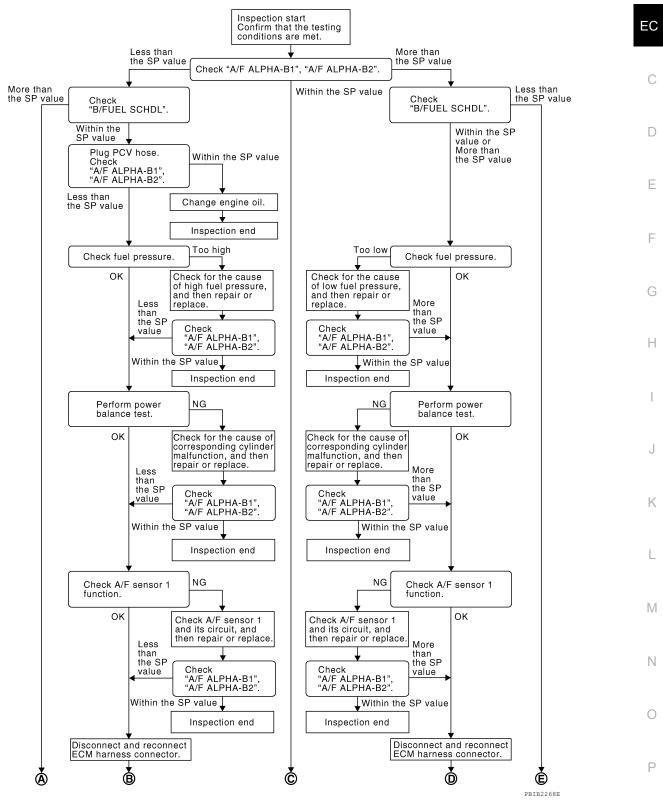
[VQ35DE]

Diagnosis Procedure

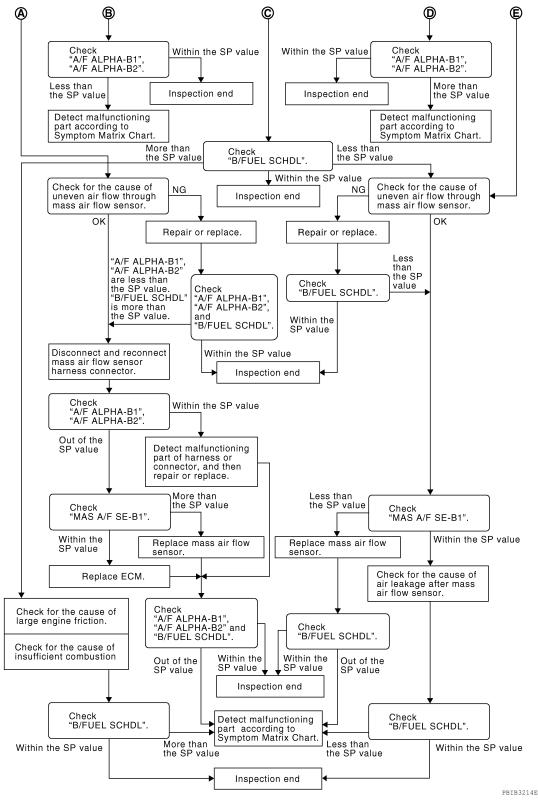
INFOID:0000000006391921

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OVERALL SEQUENCE



[VQ35DE]



DETAILED PROCEDURE

1.CHECK "A/F ALPHA-B1", "A/F ALPHA-B2"

(E)With CONSULT-III

- Start engine.
- 2. Confirm that the testing conditions are met. Refer to <a>EC-430, <a>"Component Function Check".
- Select "A/F ALPHA-B1", "A/F ALPHA-B2" in "SPEC" of "DATA MONITOR" mode, and make sure that the each indication is within the SP value.

TROUBLE DIAGNOSIS - SPECIFICATION VALUE < DTC/CIRCUIT DIAGNOSIS > [VQ35DE]	
NOTE:	
Check "A/F ALPHA-B1", "A/F ALPHA-B2" for approximately 1 minute because they may fluctuate. It is NG if the indication is out of the SP value even a little.	Α
Is the measurement value within the SP value?	
YES >> GO TO 17.	EC
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"	С
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?	D
YES >> GO TO 4.	
NO >> More than the SP value: GO TO 19.	_
3.check "B/Fuel schdl"	Е
Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.	F
Is the measurement value within the SP value?	1
YES >> GO TO 6.	
NO-1 >> More than the SP value: GO TO 6.	G
NO-2 >> Less than the SP value: GO TO 25.	
4.CHECK "A/F ALPHA-B1", "A/F ALPHA-B2"	
1. Stop the engine.	Н
2. Disconnect PCV hose, and then plug it.	
3. Start engine.	
4. Select "A/F ALPHA-B1", "A/F ALPHA-B2" 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 >> GO TO 5.	1
NO >> GO TO 6.	O
5. CHANGE ENGINE OIL	
	K
 Stop the engine. Change engine oil. Refer to <u>LU-26</u>, "Changing Engine Oil". 	
NOTE:	
This symptom may occur when a large amount of gasoline is mixed with engine oil because of driving	L
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 con-	
dition.	\mathbb{N}
>> INSPECTION END	
	N.1
6.CHECK FUEL PRESSURE	Ν
Check fuel pressure. (Refer to EC-701, "Inspection".)	
Is the inspection result normal?	0
YES >> GO TO 9.	
NO-1 >> Fuel pressure is too high: Replace "fuel filter and fuel pump assembly", refer to <u>FL-7. "Exploded</u>	

View", and then. GO TO 8.

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

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7. DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging.

Is the inspection result normal?

>> Replace "fuel filter and fuel pump assembly", refer to $\underline{\text{FL-7. "Exploded View"}}$, and then GO TO 8. >> Repair or replace and then GO TO 8. YES

NO

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< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

8.CHECK "A/F ALPHA-B1", "A/F ALPHA-B2"

- 1. Start engine.
- 2. Select "A/F ALPHA-B1", "A/F ALPHA-B2" 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 9.

9. PERFORM POWER BALANCE TEST

- 1. Perform "POWER BALANCE" in "ACTIVE TEST" mode.
- 2. 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 <u>EC-629, "Component Function Check"</u>.)
- Fuel injector and its circuit (Refer to EC-616, "Component Function Check".)
- · Intake air leakage
- Low compression pressure (Refer to EM-130, "On-Vehicle Service".)

Is the inspection result normal?

YES >> Replace fuel injector, refer to EM-148, "Removal and Installation", and then GO TO 11.

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

11.CHECK "A/F ALPHA-B1", "A/F ALPHA-B2"

- 1. Start engine.
- Select "A/F ALPHA-B1", "A/F ALPHA-B2" 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 12.

12. CHECK A/F SENSOR 1 FUNCTION

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

- For DTC P0130, P0150, refer to EC-471, "DTC Logic".
- For DTC P0131, P0151, refer to EC-475, "DTC Logic".
- For DTC P0132, P0152, refer to <u>EC-479</u>, "DTC Logic".

Is any DTC detected?

YES >> GO TO 15.

NO >> GO TO 13.

13. CHECK A/F SENSOR 1 CIRCUIT

Perform Diagnostic Procedure according to corresponding DTC.

>> GO TO 14.

14.CHECK "A/F ALPHA-B1", "A/F ALPHA-B2"

- Start engine.
- Select "Ā/F ALPHA-B1", "A/F ALPHA-B2" 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

1. Stop the engine.

[VQ35DE]

< DTC/CIRCUIT DIAGNOSIS > 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", "A/F ALPHA-B2" EC Start engine. Select "A/F ALPHA-B1", "A/F ALPHA-B2" 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 >> Detect malfunctioning part according to <a>EC-689, "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? 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 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? YFS >> GO TO 21. NO >> Repair or replace malfunctioning part, and then GO TO 20. 20.CHECK "A/F ALPHA-B1", "A/F ALPHA-B2", AND "B/FUEL SCHDL" N Select "A/F ALPHA-B1", "A/F ALPHA-B2", and "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the each indication is within the SP value. 0 Is the measurement value within the SP value? YES >> INSPECTION END

NO >> "B/FUEL SCHDL" is more, "A/F ALPHA-B1", "A/F ALPHA-B2" are less than the SP value: GO TO

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.

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

$\overline{22}$.check "A/F ALPHA-B1", "A/F ALPHA-B2"

- 1. Start engine.
- Select "A/F ALPHA-B1", "A/F ALPHA-B2" 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 >> Detect malfunctioning part of mass air flow sensor circuit and repair it. Refer to <u>EC-457, "Diagnosis Procedure"</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, refer to <u>EM-131, "Removal and Installation"</u>, and then GO TO 29.

24.REPLACE ECM

- Replace ECM.
- Refer to <u>EC-334</u>, "<u>ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT</u>: 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, refer to <u>EM-131, "Removal and Installation"</u>, 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

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

- 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.

 $29.\mathtt{CHECK}$ "A/F ALPHA-B1", "A/F ALPHA-B2", AND "B/FUEL SCHDL"

Select "A/F ALPHA-B1", "A/F ALPHA-B2", 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 >> Detect malfunctioning part according to <a>EC-689, "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-689, "Symptom Table". EC

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POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000006391922

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK ECM GROUND CIRCUIT FOR OPEN AND SHORT

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

ECM		Ground	Continuity	
Connector	Terminal	Giodila	Continuity	
F14	12	Ground		
Г1 4	16		Existed	
	107			
E10	108			
E10 -	111			
	112			

3. Also check harness for 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 E11, F2
- · Harness for open or short between ECM and ground

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

4. CHECK ECM POWER SUPPLY CIRCUIT-I

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

ECM			
Connector	+	_	Voltage
Connector	Terminal	Terminal	
E10	93	112	Battery voltage

Is the inspection result normal?

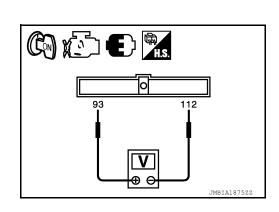
YES >> GO TO 6.

NO >> GO TO 5.

5. DETECT MALFUNCTIONING PART

Check the following.

- IPDM E/R connector E18
- 10 A fuse (No. 35)
- Harness for open or short between ECM and IPDM E/R



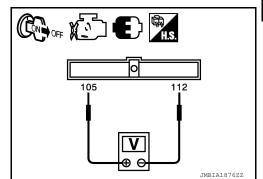
[VQ35DE]

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

6. CHECK ECM POWER SUPPLY CIRCUIT-II

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

ECM			
Connector	+	-	Voltage
Connector	Terminal Te		
E10	105	112	After turning ignition switch OFF, battery voltage will exist for a few seconds, then drop to approximately 0 V.



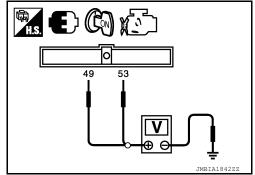
Is the inspection result normal?

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

7 .CHECK ECM POWER SUPPLY CIRCUIT-III

- Turn ignition switch ON.
- 2. Check the voltage between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Voltage
Connector	Terminal	Ground	voltage
F10	49	Ground	Rattery voltage
FIU	53	Ground	Battery voltage



Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".

8. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

9. CHECK ECM POWER SUPPLY CIRCUIT-IV

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

ECM				
	+	-	_	Voltage
Connector	Terminal	Connector	Terminal	
F14	24	E10	112	Battery voltage

24 112 V

Is the inspection result normal?

YES >> GO TO 12. NO >> GO TO 10.

10. CHECK ECM POWER SUPPLY CIRCUIT-V

- 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.

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< DTC/CIRCUIT DIAGNOSIS >

ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F14	24	F10	69	Existed

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

Is the inspection result normal?

YES >> GO TO 11.

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

11.CHECK 15 A FUSE

- 1. Disconnect 15 A fuse (No. 42) from IPDM E/R.
- 2. Check 15 A fuse.

Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace 15 A fuse.

12. CHECK ECM POWER SUPPLY CIRCUIT-VI

- 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.

ECM		IPDN	/I E/R	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E10	105	E18	10	Existed

^{4.} Also check harness for short to ground and short to power.

Is the inspection result normal?

YES >> GO TO 13.

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

13. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".

NO >> Repair or replace harness or connectors.

U1000, U1001 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

U1000, U1001 CAN COMM CIRCUIT

Description INFOID:0000000006391923

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.	shorted)

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-441, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

Go to LAN-15, "Trouble Diagnosis Flow Chart".

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[VQ35DE]

P0011, P0021 IVT CONTROL

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0011 or P0021 is displayed with DTC P0075, P0081, first perform the trouble diagnosis for <u>EC-453</u>, "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0011	intake valve timing control performance (bank 1)	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
P0021	Intake valve timing control performance (bank 2)		 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. INSPECTION START

Will CONSULT-III be used?

Will CONSULT-III be used?

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:

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

>> GO TO 3.

3. 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.
- 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	1,200 - 4,000 rpm
COOLAN TEMP/S	More than 60°C (140°F)
B/FUEL SCHDL	More than 7.3 msec
Selector 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.

Is 1st trip DTC detected?

YES >> Go to EC-444, "Diagnosis Procedure"

NO >> GO TO 4.

P0011, P0021 IVT CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

4. PERFORM DTC CONFIRMATION PROCEDURE-II

- 1. Select "DATA MONITOR" mode with CONSULT-III.
- 2. Maintain the following conditions for at least 20 consecutive seconds.

ENG SPEED	1,400 - 3,175 rpm (A constant rotation is maintained.)
COOLAN TEMP/S	More than 70°C (158°F)
Selector 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.

3. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-444, "Diagnosis Procedure".

NO >> INSPECTION END

5. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-443, "Component Function Check".

NOTE:

Use component function check to check the overall function of intake valve timing control system. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

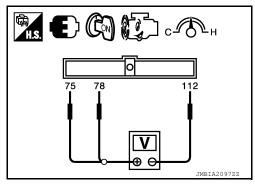
NO >> Go to EC-444, "Diagnosis Procedure".

Component Function Check

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 let it idle.
- 4. Check the voltage between ECM harness connector and ground under the following condition.



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		ECM				
DTC	TC Connector Terminal Connector Terminal		Condition	Voltage signal		
					At idle	BATTERY VOLTAGE (11 - 14 V)
P0011	. F13	78 [IVT control solenoid valve (bank 1)]	112	When revving engine up to 2,000 rpm	7 - 12 V★ 5V/div JMBIA0038GB	
	1 13		E10	112	At idle	BATTERY VOLTAGE (11 - 14 V)
P0021		75 [IVT control solenoid valve (bank 2)]			When revving engine up to 2,000 rpm	7 - 12 V★ 5V/div JMBIA0038GB

^{★:} Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-444, "Diagnosis Procedure".

Diagnosis Procedure

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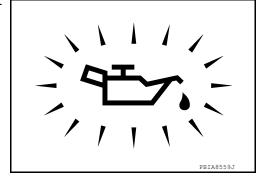
1. CHECK OIL PRESSURE WARNING LAMP

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

Is oil pressure warming lamp illuminated?

YES >> Go to LU-25, "Inspection".

NO >> GO TO 2.



$2.\mathsf{CHECK}$ INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Refer to EC-445, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace malfunctioning intake valve timing control solenoid valve. Refer to EM-159, "Removal and Installation".

$3. {\tt CHECK\ CRANKSHAFT\ POSITION\ SENSOR\ (POS)}$

Refer to EC-503, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.

P0011, P0021 IVT CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

NO >> Replace crankshaft position sensor (POS). Refer to EM-141, "Exploded View".

f 4.CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-506, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace malfunctioning camshaft position sensor (PHASE). Refer to EM-153, "Exploded View".

5. CHECK CAMSHAFT (INTAKE)

Check the following.

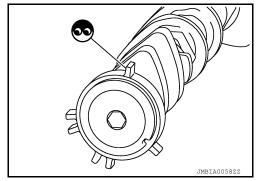
- · Accumulation of debris to the signal plate of camshaft rear end
- Chipping signal plate of camshaft rear end

Is the inspection result normal?

YES >> GO TO 6.

NO >> Remove

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft. Refer to <u>EM-180</u>. "Removal and Installation".



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-170, "Installation".

NO >> GO TO 7.

7. CHECK LUBRICATION CIRCUIT

Refer to EM-188, "Inspection after Installation".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Clean lubrication line.

8. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391929

${f 1}.$ CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- 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	7.1 - 7.7Ω [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 malfunctioning intake valve timing control solenoid valve. Refer to EM-159, "Removal and Installation".

2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

1. Remove intake valve timing control solenoid valve. Refer to EM-159, "Removal and Installation".

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P0011, P0021 IVT CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

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:

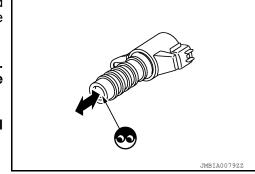
Never apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

NOTE:

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

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> Replace malfunctioning intake valve timing control solenoid valve. Refer to <u>EM-159</u>, "Removal and Installation".



P0031, P0032, P0051, P0052 A/F SENSOR 1 HEATER

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

P0031, P0032, P0051, P0052 A/F SENSOR 1 HEATER

SYSTEM DESCRIPTION

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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	ricator control	ricater

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 (bank 1) 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 (bank 1) 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
P0051	Air fuel ratio (A/F) sensor 1 heater (bank 2) 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
P0052	Air fuel ratio (A/F) sensor 1 heater (bank 2) 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 between 11 V 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-447, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391932

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-38, "Work Flow".

Revision: June 2012 EC-447 2011 Altima GCC

P0031, P0032, P0051, P0052 A/F SENSOR 1 HEATER

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Is the inspection result normal?

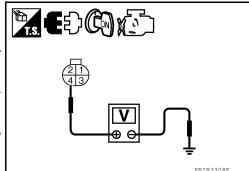
YES >> GO TO 2.

NO >> Repair or replace ground connection.

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

- 1. Disconnect air fuel ratio (A/F) sensor 1 harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between A/F sensor 1 harness connector and ground.

DTC		A/F sensor 1	Ground	Voltage (V)	
ыс	Bank	Connector	Terminal	Ground	voitage (v)
P0031, P0032	1	F12	4	Ground	Battery voltage
P0051, P0052	2	F61	4	Giodila	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 F10
- 15 A fuse (No. 37)
- · 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.
- Check harness continuity between A/F sensor 1 harness connector and ECM harness connector.

DTC	A/F sensor 1			E	Bank	
ы	Bank	Connector	Terminal	Connector	Terminal	Dank
P0031, P0032	1	F12	3	F14	4	Existed
P0051, P0052	2	F61	3	1 14	8	LAISIEU

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.

CHECK A/F SENSOR 1 HEATER

Refer to EC-449, "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 malfunctioning air fuel ratio (A/F) sensor 1. Refer to <u>EM-138</u>, "Removal and Installation". **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 tool [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

P0031, P0032, P0051, P0052 A/F SENSOR 1 HEATER

< DTC/CIRCUIT DIAGNOSIS >

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>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Perform GI-42, "Intermittent Incident".

>> Repair or replace.

Component Inspection

INFOID:0000000006391933

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

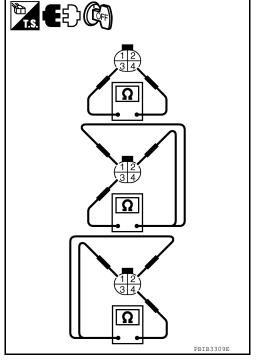
Check resistance between A/F sensor terminals as follows.

Terminal No.	Resistance
3 and 4	1.8 - 2.44 Ω at 25°C (77°F)
3 and 1, 2	$\infty \Omega$
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 malfunctioning air fuel ratio (A/F) sensor 1. Refer to <u>EM-138, "Removal and Installation"</u>. **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 tool [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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Revision: June 2012 EC-449 2011 Altima GCC

[VQ35DE]

P0037, P0038, P0057, P0058 HO2S2 HEATER

Description INFOID:000000006391934

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	Heated oxygen sensor 2 heater
Above 3,600 rpm	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 (bank 1) 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 (bank 1) 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
P0057	Heated oxygen sensor 2 heater (bank 2) 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
P0058	Heated oxygen sensor 2 heater (bank 2) 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 between 11 V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.

P0037, P0038, P0057, P0058 HO2S2 HEATER

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

- 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.
- Check 1st trip DTC.

Is 1st trip DTC detected?

>> Go to EC-451, "Diagnosis Procedure". YES

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391936

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-38, "Work Flow".

Is the inspection result normal?

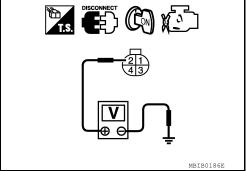
YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK HO2S2 POWER SUPPLY CIRCUIT

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

DTC		HO2S2	Ground	Voltage (V)	
ы	Bank	Connector	Terminal	Giodila	voltage (v)
P0037, P0038	1	F62	2	Ground	Battery voltage
P0057, P0058	2	F56	2	Giodila	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 connector F10
- 15 A fuse (No. 37)
- Harness for open or short between heated oxygen sensor 2 and fuse

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

4. CHECK HO2S2 OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

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

DTC	HO2S2			E	Continuity	
ыс	Bank	Connector	Terminal	Connector	Terminal	Continuity
P0037, P0038	1	F62	3	F14	13	Existed
P0057, P0058	2	F56	3	F 14	17	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, short to ground or short to power in harness or connectors.

5.CHECK HEATED OXYGEN SENSOR 2 HEATER

Refer to EC-452, "Component Inspection".

EC-451 Revision: June 2012 2011 Altima GCC

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P0037, P0038, P0057, P0058 HO2S2 HEATER

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

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

6.REPLACE HEATED OXYGEN SENSOR 2

Replace malfunctioning heated oxygen sensor 2. Refer to EM-138, "Removal and Installation".

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 [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-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391937

[VQ35DE]

1. CHECK HEATED OXYGEN SENSOR 2 HEATER

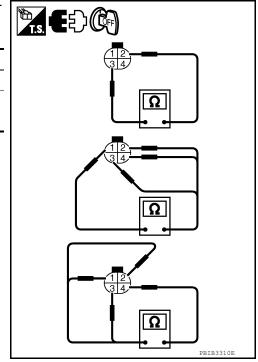
Check resistance between heated oxygen sensor 2 terminals as follows.

Terminal No.	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 2

Replace malfunctioning heated oxygen sensor 2. Refer to EM-138, "Removal and Installation".

- 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 [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

[VQ35DE]

INFOID:0000000006391939

P0075, P0081 IVT CONTROL SOLENOID VALVE

Description INFOID:0000000006391938

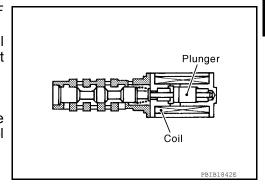
Intake valve timing control solenoid valve is activated by ON/OFF pulse duty (ratio) signals from the ECM.

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 so- lenoid valve (bank 1) circuit	An improper voltage is sent to the ECM	Harness or connectors (Intake valve timing control solenoid valve)
P0081	Intake valve timing control so- lenoid valve (bank 2) circuit	through 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 TO 2.

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-453, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

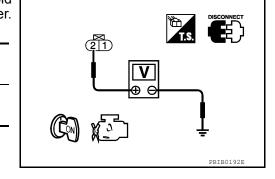
1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- 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 with CONSULT-III or tester.

DTC	IVT control solenoid valve			Ground	Voltage (V)	
DIC	Bank	Connector	Terminal	Giodila	voitage (v)	
P0075	1	F67	2	Ground	Battery voltage	
P0081	2	F66	2	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 2.



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Revision: June 2012 EC-453 2011 Altima GCC

P0075, P0081 IVT CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

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

2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

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

DTC	IVT control solenoid valve			ECM		Continuity
ыс	Bank	Connector	Terminal	Connector	Terminal	Continuity
P0075	1	F67	1	F13	78	Existed
P0081	2	F66	1	1 13	75	LAISIEU

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

Is the inspection result normal?

YES >> GO TO 3.

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

3.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Refer to EC-454, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace malfunctioning intake valve timing control solenoid valve. Refer to EM-159, "Removal and Installation".

4. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391941

1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- 1. Disconnect intake valve timing control solenoid valve harness connector.
- 2. Check resistance between intake valve timing control solenoid valve terminals as follows.

Terminals	Resistance
1 and 2	7.1 - 7.7Ω [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 malfunctioning intake valve timing control solenoid valve. Refer to EM-159, "Removal and Installation".

2. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

1. Remove intake valve timing control solenoid valve. Refer to EM-159, "Removal and Installation".

P0075, P0081 IVT CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

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:

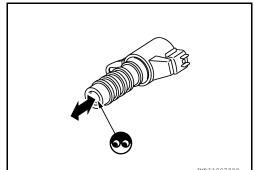
Never apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

NOTE:

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

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> Replace malfunctioning intake valve timing control solenoid valve. Refer to EM-159, "Removal and Installation".



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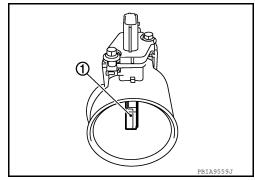
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Description INFOID:0000000006391942

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 greater air flow, 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:0000000006391943

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-457, "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-457, "Diagnosis Procedure".

NO >> GO TO 4.

4.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0103-II

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

Is DTC detected?

YES >> Go to EC-457, "Diagnosis Procedure".

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< DTC/CIRCUIT DIAGNOSIS >

>> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391944

[VQ35DE]

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

NO

- 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

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-38, "Work Flow".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace ground connection.

f 4.CHECK MAF SENSOR POWER SUPPLY CIRCUIT

- 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 (V)	
Connector			voltage (v)	
F31	2	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E11, F2
- 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, 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 sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F31	3	F13	56	Existed

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EC-457 Revision: June 2012

DISCONNECT ALL

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< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

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, short to ground or short to power in harness or connectors.

7.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
F31	4	F13	58	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, short to ground or short to power in harness or connectors.

8. CHECK MASS AIR FLOW SENSOR

Refer to EC-458, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace mass air flow sensor. Refer to EM-131, "Removal and Installation".

9. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391945

1. CHECK MASS AIR FLOW SENSOR-I

(P)With CONSULT-III

- Reconnect all harness connectors disconnected.
- 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 under the following conditions.

Monitor item	Condition	MAS A/F SE-B1 (V)
	Ignition switch ON (Engine stopped.)	Approx. 0.4
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2
MAS AL SE-BI	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.6 - 1.9
	Idle to approximately 4,000 rpm	0.9 - 1.2 to Approx. 2.4*

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

♥Without CONSULT-III

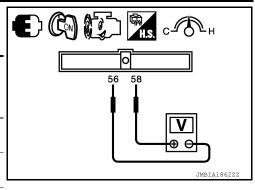
- 1. Reconnect all harness connectors disconnected.
- Start engine and warm it up to normal operating temperature.

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the voltage between ECM harness connector terminals under the following conditions.

	ECM			
Con-	Con- + -		Condition	Voltage (V)
nector	Terminal	Terminal		
			Ignition switch ON (Engine stopped.)	Approx. 0.4
F13 (M/sen	58 (MAF	56	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2
			2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.6 - 1.9
			Idle to approximately 4,000 rpm	0.9 - 1.2 to Approx. 2.4*



Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

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

Check for the cause of uneven air flow via the 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

(II) With CONSULT-III

- 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 under the following conditions.

Monitor item	Condition	MAS A/F SE-B1 (V)
	Ignition switch ON (Engine stopped.)	Approx. 0.4
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2
IVIAS A/F SE-B1	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.6 - 1.9
	Idle to approximately 4,000 rpm	0.9 - 1.2 to Approx. 2.4*

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

Without CONSULT-III

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

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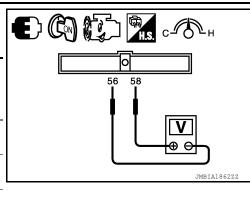
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^{*:} Check for linear voltage rise in response to engine being increased to approximately 4,000 rpm.

< DTC/CIRCUIT DIAGNOSIS >

3. Check the voltage between ECM harness connector terminals under the following conditions.

	ECM			
Con-	+	_	Condition	Voltage (V)
nector	Terminal	Terminal		
		58 (MAF (Second	Ignition switch ON (Engine stopped.)	Approx. 0.4
F13	56		Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2
F13		sensor (ground)	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.6 - 1.9
			Idle to approximately 4,000 rpm	0.9 - 1.2 to Approx. 2.4*



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 under the following conditions.

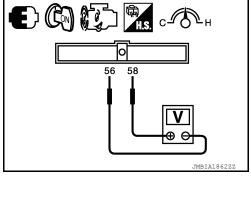
Monitor item	Condition	MAS A/F SE-B1 (V)
	Ignition switch ON (Engine stopped.)	Approx. 0.4
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2
MAS AN SE-BT	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.6 - 1.9
	Idle to approximately 4,000 rpm	0.9 - 1.2 to Approx. 2.4*

^{*:} Check for linear voltage rise in response to engine being increased to approximately 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.
- 4. Check the voltage between ECM harness connector terminals under the following conditions.

	ECM			
Con-	+	_	Condition	Voltage (V)
nector	Terminal	Terminal		
	(MAF sensor (Se		Ignition switch ON (Engine stopped.)	Approx. 0.4
F13		(MAF 56	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2
гіз		around)	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.6 - 1.9
			Idle to approximately 4,000 rpm	0.9 - 1.2 to Approx. 2.4*



Is the inspection result normal?

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

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

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

YES >> INSPECTION END

NO >> Clean or replace mass air flow sensor. Refer to EM-131, "Removal and Installation".

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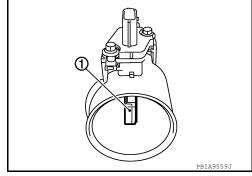
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P0112, P0113 IAT SENSOR

Description INFOID:0000000006391946

The intake air temperature sensor is built-into the mass air flow sensor (1). The sensor detects intake air temperature and transmits a signal to the ECM.

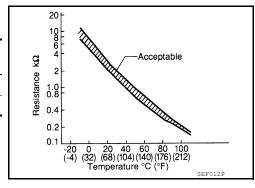
The temperature sensing unit uses a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.



<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 terminal 50 (Intake air temperature sensor) and 56 (Sensor ground).



DTC Logic

INFOID:0000000006391947

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0112	Intake air tempera- ture 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 tempera- ture 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-463, "Diagnosis Procedure".

NO >> INSPECTION END

[VQ35DE]

Diagnosis Procedure

INFOID:0000000006391948

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-38, "Work Flow".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK INTAKE AIR TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

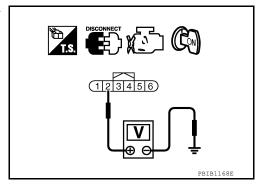
- Disconnect mass air flow sensor (with intake air temperature sensor) harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between mass air flow sensor harness connector and ground.

MAF	sensor	Ground	Voltage (V)	
Connector	Terminal	Giodila	voltage (v)	
F31	5	Ground	Approx. 5V	

Is the inspection result normal?

YES >> GO TO 3.

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



3.check intake air temperature sensor ground circuit for open and short

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between mass air flow sensor harness connector and ECM harness connector.

MAF sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F31	6	F13	56	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, short to ground or short to power in harness or connectors.

4. CHECK INTAKE AIR TEMPERATURE SENSOR

Refer to EC-463, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO

>> Replace mass air flow sensor (with intake air temperature sensor). Refer to EM-131, "Removal and Installation".

CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK INTAKE AIR TEMPERATURE SENSOR

- Turn ignition switch OFF.
- Disconnect mass air flow sensor harness connector.

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INFOID:0000000006391949

P0112, P0113 IAT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check resistance between mass air flow sensor terminals as follows.

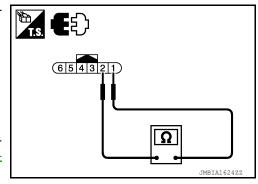
Terminal	Condition		Resistance ($k\Omega$)
1 and 2	Temperature [°C (°F)]	25 (77)	1.800 - 2.200

<u>Is the inspection result normal?</u>

YES >> INSPECTION END

NO

>> Replace mass air flow sensor (with intake air temperature sensor). Refer to EM-131, "Removal and Installa-



[VQ35DE]

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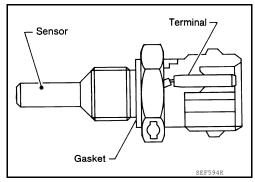
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INFOID:0000000006391951

P0117, P0118 ECT SENSOR

Description INFOID:0000000006391950

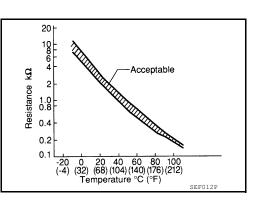
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The 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	2.1 - 2.9
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 terminal 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 tem- perature sensor cir- cuit 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 tem- perature sensor cir- cuit high input	An excessively high voltage from the sensor is sent to ECM.	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.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

YES >> Go to EC-466, "Diagnosis Procedure".

NO >> INSPECTION END Ν

EC-465 Revision: June 2012 2011 Altima GCC

< DTC/CIRCUIT DIAGNOSIS >

Diagnosis Procedure

INFOID:0000000006391952

IVQ35DE

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E9. Refer to Ground Inspection in GI-38, "Work Flow".

Is the inspection result normal?

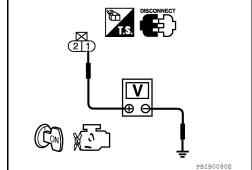
YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK ECT SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect engine coolant temperature (ECT) sensor harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between ECT sensor harness connector and ground.

ECT s	sensor	Ground	Voltage (V)	
Connector	Terminal	Ground	voltage (v)	
F11	1	Ground	Approx. 5 V	



Is the inspection result normal?

YES >> GO TO 3.

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

${f 3.}$ CHECK ECT SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 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	Continuity	
Connector	Terminal	Connector Terminal		Continuity
F11	2	F13	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, short to ground or short to power in harness or connectors.

4. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-466, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace engine coolant temperature sensor. Refer to <u>CO-49, "Exploded View"</u>.

CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391953

1. CHECK ENGINE COOLANT TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- Disconnect engine coolant temperature sensor harness connector.
- Remove engine coolant temperature sensor. Refer to <u>CO-49, "Exploded View"</u>.

Revision: June 2012 EC-466 2011 Altima GCC

P0117, P0118 ECT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

4. Check resistance between engine coolant temperature sensor terminals as follows.

Terminals	Condition		Resistance (kΩ)
1 and 2	Temperature [°C (°F)]	20 (68)	2.1 - 2.9
		50 (122)	0.68 - 1.00
		90 (194)	0.236 - 0.260

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor. Refer to CO-49, "Exploded View".

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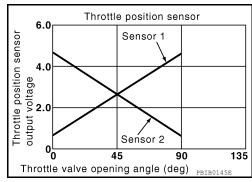
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P0122, P0123 TP SENSOR

Description INFOID.000000006391954

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. The ECM judges the current opening angle of the throttle valve from these signals and controls the throttle valve opening angle in response to driving condition via the throttle control motor.



DTC Logic

INFOID:0000000006391955

DTC DETECTION LOGIC

NOTE:

If DTC P0122 or P0123 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to <u>EC-521</u>, "<u>DTC Logic"</u>.

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 8 V 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-468, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391956

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-38, "Work Flow".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY CIRCUIT

- 1. Disconnect electric throttle control actuator harness connector.
- Turn ignition switch ON.

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the voltage between electric throttle control actuator harness connector and ground.

Electric throttle	control actuator	Ground	Voltage (V)
Connector	Terminal	- Ground Vollage (V	
F57	1	Ground	5 V

65 4 3 2 1 PRIB3484E

Is the inspection result normal?

YES >> GO TO 3.

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

$3. \mathrm{check}$ throttle position sensor 2 ground circuit for open and short

- 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		E	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F57	4	F13	36	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, 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		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F51	3	F13	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, short to ground or short to power in harness or connectors.

${f 5}.$ CHECK THROTTLE POSITION SENSOR

Refer to EC-470, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

Revision: June 2012

6.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace electric throttle control actuator. Refer to <u>EM-132</u>, "<u>Removal and Installation</u>".
- 2. Refer to EC-470, "Special Repair Requirement".

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

EC-469 2011 Altima GCC

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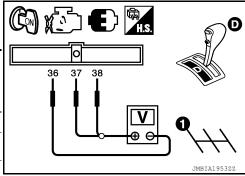
Component Inspection

INFOID:0000000006391957

1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-470, "Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set selector lever position to D position.
- 6. Check the voltage between ECM harness connector terminals under the following conditions.

ECM						
Con-	+	-	C	ondition	Voltage	
nector	Terminal	Terminal				
	37	— 36 (Sensor ground) Acce		Fully released	More than 0.36 V	
F13	(TP sensor 1 signal)		(Sensor	Accelera-	Fully depressed	Less than 4.75 V
1 13	38			•	tor pedal	Fully released
	(TP sensor 2 signal)			Fully depressed	More than 0.36 V	



Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator. Refer to EM-132, "Removal and Installation".
- Go to EC-470, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000006391958

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-336, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

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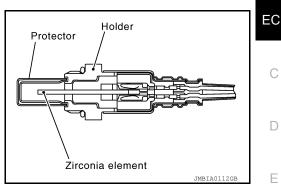
P0130, P0150 A/F SENSOR 1

Description INFOID:0000000006391959

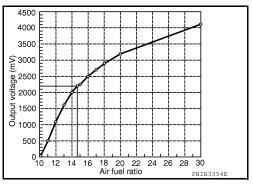
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

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 approximately 800°C (1,472°F).



DTC Logic INFOID:0000000006391960

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 (bank 1) circuit	The A/F signal computed by ECM from the A/F	Harness or connectors (The A/F sensor 1 circuit is open
P0150	Air fuel ratio (A/F) sensor 1 (bank 2) circuit	sensor 1 signal is constantly approx. 2.2V.	or shorted.) • A/F sensor 1

DTC CONFIRMATION PROCEDURE

1. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-471, "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

>> Go to EC-472, "Diagnosis Procedure". NO

Component Function Check

1. INSPECTION START

Will CONSULT-III be used?

Will CONSULT-III be used?

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

EC-471 Revision: June 2012 2011 Altima GCC

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< DTC/CIRCUIT DIAGNOSIS >

$\overline{2}$.CHECK AIR FUEL RATIO (A/F) SENSOR 1 FUNCTION

(P)With CONSULT-III

Start engine and warm it up to normal operating temperature.

- 2. Select "A/F SEN1 (B1)" or "A/F SEN1 (B2)" in "DATA MONITOR" mode with CONSULT-III.
- Check "A/F SEN1 (B1)" or "A/F SEN1 (B2)" indication.

Does the indication fluctuates around 2.2V?

YES >> GO TO 3.

NO >> Go to EC-472, "Diagnosis Procedure".

3.perform component function check

- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and warm it up to normal operating temperature.
- 3. Drive the vehicle at a speed of 80 km/h (50 MPH) for a few minutes in the suitable gear position.
- 4. Shift the selector lever to the D position, then release the accelerator pedal fully until the vehicle speed decreases to 50 km/h (31 MPH).

CAUTION:

Always drive vehicle at a safe speed.

NOTÉ:

Never apply brake during releasing the accelerator pedal.

- 5. Repeat steps 3 to 4 for five times.
- 6. Stop the vehicle and turn ignition switch OFF.
- 7. Wait at least 10 seconds and restart engine.
- 8. Repeat steps 3 to 4 for five times.
- 9. Stop the vehicle.
- 10. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-472, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391962

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E9. Refer to Ground Inspection in GI-38, "Work Flow".

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.
- 2. Turn ignition switch ON.
- Check the voltage between A/F sensor 1 harness connector and ground.

DTC	A/F sensor 1			Ground	Voltage
ыс	Bank	Connector	Terminal	Oround	voltage
P0130	1	F12	4	Ground	Battery voltage
P0150	2	F61	4	Giodila	Dattery 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 F10
- 15 A fuse (No. 37)

P0130, P0150 A/F SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

- 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

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

DTC	A/F sensor 1			ECM		Continuity	
DIC	Bank	Connector	Terminal	Connector	Terminal	Continuity	
P0130	1 F12	F12	1		45		
F 0 1 3 0		2	F12	1 12	1 12	F13	49
P0150	2	F61	1	FIS	53	Existed	
F0150		F01	2		57		

Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

DTC		A/F sensor 1		Ground	Continuity
DIC	Bank	Connector	Terminal	Giodila	Continuity
P0130	1	F12	1		
1 0130	'	1 12	2	Ground	Not existed
P0150	2	F61	1	Giodila	NOI EXISIEU
F0130	2	101	2		

DTC	ECM		Ground	Continuity
DIC	Connector	Terminal	Oround	Continuity
P0130		45		
P0130	F13	49	Ground	Not existed
P0150		53		
		57		

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

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

5. CHECK INTERMITTENT INCIDENT

Perform GI-42, "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 malfunctioning air fuel ratio (A/F) sensor 1. Refer to <u>EM-138, "Removal and Installation"</u>. **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 tool [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

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>> INSPECTION END

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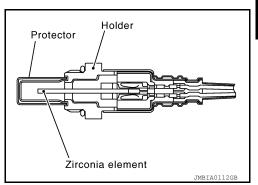
P0131, P0151 A/F SENSOR 1

Description

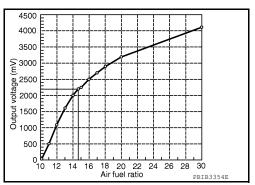
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement 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 approximately 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 (bank 1) circuit low voltage	The A/F signal computed by ECM from the A/	Harness or connectors (The A/F sensor 1 circuit is open or
P0151	Air fuel ratio (A/F) sensor 1 (bank 2) circuit low voltage	F sensor 1 signal is constantly approx. 0V.	shorted.) • A/F sensor 1

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:

Before performing the following procedure, confirm that battery voltage is more than 10.5 V at idle.

>> GO TO 3.

3.CHECK A/F SENSOR FUNCTION

(P)With CONSULT-III

Revision: June 2012 EC-475 2011 Altima GCC

< DTC/CIRCUIT DIAGNOSIS >

- Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" or "A/F SEN1 (B2)" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "A/F SEN1 (B1)" or "A/F SEN1 (B2)" indication.

Is the indication constantly approx. 0 V?

YES >> Go to EC-477, "Diagnosis Procedure".

NO >> GO TO 4.

4. PERFORM DTC CONFIRMATION PROCEDURE

- 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.

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
Selector 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 1.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-477, "Diagnosis Procedure".

NO >> INSPECTION END

${f 5}$.PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-476, "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 <u>EC-477</u>, "<u>Diagnosis Procedure</u>".

Component Function Check

INFOID:0000000006391965

1. PERFORM COMPONENT FUNCTION CHECK

®Without CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. 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.

4. Maintain the following conditions for about 20 consecutive seconds.

Engine speed	1,000 - 3,200 rpm
Vehicle speed	More than 40 km/h (25 MPH)
Selector lever	Suitable position
Driving condition	Driving at level road (To avoid overloading will help maintain the driving conditions required for this test.)

NOTE:

Keep the accelerator pedal as steady as possible during the cruising.

P0131, P0151 A/F SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

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- If this procedure is not completed within 1 minute after restarting engine at step 2, return to step 2.
- Repeat steps 2 to 4.
- 6. Check 1st trip DTC.

Is 1st trip DTC detected?

>> Go to EC-477, "Diagnosis Procedure". YES

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391966

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

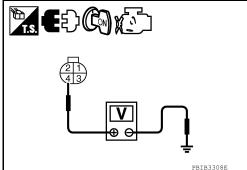
YES >> GO TO 2.

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.

DTC	A/F sensor 1			Ground	Voltage
ыс	Bank	Connector	Terminal	Giodila	voltage
P0131	1	F12	4	Ground	Battery voltage
P0151	2	F61	4	Giodila	Dattery 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 F10
- 15 A fuse (No. 37)
- 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.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

DTC	A/F sensor 1			ECM		Continuity
DIC	Bank	Connector	Terminal	Connector	Terminal	Continuity
P0131	1	F12	1		45	
F0131	'	1 112	2	F13	49	Existed
P0151	2	F61	1	1 13	53	LXISIGU
F0131	2	101	2		57	

Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

DTC		A/F sensor 1			Continuity
DIC	Bank	Connector	Terminal	Ground	Continuity
P0131	1	F12	1		
F0131	1	FIZ	2	Ground	Not existed
D0151	2	F64	1	Ground	NOI EXISIEU
P0151	2	F61	2		

DTC	E	CM	Ground	Continuity	
DIC	Connector	Terminal	Ground	Continuity	
P0131		45			
F0131	F13	49	Ground	Not existed	
P0151	FIS	53	Giouna		
F0151		57			

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

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

5. CHECK INTERMITTENT INCIDENT

Perform GI-42, "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 malfunctioning air fuel ratio (A/F) sensor 1. Refer to <u>EM-138</u>, "Removal and Installation". **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 tool [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

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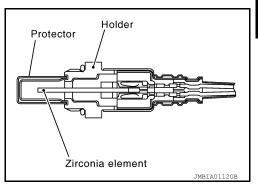
P0132, P0152 A/F SENSOR 1

Description INFOID:0000000006391967

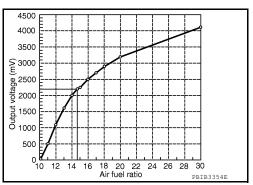
The air fuel ratio (A/F) sensor 1 is a planar one-cell limit current sensor. The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

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 approximately 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 (bank 1) circuit high voltage	The A/F signal computed by ECM from the A/F	Harness or connectors (The A/F sensor 1 circuit is open or
P0152	Air fuel ratio (A/F) sensor 1 (bank 2) circuit high voltage	sensor 1 signal is constantly approx. 5V.	shorted.) • A/F sensor 1

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:

Before performing the following procedure, confirm that battery voltage is more than 10.5 V at idle.

>> GO TO 3.

3. CHECK A/F SENSOR FUNCTION

(P)With CONSULT-III

Revision: June 2012 EC-479 2011 Altima GCC

[VQ35DE]

< DTC/CIRCUIT DIAGNOSIS >

- Start engine and warm it up to normal operating temperature.
- 2. Select "A/F SEN1 (B1)" or "A/F SEN1 (B2)" in "DATA MONITOR" mode with CONSULT-III.
- 3. Check "A/F SEN1 (B1)" or "A/F SEN1 (B2)" indication.

Is the indication constantly approx. 5V?

YES >> Go to EC-481, "Diagnosis Procedure".

NO >> GO TO 4.

f 4.PERFORM DTC CONFIRMATION PROCEDURE

- 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
Selector 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 1.
- Check 1st trip DTC.

Is 1st trip DTC is detected?

YES >> Go to EC-481, "Diagnosis Procedure".

NO >> INSPECTION END

PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-480, "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-481, "Diagnosis Procedure".

Component Function Check

NFOID:000000000639196

1. PERFORM COMPONENT FUNCTION CHECK

®Without CONSULT-III

- 1. Start engine and warm it up to normal operating temperature.
- 2. 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.

4. Maintain the following conditions for about 20 consecutive seconds.

Engine speed	1,000 - 3,200 rpm
Vehicle speed	More than 40 km/h (25 MPH)
Selector lever	Suitable position
Driving condition	Driving at level road (To avoid overloading will help maintain the driving conditions required for this test.)

NOTE:

Keep the accelerator pedal as steady as possible during the cruising.

P0132, P0152 A/F SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

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- If this procedure is not completed within 1 minute after restarting engine at step 2, return to step 2.
- Repeat steps 2 to 4.
- 6. Check 1st trip DTC.

Is 1st trip DTC detected?

>> Go to EC-481, "Diagnosis Procedure". YES

>> INSPECTION END NO

Diagnosis Procedure

INFOID:0000000006391970

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

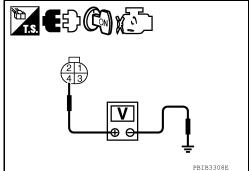
YES >> GO TO 2.

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.

DTC A/F sensor 1		Ground	Voltage		
DIC	Bank	Connector	Terminal	Oround	voltage
P0132	1	F12	4	Ground	Battery voltage
P0152	2	F61	4	Giodila	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 F10
- 15 A fuse (No. 37)
- 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.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

DTC	A/F sensor 1			A/F sensor 1 ECM		Continuity
DIC	Bank	Connector	Terminal	Connector	Terminal	Continuity
P0132	1	F12	1		45	
F0132	1	2	F13	49	Existed	
P0152	2	F61	1	1 13	53	LXISIGU
F 0 132	2	101	2		57	

Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

EC-481

2011 Altima GCC

Revision: June 2012

DTC		A/F sensor 1			Continuity
DIC	Bank	Connector	Terminal	Ground	Continuity
P0132	1	F12	1		
F0132	1	FIZ	2	Ground	Not existed
P0152	2	F61	1	Ground	NOI EXISIEU
P0152	2	гот	2		

DTC	E	CM	Ground	Continuity	
DIC	Connector	Terminal	Ground	Continuity	
P0132		45			
F0132	F13	49	Ground	Not existed	
P0152	FIS	53	Giouna		
F0152		57			

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

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

5. CHECK INTERMITTENT INCIDENT

Perform GI-42, "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 malfunctioning air fuel ratio (A/F) sensor 1. Refer to <u>EM-138</u>, "Removal and Installation". **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 tool [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant. (commercial service tool)

>> INSPECTION END

INFOID:0000000006391972

P0138, P0158 HO2S2

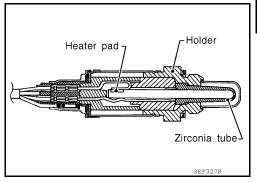
Description INFOID:0000000006391971

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 1 V in richer conditions to 0 V in leaner conditions.

Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.

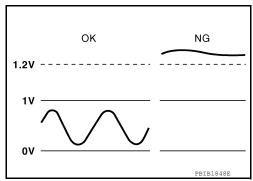


DTC Logic

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 voltage is unusually high during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0138	Heated oxygen sensor 2 (bank 1) circuit high voltage		Harness or connectors (The sensor circuit is open or shorted)
P0158	Heated oxygen sensor 2 (bank 2) circuit high voltage	sor is sent to ECM.	Heated oxygen 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.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION

- Start engine and warm it up to the normal operating temperature.
- 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.
- Check 1st trip DTC.

Is 1st trip DTC detected?

>> Go to EC-484, "Diagnosis Procedure".

EC-483 Revision: June 2012 2011 Altima GCC EC

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NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391973

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK HO2S2 CONNECTOR FOR WATER

- 1. Disconnect heated oxygen sensor 2 (HO2S2) harness connector.
- 2. Check that water is not inside conductors.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace harness or connectors.

3.CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

- Disconnect heated oxygen sensor 2 (HO2S2) harness connector.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between HO2S2 harness connector and ECM harness connector.

DTC HO2S2			E	Continuity		
ыс	Bank	Connector	Terminal	Connector	Terminal	Continuity
P0138	1	F62	1	F13	35	Existed
P0158	2	F56	1	1 13	33	LAISIGU

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

Is the inspection result normal?

YES >> GO TO4.

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

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

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

DTC	DTC HO2S2		ECM		Continuity	
ыс	Bank	Connector	Terminal	Connector	Terminal	Continuity
P0138	1	F62	4	F13	33	Existed
P0158	2	F56	4	FIS	34	Existed

Check the continuity between HO2S2 harness connector and ground, or ECM harness connector and ground.

DTC		HO2S2		Ground	Continuity
ыс	Bank	Connector	Terminal	Oround	Continuity
P0138	1	F62	4	Ground	Not existed
P0158	2	F56	4	Giouna	NOI EXISIEU

DTC	ECM		Ground	Continuity
ыс	Connector	Terminal	Ground	Continuity
P0138	F13	33	Ground	Not existed
P0158	1 13	34	Giodila	Not existed

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

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

5.CHECK HEATED OXYGEN SENSOR 2

Refer to EC-485, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

O.REPLACE HEATED OXYGEN SENSOR 2

Replace malfunctioning heated oxygen sensor 2. Refer to EM-138, "Removal and Installation". **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 [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-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1.INSPECTION START

Will CONSULT-III be used?

Will CONSULT-III be used?

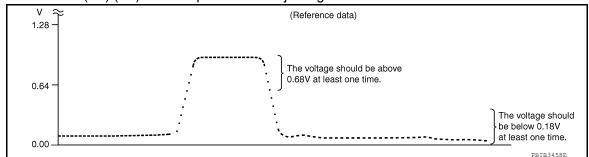
YES >> GO TO 2.

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. 2.
- 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.
- Let engine idle for 1 minute.
- Select "FUEL INJECTION" in "ACTIVE TEST" mode, and select "HO2S2 (B1)/(B2)" as the monitor item with CONSULT-III.
- Check "HO2S2 (B1)/(B2)" at idle speed when adjusting "FUEL INJECTION" to ± 25%.



"HO2S2 (B1)/(B2)" should be above 0.68 V at least once when the "FUEL INJECTION" is + 25%. "HO2S2 (B1)/(B2)" should be below 0.18 V at least once when the "FUEL INJECTION" is – 25%.

Is the inspection result normal?

>> INSPECTION END YES

EC-485 Revision: June 2012 2011 Altima GCC EC

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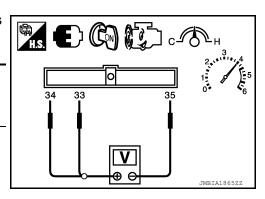
NO >> GO TO 6.

3. CHECK HEATED OXYGEN SENSOR 2-I

Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- 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 conditions.

	ECM			
Con-	+	_	Condition	Voltage
nector	Terminal	Terminal		
F13	33 [HO2S2 (bank 1) signal]	35	Revving up to 4,000 rpm under no load at	The voltage should be above 0.68 V at least once during this procedure.
F13	34 [HO2S2 (bank 2) signal]	ground)	least 10 times	The voltage should be below 0.18 V at least once during this procedure.



Is the inspection result normal?

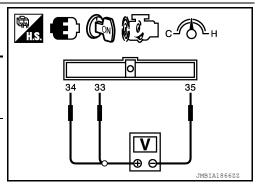
YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector terminals under the following conditions.

	ECM			
Con-	+	_	Condition	Voltage
nector	Terminal	Terminal		
F13	33 [HO2S2 (bank 1) signal]	35 (Sensor	Keeping engine at	The voltage should be above 0.68 V at least once during this procedure.
113	34 [HO2S2 (bank 2) signal]	ground)	idle for 10 minutes	The voltage should be below 0.18 V at least once during this procedure.



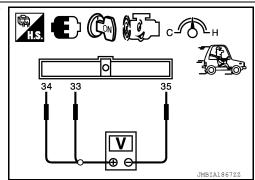
Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector terminals under the following conditions.



	ECM			
Con-	+	_	Condition	Voltage
nector	Terminal	Terminal		
F13	33 [HO2S2 (bank 1) signal] 34 [HO2S2 (bank 2) signal]	35 (Sensor ground)	Coasting from 80 km/ h (50 MPH) while se- lector lever is in the D position	The voltage should be above 0.68 V at least once during this procedure. The voltage should be below 0.18 V 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 malfunctioning heated oxygen sensor 2. Refer to <u>EM-138, "Removal and Installation"</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 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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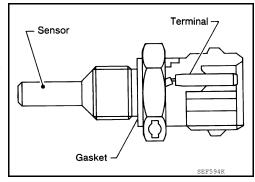
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P0196 EOT SENSOR

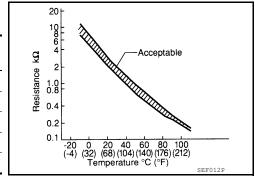
Description INFOID:000000006391975

The engine oil temperature sensor is used to detect the engine oil temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine oil 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 oil temperature [°C (°F)]	Voltage* (V)	Resistance (kΩ)
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.1 - 2.9
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260
110 (230)	0.6	0.143 - 0.153



^{*:} These data are reference values and are measured between ECM terminals 54 (Engine oil temperature sensor) and 52 (Sensor ground).

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P0196 is displayed with P0197 or P0198, first perform the trouble diagnosis for DTC P0197, P0198. Refer to EC-491, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0196	Engine oil temperature sensor range/performance	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.) Engine oil 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. Start engine and wait at least 5 seconds.
- 2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-492, "Diagnosis Procedure".

NO >> INSPECTION END

P0196 EOT SENSOR

[VQ35DE] < DTC/CIRCUIT DIAGNOSIS >

Diagnosis Procedure

CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK EOT SENSOR POWER SUPPLY CIRCUIT

- Disconnect engine oil temperature (EOT) sensor harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between EOT sensor harness connector and ground.

EOT :	sensor	Ground	Voltage	
Connector	Terminal	Ground		
F68	1	Ground	Approx. 5 V	

Is the inspection result normal?

YES >> GO TO 3.

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

3.check eot sensor ground circuit for open and short

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

EOT sensor		EC	Continuity	
Connector	Terminal	Connector Terminal		Continuity
F68	2	F13	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, short to ground or short to power in harness or connectors.

f 4.CHECK ENGINE OIL TEMPERATURE SENSOR

Refer to EC-492, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace engine oil temperature sensor.

CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

1. CHECK ENGINE OIL TEMPERATURE SENSOR

Turn ignition switch OFF.

Component Inspection

- Disconnect engine oil temperature sensor harness connector.
- Remove engine oil temperature sensor. Refer to CO-49, "Exploded View".

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INFOID:0000000006391978

P0196 EOT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

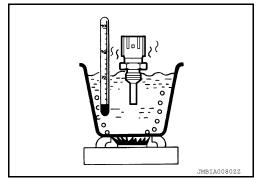
4. Check resistance between engine oil temperature sensor terminals by heating with hot water as shown in the figure.

Terminals	Condition		Resistance
		20 (68)	2.1 - 2.9 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 oil temperature sensor.



[VQ35DE]

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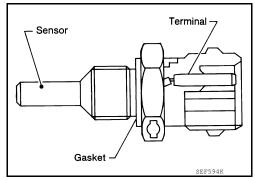
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P0197, P0198 EOT SENSOR

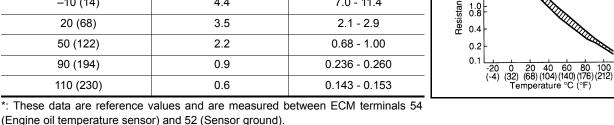
Description INFOID:0000000006391979

The engine oil temperature sensor is used to detect the engine oil temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine oil 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 oil temperature [°C (°F)]	Voltage* (V)	Resistance (kΩ)
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.1 - 2.9
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260
110 (230)	0.6	0.143 - 0.153



DTC Logic INFOID:0000000006391980

DTC DETECTION LOGIC

DTC No.	Trouble Diagnosis Name	DTC detecting condition	Possible Cause	
P0197	Engine oil tempera- ture 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.)	-
P0198	Engine oil tempera- ture sensor circuit high input	An excessively high voltage from the sensor is sent to ECM.	Engine oil 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

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

Is 1st trip DTC detected?

YES >> Go to EC-492, "Diagnosis Procedure".

NO >> INSPECTION END Acceptable

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P0197, P0198 EOT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Diagnosis Procedure

INFOID:0000000006391981

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK EOT SENSOR POWER SUPPLY CIRCUIT

- Disconnect engine oil temperature (EOT) sensor harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between EOT sensor harness connector and ground.

EOT sensor		Ground	Voltage	
Connector	Connector Terminal		voltage	
F68	1	Ground	Approx. 5 V	

Is the inspection result normal?

YES >> GO TO 3.

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

${f 3.}$ CHECK EOT SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

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

EOT sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F68	2	F13	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, short to ground or short to power in harness or connectors.

4. CHECK ENGINE OIL TEMPERATURE SENSOR

Refer to EC-492, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace engine oil temperature sensor.

${f 5.}$ CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391982

1. CHECK ENGINE OIL TEMPERATURE SENSOR

- Turn ignition switch OFF.
- Disconnect engine oil temperature sensor harness connector.
- Remove engine oil temperature sensor.

P0197, P0198 EOT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

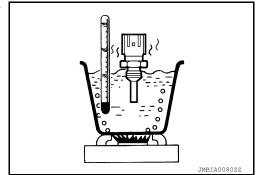
4. Check resistance between engine oil temperature sensor terminals by heating with hot water as shown in the figure.

Terminals	Condition		Resistance
		20 (68)	2.1 - 2.9 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 oil temperature sensor.



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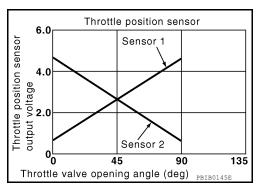
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P0222, P0223 TP SENSOR

Description INFOID.000000006391983

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. The ECM judges the current opening angle of the throttle valve from these signals and controls the throttle valve opening angle in response to driving condition via the throttle control motor.



DTC Logic

INFOID:0000000006391984

DTC DETECTION LOGIC

NOTE:

If DTC P0222 or P0223 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-521, "DTC 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 8 V 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-494, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391985

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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-I

- Disconnect electric throttle control actuator harness connector.
- Turn ignition switch ON.

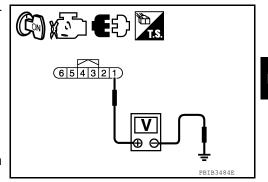
P0222, P0223 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the voltage between electric throttle control actuator harness connector and ground.

Electric throttle control actuator		Ground	Voltage
Connector	Terminal	Ground	voltage
F57	1	Ground	Approx. 5 V



Is the inspection result normal?

YES >> GO TO 3.

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

$3. \mathsf{check}$ throttle position sensor 1 ground circuit for open and short

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between electric throttle control actuator and ECM harness connector.

Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F51	4	F13	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, short to ground or short to power in harness or connectors.

f 4.CHECK THROTTLE POSITION SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between electric throttle control actuator and ECM harness connector.

Electric throttle	control actuator	ECM		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
F51	2	F13	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, short to ground or short to power in harness or connectors.

5. CHECK THROTTLE POSITION SENSOR

Refer to EC-496, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

O. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator. Refer to EM-132, "Removal and Installation".
- Refer to <u>EC-496</u>, "Special Repair Requirement".

>> INSPECTION END

/.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Revision: June 2012 EC-495 2011 Altima GCC

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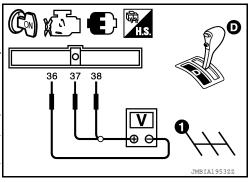
Component Inspection

INFOID:0000000006391986

1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-470, "Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set selector lever position to D position.
- 6. Check the voltage between ECM harness connector terminals under the following conditions.

	ECM		Condition				
Con-	+	-			Condition Voltage		Voltage
nector	Terminal	Terminal					
	37			Fully released	More than 0.36 V		
F13	(TP sensor 1 signal)	36 (Sensor	(Sensor Accelera-	Fully depressed	Less than 4.75 V		
1 13	38	ground)		Fully released	Less than 4.75 V		
	(TP sensor 2 signal)			Fully depressed	More than 0.36 V		



Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator. Refer to EM-132, "Removal and Installation".
- Go to EC-470, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000006391987

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-336, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

P0327, P0328, P0332, P0333 KS

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

P0327, P0328, P0332, P0333 KS

Description INFOID:0000000006391988

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.

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DTC Logic

INFOID:0000000006391989

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detected condition	Possible cause
P0327	Knock sensor (bank 1) circuit low input	An excessively low voltage from the sensor is sent to ECM.	
P0328	Knock sensor (bank 1) circuit high input	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors (The sensor circuit is open or shorted.)
P0332	Knock sensor (bank 2) circuit low input	An excessively low voltage from the sensor is sent to ECM.	Knock sensor
P0333	Knock sensor (bank 2) 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 10 V 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-497, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391990

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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 ECM harness connector.
- Check the continuity between knock sensor harness connector and ECM harness connector.

EC-497 Revision: June 2012 2011 Altima GCC

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INFOID:0000000006391991

DTC		Knock sensor		ECM		Continuity
ыс	Bank	Connector	Terminal	Connector	Terminal	Continuity
P0327, P0328	1	F202	2	F13	67	Existed
P0332, P0333	2	F203	2	1 13	07	LAISIEU

3. 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 F76, F201
- Harness for open or short between knock sensor and ECM
 - >> Repair open circuit or short to power in harness or connectors.

4. CHECK KNOCK SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

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

DTC	Knock sensor		ECM		Continuity	
ыс	Bank	Connector	Terminal	Connector	Terminal	Continuity
P0327, P0328	1	F202	1	F13	61	Existed
P0332, P0333	2	F203	1	ГІЗ	62	Existed

2. 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 F76, F201
- Harness for open or short between knock sensor and ECM
 - >> Repair open circuit, short to ground or short to power in harness or connectors.

6. CHECK KNOCK SENSOR

Refer to EC-498, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace malfunctioning knock sensor. Refer to EM-207, "Disassembly and Assembly".

7.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK KNOCK SENSOR

- Turn ignition switch OFF.
- Disconnect knock sensor harness connector.

P0327, P0328, P0332, P0333 KS

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check resistance between knock sensor terminal as follows. NOTE:

It is necessary to use an ohmmeter which can measure more than 10 $M\Omega.$

Terminals	Resistance
1 and 2	Approx. 532 - 588 kΩ [at 20°C (68°F)]

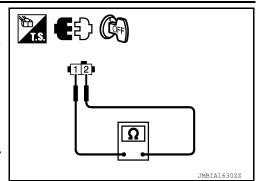
CAUTION:

Never 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 malfunctioning knock sensor. Refer to EM-207, "Disassembly and Assembly".



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P0335 CKP SENSOR (POS)

Description INFOID:0000000006391992

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.

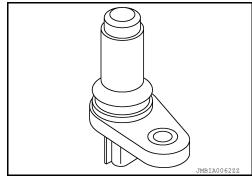
When the engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

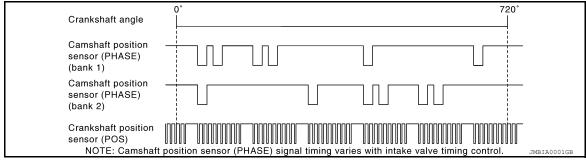
The changing gap causes the magnetic field near the sensor to change.

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 [CKP sensor (POS) circuit is open or shorted.] (APP sensor 2 circuit is shorted.) (Refrigerant pressure sensor circuit is shorted.) Crankshaft position sensor (POS) Accelerator pedal position sensor Refrigerant 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 10.5 V with ignition switch ON.

>> GO TO 2.

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?

P0335 CKP SENSOR (POS)

< DTC/CIRCUIT DIAGNOSIS >

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YES >> Go to EC-501, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006391994

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

OK or NG

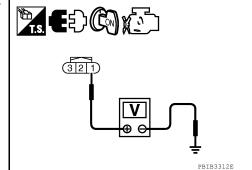
OK >> GO TO 2.

NG >> 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.
- Check the voltage between CKP sensor (POS) harness connector and ground.

CKP sen	sor (POS)	Ground	Voltage (V)	
Connector	Terminal	Ground		
F30	1	Ground	Approx. 5	



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.
- Disconnect ECM harness connector.
- Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

CKP sen	CKP sensor (POS)		ECM		
Connector	Terminal	Connector	Terminal	Continuity	
F30	1	F13	76	Existed	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit.

4.CHECK CRANKSHAFT POSITION (CKP) SENSOR (POS) POWER SUPPLY CIRCUIT-III

Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor		
Connector	Terminal	Name	Connector	Terminal
F13 72		Refrigerant pressure sensor	E219	1
1 13	76	CKP sensor (POS)	F30	1
E10	87	APP sensor	E40	6

Is the inspection result normal?

YES >> GO TO 5.

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

5. CHECK REFRIGERANT PRESSURE SENSOR

Check the following.

Revision: June 2012

Refrigerant pressure sensor (Refer to <u>EC-636, "Diagnosis Procedure"</u>.)

Is the inspection result normal?

EC-501 2011 Altima GCC

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YES >> GO TO 6.

NO >> Replace refrigerant pressure sensor. Refer to <u>HA-41, "Removal and Installation for Refrigerant Pressure Sensor"</u>.

6.CHECK APP SENSOR

Refer to EC-587, "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 ACC-4, "Exploded View".
- 2. Refer to EC-587, "Special Repair Requirement".

>> INSPECTION END

8.CHECK CKP SENSOR (POS) GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 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	
F30	2	F13	60	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, short to ground or short to power in harness or connectors.

9. CHECK CKP SENSOR (POS) INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

CKP sensor (POS)		ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
F30	3	F13	65	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, short to ground or short to power in harness or connectors.

10. CHECK CRANKSHAFT POSITION SENSOR (POS)

Refer to EC-503, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace crankshaft position sensor (POS). Refer to EM-141, "Exploded View".

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. Refer to EM-207, "Disassembly and Assembly".

12. CHECK INTERMITTENT INCIDENT

Refer to GI-42. "Intermittent Incident".

P0335 CKP SENSOR (POS)

< DTC/CIRCUIT DIAGNOSIS >

>> INSPECTION END

Component Inspection

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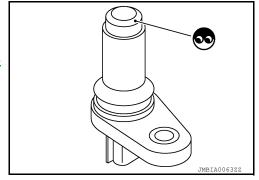
1. CHECK CRANKSHAFT POSITION SENSOR (POS)-I

- 1. Loosen the fixing bolt of the sensor.
- 2. Disconnect crankshaft position sensor (POS) harness connector.
- 3. Remove the sensor. Refer to EM-141, "Exploded View".
- Visually check the sensor for chipping.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace crankshaft position sensor (POS). Refer to <u>EM-141</u>, "<u>Exploded View</u>".



2.CHECK CRANKSHAFT POSITION SENSOR (POS)-II

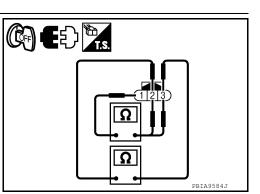
Check resistance crankshaft position sensor (POS) terminals as per the following.

Terminal No. (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 crankshaft position sensor (POS). Refer to EM-141, "Exploded View".



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P0340, P0345 CMP SENSOR (PHASE)

Description INFOID:0000000006391996

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.

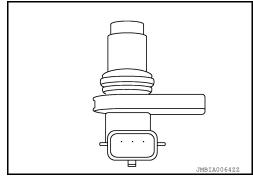
The sensor consists of a permanent magnet and Hall IC.

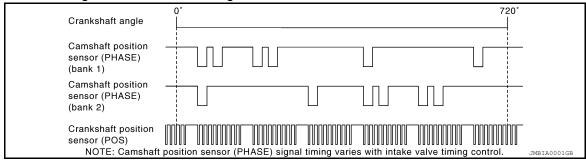
When engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

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 or P0345 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-521, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0340	Camshaft position sensor (PHASE) (bank 1) 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	Camsnart position sensor (PHASE)
P0345	Camshaft position sensor (PHASE) (bank 2) circuit	during engine running. The cylinder No. signal is not in the normal pattern during engine running.	 Camshaft (INT) Starter motor (Refer to <u>STR-38</u>.) Starting system circuit (Refer to <u>STR-38</u>.) 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 10.5 V with ignition switch ON.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE-I

- 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.

P0340, P0345 CMP SENSOR (PHASE)

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

INFOID:0000000006391998

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Is 1st trip DTC detected?

YES >> Go to EC-505, "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-505, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

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. Refer to <u>STR-32, "Work Flow (With GR8-1200 NI)"</u> or <u>STR-35, "Work Flow (Without GR8-1200 NI)"</u>.

2.check ground connection

- Turn ignition switch OFF.
- 2. Check ground connection E9. Refer to Ground Inspection in GI-45, "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

- 1. Disconnect camshaft position (CMP) sensor (PHASE) harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between CMP sensor (PHASE) harness connector and ground.

DTC	CMF	P sensor (PH	Ground	Voltage (V)	
DIC	Bank Connector Term				Terminal
P0340	1	F55	1	Ground	5 V
P0345	2	F60	1	Ground	5 V

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit, 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. Disconnect ECM harness connector.
- Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

DTC	CMP sensor (PHASE)			ECM		Continuity
DIC	Bank	Connector	Terminal	Connector	Terminal	Continuity
P0340	1	F55	2	F13	64	Existed
P0345	2	F60	2	1 13	68	LXISIEU

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

Is the inspection result normal?

YES >> GO TO 5.

P0340, P0345 CMP SENSOR (PHASE)

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

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

5. CHECK CMP SENSOR (PHASE) INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

DTC	CMP sensor (PHASE)			ECM		Continuity
ыс	Bank	Connector	Terminal	Connector	Terminal	Continuity
P0340	1	F55	3	F13	70	Existed
P0345	2	F60	3	FIS	69	Existed

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, short to ground or short to power in harness or connectors.

6.CHECK CAMSHAFT POSITION SENSOR (PHASE)

Refer to EC-506, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace malfunctioning camshaft position sensor (PHASE). Refer to EM-153, "Exploded View".

7. CHECK CAMSHAFT (INT)

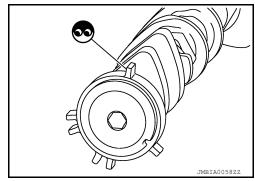
Check the following.

- · Accumulation of debris to the signal plate of camshaft 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. Refer to <u>EM-180</u>, "Removal and Installation".



8. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006391999

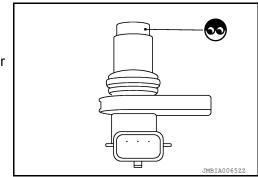
1. CHECK CAMSHAFT POSITION SENSOR (PHASE)-I

- 1. Turn ignition switch OFF.
- 2. Loosen the fixing bolt of the sensor.
- 3. Disconnect camshaft position sensor (PHASE) harness connector.
- 4. Remove the sensor. Refer to EM-153, "Exploded View".
- 5. Visually check the sensor for chipping.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace malfunctioning camshaft position sensor (PHASE). Refer to EM-153, "Exploded View".



P0340, P0345 CMP SENSOR (PHASE)

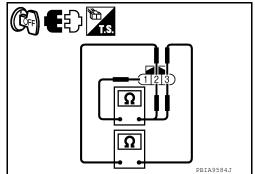
< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

$\overline{2}$.CHECK CAMSHAFT POSITION SENSOR (PHASE)-II

Check resistance camshaft position sensor (PHASE) terminals as per the following.

Terminal No. (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 malfunctioning camshaft position sensor (PHASE). Refer to EM-153, "Exploded View".

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P0444 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

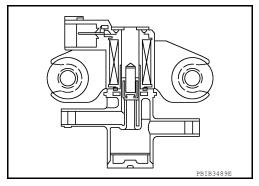
< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

P0444 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Description INFOID:000000006392000

The EVAP canister purge volume control solenoid valve is used 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:0000000006392001

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 via the valve	Harness or connectors (The solenoid valve circuit is open or 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 11 V at idle.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. 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-508, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

NFOID:000000000639200

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.

P0444 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

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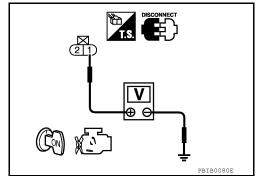
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Check the voltage between EVAP canister purge volume control solenoid valve harness connector and ground.

•	rge volume control id valve	Ground	Voltage (V)
Connector	Terminal		
F29	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 E11, F2
- 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, 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.
- Disconnect ECM harness connector.
- 3. Check the continuity between EVAP canister purge volume control solenoid valve harness connector and ECM harness connector.

•	urge volume con- noid valve	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F29	2	F14	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, 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

- 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.

Does engine speed vary according to the valve opening?

YES >> GO TO 6.

NO >> GO TO 5.

5. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Refer to EC-510, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace EVAP canister purge volume control solenoid valve. Refer to EM-26, "Removal and <a href="Installation".

6. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

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P0444 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

>> INSPECTION END

Component Inspection

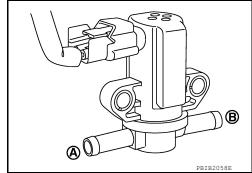
INFOID:0000000006392003

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.
- 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.

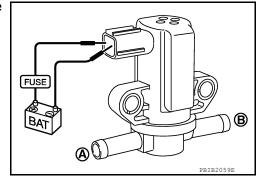
Condition (PURG VOL CONT/V value)	Air passage continuity between (A) and (B)
100%	Existed
0%	Not existed



⋈Without CONSULT-III

- 1. Turn ignition switch OFF.
- 2. 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)	
12 V 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. Refer to <u>EM-26</u>, "Removal and Installation".

P0500 VSS

Description INFOID:0000000006392004

The vehicle speed signal is sent to the combination meter from the "ABS actuator and electric unit (control unit)" via the CAN communication line. The combination meter then sends a signal to the ECM via the CAN communication line.

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DTC Logic

INFOID:0000000006392005

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-441, "DTC Logic".

 If DTC P0500 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-520, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0500	Vehicle speed sensor	The vehicle speed signal sent to ECM is almost 0 km/h (0 MPH) 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) Wheel sensor Unified meter and A/C amp. ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Will CONSULT-III be used?

Will CONSULT-III be used?

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 SIGNAL

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

- Start engine (VDC switch OFF). 1.
- 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-512, "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:

EC-511 Revision: June 2012 2011 Altima GCC

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Always drive vehicle at a safe speed.

ENG SPEED	1,600 - 6,000 rpm
COOLAN TEMP/S	More than 70°C (158°F)
B/FUEL SCHDL	5.5 - 31.8 msec
Selector lever	Except P or N position
PW/ST SIGNAL	OFF

4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-512, "Diagnosis Procedure".

NO >> INSPECTION END

5. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-512, "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-512, "Diagnosis Procedure".

Component Function Check

INFOID:0000000006392006

1. PERFORM COMPONENT FUNCTION CHECK

Without CONSULT-III

- 1. Lift up drive wheels.
- 2. Start engine.
- Check vehicle speed of speedometer.

The vehicle speed 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-512, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006392007

1.check dtc with "abs actuator and electric unit (control unit)"

Refer to BRC-45, "DTC No. Index" (Without TCS) or BRC-115, "DTC No. Index" (With TCS).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace.

2.CHECK COMBINATION METER FUNCTION

Refer to MWI-4, "Work Flow".

>> INSPECTION END

P0550 PSP SENSOR [VQ35DE] < DTC/CIRCUIT DIAGNOSIS > P0550 PSP SENSOR Α Description INFOID:0000000006392008 Power steering pressure (PSP) sensor is installed to the power steering high-pressure tube and detects a EC power steering load. This sensor is a potentiometer which transforms the power steering load into output voltage, and emits the voltage signal to the ECM. The ECM controls the electric throttle control actuator and adjusts the throttle valve opening angle to increase the engine speed and adjusts the idle speed for the increased load. DTC Logic INFOID:0000000006392009 D DTC DETECTION LOGIC NOTE: If DTC P0550 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to Е EC-521, "DTC Logic". DTC No. Trouble diagnosis name DTC detecting condition Possible cause Harness or connectors An excessively low or high voltage from the Power steering pressure P0550 (The sensor circuit is open or shorted) sensor circuit sensor is sent to ECM. Power steering 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 Start engine and let it idle for at least 5 seconds. Check 1st trip DTC. Is 1st trip DTC detected? K >> Go to EC-513, "Diagnosis Procedure". YES >> INSPECTION END NO

Diagnosis Procedure

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK PSP SENSOR POWER SUPPLY CIRCUIT

- Disconnect power steering pressure (PSP) sensor harness connector.
- Turn ignition switch ON.

EC-513 Revision: June 2012 2011 Altima GCC

INFOID:0000000006392010

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< DTC/CIRCUIT DIAGNOSIS >

Check the voltage between PSP sensor harness connector and ground.

PSP s	sensor	Ground	Voltage (V)
Connector	Connector Terminal		voitage (v)
F40	1	Ground	Approx. 5

Is the inspection result normal?

YES >> GO TO 3.

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

${f 3.}$ CHECK PSP SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

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

PSP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F40	3	F13	48	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, short to ground short to power in harness or connectors.

4. CHECK PSP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

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

PSP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F40	2	F13	41	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, short to ground or short to power in harness or connectors.

5.CHECK PSP SENSOR

Refer to EC-514, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace PSP sensor. Refer to <u>ST-22, "VQ35DE : Component Parts Location - 17 Inch Tire"</u>, or <u>ST-24, "VQ35DE : Component Parts Location - 18 Inch Tire"</u>.

6. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006392011

1. CHECK POWER STEERING PRESSURE SENSOR

- Reconnect all harness connectors disconnected.
- Start engine and let it idle.

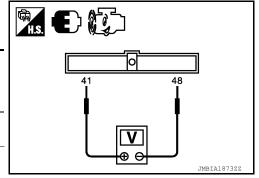
P0550 PSP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

3. Check the voltage between ECM terminals under the following conditions.

	ECM				
Connector	+	-	Condition	Voltage	
Connector	Terminal	Terminal			
F13	41 (Power steering	48 (Sensor	Steering wheel: Being turned.	0.5 - 4.5 V	
1 13	pressure sensor signal)	ground)	Steering wheel: Not being turned.	0.4 - 0.8 V	



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace power steering pressure sensor. Refer to <u>ST-22, "VQ35DE : Component Parts Location - 17 Inch Tire"</u>, or <u>ST-24, "VQ35DE : Component Parts Location - 18 Inch Tire"</u>.

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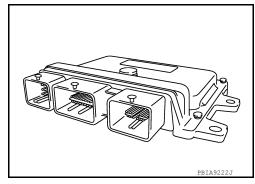
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INFOID:0000000006392013

P0603 ECM POWER SUPPLY

Description INFOID:0000000006392012

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 10 seconds.
- 2. Turn ignition switch OFF and wait at least 5 minutes.
- 3. Turn ignition switch ON, wait at least 10 seconds.
- 4. Repeat steps 2 and 3 for five times.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-516, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392014

1. CHECK ECM POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.

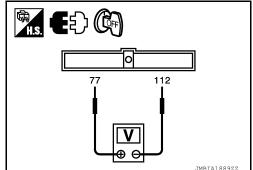
P0603 ECM POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the voltage between ECM harness connector and ground.

	E			
+			_	Voltage (V)
Connector	Terminal	Connector	Terminal	
F13	77	E10	112	Battery voltage



Is the inspection result normal?

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

2.DETECT MALFUNCTIONING PART

Check the following.

- 15 A fuse (No. 42)
- IPDM E/R harness connector F10
- · Harness for open or short between ECM and battery

>> Repair or replace harness or connectors.

3. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace harness or connectors.

4. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT-III

- Turn ignition switch ON.
- 2. Select "SELF-DIAG RESULTS" mode with CONSULT-III.
- Touch "ERASE".
- 4. Perform DTC CONFIRMATION PROCEDURE.

See EC-516, "DTC Logic".

(R) Without CONSULT-III

- Turn ignition switch ON.
- Erase the Diagnostic Test Mode II (Self-diagnostic results) memory.
- 3. Perform DTC CONFIRMATION PROCEDURE.

See EC-516, "DTC Logic".

Is the 1st trip DTC P0603 displayed again?

YES >> GO TO 5.

NO >> INSPECTION END

5.REPLACE ECM

- 1. Replace ECM.
- 2. Go to EC-334, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> INSPECTION END

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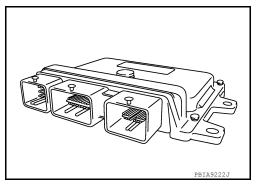
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P0605 ECM

Description INFOID:000000006392015

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-519, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform dtc confirmation procedure for malfunction b

- Turn ignition switch ON and 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-519, "Diagnosis Procedure".

NO >> GO TO 4.

f 4.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION C

- 1. Turn ignition switch ON and 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.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-519, "Diagnosis Procedure".

NO >> INSPECTION END

P0605 ECM

[VQ35DE] < DTC/CIRCUIT DIAGNOSIS >

Diagnosis Procedure

1.INSPECTION START

(II) With CONSULT-III EC 1. Turn ignition switch ON. Select "SELF-DIAG RESULTS" mode with CONSULT-III. Touch "ERASE".

4. Perform DTC CONFIRMATION PROCEDURE.

See EC-518, "DTC Logic".

Without CONSULT-III

- 1. Turn ignition switch ON.
- 2. Erase the Diagnostic Test Mode II (Self-diagnostic results) memory.
- Perform DTC CONFIRMATION PROCEDURE.

See EC-518, "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-334, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".

>> INSPECTION END

EC-519 Revision: June 2012 2011 Altima GCC

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P0607 ECM

Description INFOID:000000006392018

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:000000006392019

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. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- Check DTC.

Is DTC detected?

YES >> Go to EC-520, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392020

1. INSPECTION START

- 1. Turn ignition switch ON.
- 2. Erase DTC.
- Perform DTC CONFIRMATION PROCEDURE. See <u>EC-520</u>, "<u>DTC Logic</u>".
- 4. Check DTC.

Is the DTC P0607 displayed again?

Yes >> GO TO 2.

No >> INSPECTION END

2.REPLACE ECM

- 1. Replace ECM.
- 2. Go to EC-334, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Special Repair Requirement".
 - >> INSPECTION END

P0643 SENSOR POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

P0643 SENSOR POWER SUPPLY

DTC Logic

DTC DETECTION LOGIC

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DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	C
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.) [CMP sensor (PHASE) circuit is shorted.) (PSP sensor circuit is shorted.) (Battery current sensor circuit is shorted.) Accelerator pedal position sensor Throttle position sensor Camshaft position sensor (PHASE) Power steering pressure sensor Battery current sensor	D E

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 8 V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Start engine and let it idle for 1 second.
- 3. Check DTC

Is DTC detected?

YES >> Go to EC-521, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392022

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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.

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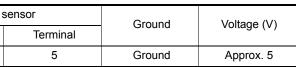
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Revision: June 2012 EC-521 2011 Altima GCC

< DTC/CIRCUIT DIAGNOSIS >

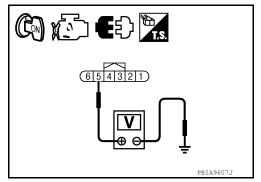
Check the voltage between APP sensor harness connector and ground.

APP :	sensor	Ground	Voltage (V)
Connector	Connector Terminal		voltage (v)
E40	5	Ground	Approx. 5



Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 3.



3.check sensor power supply circuits

- Turn ignition switch OFF.
- Check harness for short to power and short to ground, between the following terminals.

E	СМ	Sensor		
Connector	Terminal	Name	Connector	Terminal
	47	TP sensor	F57	1
	51	Battery current sensor	F5	1
F13	55	PSP sensor	F40	1
	59	CMP sensor (PHASE) (bank 1)	F55	1
	63	CMP sensor (PHASE) (bank 2)	F60	1
E10	83	APP sensor	E40	5

Is the inspection result normal?

YES >> GO TO 4.

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

4.CHECK COMPONENTS

Check the following.

- Camshaft position sensor (PHASE) (Refer to EC-506, "Component Inspection".)
- Battery current sensor (Refer to <u>EC-537</u>, "Component Inspection".)
- Power steering pressure sensor (Refer to <u>EC-514, "Component Inspection"</u>.)

Is the inspection result normal?

YFS >> GO TO 5.

NO >> Replace malfunctioning component.

5. CHECK BATTERY CURRENT SENSOR-I

- Disconnect battery current sensor harness connector.
- Remove the sensor. Refer to CHG-9, "System Diagram".
- Check resistance battery current sensor terminals as follows.

Terminal No.	Resistance
1 - 2	F 100
1 - 3	Except 0 Ω

Is the inspection result normal?

YES >> GO TO 6.

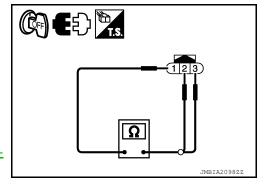
>> Replace battery current sensor. Refer to CHG-9, "Sys-NO tem Diagram".

6.CHECK TP SENSOR

Refer to EC-470, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.



P0643 SENSOR POWER SUPPLY

P0643 SENSOR POWER SUPPLY	
< DTC/CIRCUIT DIAGNOSIS >	[VQ35DE]
NO >> GO TO 7.	
7. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR	А
 Replace electric throttle control actuator. Refer to EM-132, "Removal and Installation". Go to EC-470, "Special Repair Requirement". 	EC
>> INSPECTION END	
8.CHECK APP SENSOR	C
Refer to EC-587, "Component Inspection".	
Is the inspection result normal? YES >> GO TO 10. NO >> GO TO 9.	D
9.REPLACE ACCELERATOR PEDAL ASSEMBLY	_
 Replace accelerator pedal assembly. Refer to <u>ACC-4, "Exploded View"</u>. Go to <u>EC-587, "Special Repair Requirement"</u>. 	E
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>> INSPECTION END	
10.check intermittent incident	G
Refer to GI-42, "Intermittent Incident".	
>> INSPECTION END	Н
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P0850 PNP SWITCH

Description INFOID:000000006392023

When the selector lever position is P or N park/neutral position (PNP) signal is ON.

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) signal is not changed in the process of engine starting and driving.	Harness or connectors (The sensor circuit is open or shorted.) TCM

DTC CONFIRMATION PROCEDURE

1.INSPECTION START

Will CONSULT-III be used?

Will CONSULT-III be used?

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 SIGNAL

(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 (Selector 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-525, "Diagnosis Procedure".

4. PERFORM DTC CONFIRMATION PROCEDURE

- 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	1,100 - 6,375 rpm
COOLAN TEMP/S	More than 70°C (158°F)
B/FUEL SCHDL	4.0 - 31.8 msec
VHCL SPEED SE	More than 64 km/h (40 mph)
Selector lever	Suitable position

Check 1st trip DTC.

P0850 PNP SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

INFOID:0000000006392025

Is 1st trip DTC detected?

YES >> Go to EC-525, "Diagnosis Procedure".

NO >> INSPECTION END

5. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-525, "Component Function Check".

NOTE:

Use component function check to check the overall function of the park/neutral position (PNP) signal circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to <u>EC-525</u>, "<u>Diagnosis Procedure</u>".

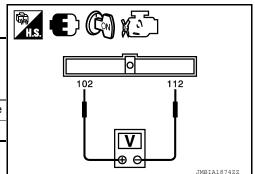
Component Function Check

1.PERFORM COMPONENT FUNCTION CHECK

1. Turn ignition switch ON.

2. Check the voltage between ECM harness connectors.

ECM					
Connector	+	_	Condition		Voltage (V)
Connector	Terminal	Terminal			
E10	102 112	102 112 Selector lever	P or N	Battery voltage	
	102	112	position	Except above	Approx. 0



Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-525, "Diagnosis Procedure".

Diagnosis Procedure

CHECK DTC WITH TCM

Refer to EC-659, "DTC Index".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning part.

2.CHECK PNP SIGNAL CIRCUIT FOR OPEN AND SHORT-I

- 1. Turn ignition switch OFF.
- 2. Disconnect TCM harness connector.
- 3. Disconnect IPDM E/R harness connector.
- Check the continuity between TCM harness connector and IPDM E/R harness connector.

TCM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F16	20	F10	72	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, short to ground or short to power in harness or connectors.

3.CHECK PNP SIGNAL CIRCUIT FOR OPEN AND SHORT-II

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

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ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E10	102	E18	30	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, short to ground or short to power in harness or connectors.

4. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".

NO >> Repair or replace malfunctioning part.

P1212 TCS COMMUNICATION LINE

< DTC/CIRCUIT DIAGNOSIS >

P1212 TCS COMMUNICATION LINE

Description INFOID:0000000006392027

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)".

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.

DTC Logic INFOID:0000000006392028

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-441, "DTC Logic".
- If DTC P1212 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-520, "DTC Logic".

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 cannot 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

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 10.5 V at idle.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 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-527, "Diagnosis Procedure".

>> INSPECTION END NO

>> GO TO 2.

Diagnosis Procedure

Go to BRC-7, "Work Flow".

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< DTC/CIRCUIT DIAGNOSIS >

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P1217 ENGINE OVER TEMPERATURE

DTC Logic

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-441, "DTC Logic".
- If DTC P1217 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-520, "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 relays) Cooling fan motor Radiator hose Radiator Radiator cap Water pump Thermostat

CAUTION:

When a malfunction is indicated, be sure to replace the coolant. Refer to <u>CO-35</u>, <u>"Changing Engine Coolant"</u>. Also, replace the engine oil. Refer to <u>LU-26</u>, <u>"Changing Engine Oil"</u>.

- 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-12, "SAE Viscosity Number".
- 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-528, "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-529, "Diagnosis Procedure".

Component Function Check

INFOID:0000000006392031

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. For the location of the radiator cap, refer to CO-38, "Exploded View".

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.

< DTC/CIRCUIT DIAGNOSIS >

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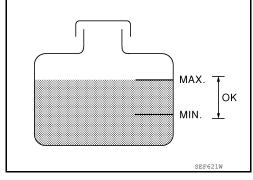
Check the coolant level in the reservoir tank and radiator.

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-529, "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-529, "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/MID/HI).

Without CONSULT-III

Perform IPDM E/R auto active test and check cooling fan motors operation, refer to PCS-11, "Diagnosis Description".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-529, "Diagnosis Procedure".

Diagnosis Procedure

${f 1}$. CHECK COOLING FAN OPERATION

(II) With CONSULT-III

- 1. Turn ignition switch ON.
- Perform "COOLING FAN" in "ACTIVE TEST" mode with CONSULT-III.
- Check that cooling fans-1 and -2 operate at each speed (LOW/MID/HI).

Without CONSULT-III

- 1. Perform IPDM E/R auto active test and check cooling fan motors operation, refer to PCS-11, "Diagnosis Description".
- Check that cooling fans-1 and -2 operate at each speed (Low/Middle/High).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-603, "Diagnosis Procedure".

2.CHECK COOLING SYSTEM FOR LEAK-I

Check cooling system for leak. Refer to CO-34, "System 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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< DTC/CIRCUIT DIAGNOSIS >

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>> Repair or replace malfunctioning part.

4. CHECK RADIATOR CAP

Check radiator cap. Refer to CO-34, "System Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace radiator cap. Refer to CO-38, "Exploded View".

5.CHECK THERMOSTAT

Check thermostat. Refer to CO-47, "Removal and Installation".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace thermostat. Refer to CO-47, "Exploded View".

6. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Refer to EC-466, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace engine coolant temperature sensor. Refer to <u>CO-49</u>, "Exploded View".

7. CHECK MAIN 12 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	MA-12, "SAE Viscosity Nu	mber"
	3	Coolant level	Visual	Coolant up to MAX level in reservoir tank and radiator filler neck	CO-35, "Changing Engine Coolant"
	4	Radiator cap	Pressure tester	CO-34, "System Inspection	<u>ı"</u>
ON* ²	5	Coolant leaks	Visual	No leaks	CO-34, "System Inspection"
ON* ²	6	Thermostat	Touch the upper and lower radiator hoses	Both hoses should be hot	CO-47, "Removal and Installation"
ON*1	7	Cooling fan	CONSULT-III	Operating	EC-603, "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-35, "Changing Engine Coolant"
OFF* ⁴	10	Coolant return from reservoir tank to radiator	Visual	Should be initial level in reservoir tank	CO-35, "Changing Engine Coolant"
OFF	11	Cylinder head	Straight gauge feeler gauge	0.1 mm (0.004 in) Maximum distortion (warping)	EM-198, "Inspection After Disassembly"
	12	Cylinder block and pistons	Visual	No scuffing on cylinder walls or piston	EM-218, "Inspection"

^{*1:} Turn the ignition switch ON.

^{*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.

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

For more information, refer to CO-32, "Troubleshooting Chart".

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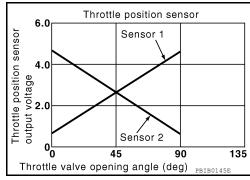
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P1225 TP SENSOR

Description INFOID:000000006392033

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. The ECM judges the current opening angle of the throttle valve from these signals and controls the throttle valve opening angle in response to driving condition via the throttle control motor.



DTC Logic

INFOID:0000000006392034

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 10 V 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.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-532, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392035

1.check electric throttle control actuator visually

- Turn ignition switch OFF.
- 2. Remove the intake air duct. Refer to EM-131, "Removal and Installation".

P1225 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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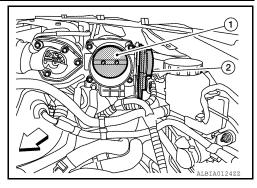
- 3. Check if foreign matter is caught between the throttle valve (1) and the housing.
- Electric throttle control actuator (2)
- <=: Vehicle front

Is the inspection result normal?

YES >

NO

- >> GO TO 2.
- >> Remove the foreign matter and clean the electric throttle control actuator inside. Refer to EM-132, "Removal and Installation".



2.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator. Refer to EM-132, "Removal and Installation".
- 2. Go to EC-533, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-336, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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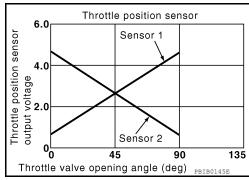
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P1226 TP SENSOR

Description INFOID:0000000006392037

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. The ECM judges the current opening angle of the throttle valve from these signals and controls the throttle valve opening angle in response to driving condition via the throttle control motor.



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 and 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-534, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392039

1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- 1. Turn ignition switch OFF.
- Remove the intake air duct. Refer to EM-131, "Removal and Installation".

P1226 TP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

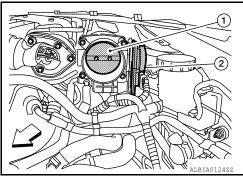
[VQ35DE]

- Check if foreign matter is caught between the throttle valve (1) and the housing.
- Electric throttle control actuator (2)
- ⟨
 ⇒: Vehicle front

Is the inspection result normal?

YES NO

- >> GO TO 2.
- >> Remove the foreign matter and clean the electric throttle control actuator inside. Refer to EM-132, "Removal and Installation".



2.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace electric throttle control actuator. Refer to EM-132, "Removal and Installation".
- 2. Go to EC-533, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-336, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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P1550 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

P1550 BATTERY CURRENT SENSOR

Description INFOID:000000006392041

The power generation voltage variable control enables fuel consumption to be decreased by reducing the engine load which is caused by the power generation of the generator. The battery current sensor is installed to the battery cable at the negative terminal. The sensor measures the charging/discharging current of the battery. Based on the sensor signal, ECM judges whether or not the power generation voltage variable control is performed. When performing the power generation voltage variable control, ECM calculates the target power generation voltage based on the sensor signal. And ECM sends the calculated value as the power generation command value to IPDM E/R. For the details of the power generation voltage variable control, refer to CHG-9. "System Description".

CAUTION:

Never connect the electrical component or the ground wire directly to the battery terminal. The connection causes the malfunction of the power generation voltage variable control, and then battery discharge may occur.

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P1550 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to <u>EC-521, "DTC Logic"</u>.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1550	Battery current sensor circuit range/performance	The output voltage of the battery current sensor remains within the specified range while engine is running.	Harness or connectors (The sensor circuit is open or shorted.) Battery current 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 8 V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait at least 10 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-536, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392043

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- 2. Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2. CHECK BATTERY CURRENT SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect battery current sensor harness connector.
- 2. Turn ignition switch ON.

P1550 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the voltage between battery current sensor harness connector and ground.

Battery current sensor		Ground	Voltage (V)	
Connector	Terminal	Glound	voilage (v)	
F5	1	Ground	Approx. 5	

Is the inspection result normal?

YES >> GO TO 3.

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

${f 3.}$ CHECK BATTERY CURRENT SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between battery current sensor harness connector and ECM harness connector.

Battery current sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F5	2	F13	44	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, short to ground or short to power in harness or connectors.

f 4.CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between battery current sensor harness connector and ECM harness connector.

Battery cur	Battery current sensor		ECM	
Connector	Terminal	Connector Terminal		Continuity
F5	3	F13	42	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, short to ground or short to power in harness or connectors.

5. CHECK BATTERY CURRENT SENSOR

Refer to EC-537, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace battery negative cable assembly.

O.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK BATTERY CURRENT SENSOR

- Turn ignition switch OFF.
- Reconnect harness connectors disconnected.

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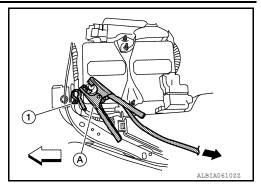
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P1550 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

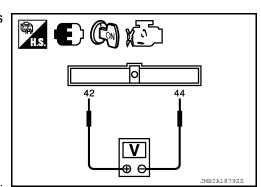
- Disconnect battery negative cable (1).
- ∀
 : Vehicle front
- ←: To body ground Install jumper cable (A) between battery negative terminal and body ground.
- Turn ignition switch ON.



6. Check the voltage between ECM harness connector terminals under the following conditions.

Connector	+ –		Voltage (V)	
Connector	Terminal	Terminal		
F13	42 (Battery current sensor signal)	44 (Sensor ground)	Approx. 2.5	

Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-3, "How to Handle Battery" (COUPE models) or PG-71, "How to Handle Battery" (SEDAN models).



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly.

P1551, P1552 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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P1551, P1552 BATTERY CURRENT SENSOR

Description INFOID:0000000006392045

The power generation voltage variable control enables fuel consumption to be decreased by reducing the engine load which is caused by the power generation of the generator. The battery current sensor is installed to the battery cable at the negative terminal. The sensor measures the charging/discharging current of the battery. Based on the sensor signal, ECM judges whether or not the power generation voltage variable control is performed. When performing the power generation voltage variable control, ECM calculates the target power generation voltage based on the sensor signal. And ECM sends the calculated value as the power generation command value to IPDM E/R. For the details of the power generation voltage variable control, refer to CHG-9. "System Description".

CAUTION:

Never connect the electrical component or the ground wire directly to the battery terminal. The connection causes the malfunction of the power generation voltage variable control, and then battery discharge may occur.

DTC Logic INFOID:0000000006392046

DTC DETECTION LOGIC

If DTC P1551 or P1552 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-521, "DTC Logic".

DTC No. Possible cause Trouble diagnosis name DTC detecting condition An excessively low voltage from the sen-Battery current sensor circuit P1551 · Harness or connectors low input sor is sent to ECM. (The sensor circuit is open or shorted.) Battery current sensor circuit An excessively high voltage from the sen-Battery current sensor P1552 sor is sent to ECM. high input

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 8 V with ignition switch ON

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 10 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-539, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

>> GO TO 2. YES

NO >> Repair or replace ground connection.

2.CHECK BATTERY CURRENT SENSOR POWER SUPPLY CIRCUIT

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P1551, P1552 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

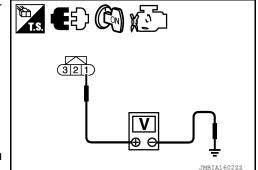
[VQ35DE]

Disconnect battery current sensor harness connector.

2. Turn ignition switch ON.

Check the voltage between battery current sensor harness connector and ground.

Battery current sensor		Ground	Voltage (V)	
Connector	Terminal	Glound	voitage (v)	
F5	1	Ground	Approx. 5	



Is the inspection result normal?

YES >> GO TO 3.

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

${f 3.}$ CHECK BATTERY CURRENT SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between battery current sensor harness connector and ECM harness connector.

Battery cui	Battery current sensor		ECM	
Connector	Terminal	Connector	Terminal	Continuity
F5	2	F13	44	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, short to ground or short to power in harness or connectors.

4. CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between battery current sensor harness connector and ECM harness connector.

Battery current sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F5	3	F13	42	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, short to ground or short to power in harness or connectors.

CHECK BATTERY CURRENT SENSOR

Refer to EC-537, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace battery negative cable assembly.

O.CHECK INTERMITTENT INCIDENT

Refer to GI-42. "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006392048

1. CHECK BATTERY CURRENT SENSOR

- Turn ignition switch OFF.
- 2. Reconnect harness connectors disconnected.

P1551, P1552 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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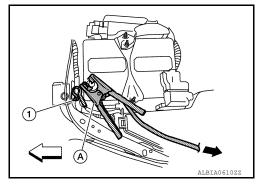
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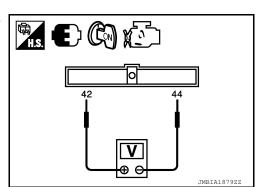
- 3. Disconnect battery negative cable (1).
- <: Vehicle front
- ←: To body ground
- 4. Install jumper cable (A) between battery negative terminal and body ground.
- 5. Turn ignition switch ON.



6. Check the voltage between ECM harness connector terminals under the following conditions.

Connector +		_	Voltage (V)
Connector	Terminal	Terminal	
F13	42 (Battery current sensor signal)	44 (Sensor ground)	Approx. 2.5

Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to $\underline{\sf PG-3}$, "How to Handle Battery" (COUPE models) or $\underline{\sf PG-71}$, "How to Handle Battery" (SEDAN models).



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly.

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P1553 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

P1553 BATTERY CURRENT SENSOR

Description INFOID:000000006392049

The power generation voltage variable control enables fuel consumption to be decreased by reducing the engine load which is caused by the power generation of the generator. The battery current sensor is installed to the battery cable at the negative terminal. The sensor measures the charging/discharging current of the battery. Based on the sensor signal, ECM judges whether or not the power generation voltage variable control is performed. When performing the power generation voltage variable control, ECM calculates the target power generation voltage based on the sensor signal. And ECM sends the calculated value as the power generation command value to IPDM E/R. For the details of the power generation voltage variable control, refer to CHG-9. "System Description".

CAUTION:

Never connect the electrical component or the ground wire directly to the battery terminal. The connection causes the malfunction of the power generation voltage variable control, and then battery discharge may occur.

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P1553 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-521, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1553	Battery current sensor performance	The signal voltage transmitted from the sensor to ECM is higher than the amount of the maximum power generation.	Harness or connectors (The sensor circuit is open or shorted.) Battery current 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 8 V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait at least 10 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-542, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392051

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK BATTERY CURRENT SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect battery current sensor harness connector.
- 2. Turn ignition switch ON.

P1553 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the voltage between battery current sensor harness connector and ground.

Battery current sensor		Ground	Voltage (V)
Connector	Terminal	Glound	voltage (v)
F5	1	Ground	Approx. 5

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Is the inspection result normal?

YES >> GO TO 3.

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

${f 3.}$ CHECK BATTERY CURRENT SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between battery current sensor harness connector and ECM harness connector.

Battery cui	rent sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F5	2	F13	44	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, short to ground or short to power in harness or connectors.

f 4.CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between battery current sensor harness connector and ECM harness connector.

Battery cui	Battery current sensor		ECM	
Connector	Terminal	Connector	Terminal	Continuity
F5	3	F13	42	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, short to ground or short to power in harness or connectors.

5. CHECK BATTERY CURRENT SENSOR

Refer to EC-537, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace battery negative cable assembly.

O.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK BATTERY CURRENT SENSOR

- Turn ignition switch OFF.
- Reconnect harness connectors disconnected.

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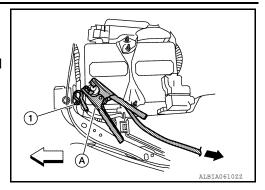
P1553 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

- Disconnect battery negative cable (1).

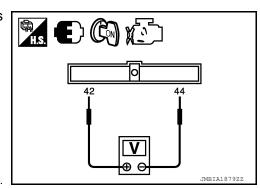
- ←: To body ground Install jumper cable (A) between battery negative terminal and body ground.
- Turn ignition switch ON.



6. Check the voltage between ECM harness connector terminals under the following conditions.

Connector	+	_	Voltage (V)
Connector	Terminal	Terminal	
F13	42 (Battery current sensor signal)	44 (Sensor ground)	Approx. 2.5

Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-3, "How to Handle Battery" (COUPE models) or PG-71, "How to Handle Battery" (SEDAN models).



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly.

P1554 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

IVQ35DE1

P1554 BATTERY CURRENT SENSOR

Description INFOID:0000000006392053

The power generation voltage variable control enables fuel consumption to be decreased by reducing the engine load which is caused by the power generation of the generator. The battery current sensor is installed to the battery cable at the negative terminal. The sensor measures the charging/discharging current of the battery. Based on the sensor signal, ECM judges whether or not the power generation voltage variable control is performed. When performing the power generation voltage variable control, ECM calculates the target power generation voltage based on the sensor signal. And ECM sends the calculated value as the power generation command value to IPDM E/R. For the details of the power generation voltage variable control, refer to CHG-9. "System Description".

CAUTION:

Never connect the electrical component or the ground wire directly to the battery terminal. The connection causes the malfunction of the power generation voltage variable control, and then battery discharge may occur.

DTC Logic INFOID:0000000006392054

DTC DETECTION LOGIC

If DTC P1554 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-521, "DTC Logic".

DTC No. Trouble diagnosis name DTC detecting condition Possible cause The output voltage of the battery current Harness or connectors Battery current sensor perfor-P1554 sensor is lower than the specified value (The sensor circuit is open or shorted.) mance while the battery voltage is high enough. Battery current sensor

DTC CONFIRMATION PROCEDURE

1. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-545, "Component Function Check".

NOTE:

Use component function check to check the overall function of the battery current sensor circuit. During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YFS >> INSPECTION END

NO >> Go to EC-546, "Diagnosis Procedure".

Component Function Check

1.PRECONDITIONING

TESTING CONDITION:

- Before performing the following procedure, confirm that battery voltage is more than 12.8 V at idle.
- Before performing the following procedure, confirm that all load switches and A/C switch are turned OFF.

>> GO TO 2.

2.PERFORM COMPONENT FUNCTION CHECK

(II) With CONSULT-III

- Start engine and let it idle.
- Select "BAT CUR SEN" in "DATA MONITOR" mode with CONSULT-III.
- Check "BAT CUR SEN" indication for 10 seconds.

"BAT CUR SEN" should be above 2,300 mV at least once.

Without CONSULT-III

Start engine and let it idle.

EC-545 Revision: June 2012 2011 Altima GCC EC

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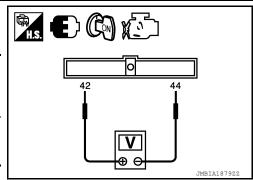
P1554 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check voltage between ECM harness connector terminals under the following conditions.

	ECM		
Connector	+	_	Voltage (V)
Connector	Terminal	Terminal	
F13	42 (Battery current sensor signal)	44 (Sensor ground)	Above 2.3 at least once



Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-546, "Diagnosis Procedure"

Diagnosis Procedure

INFOID:0000000006392056

1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

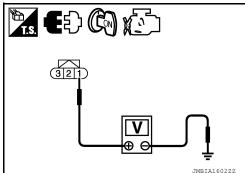
YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.CHECK BATTERY CURRENT SENSOR POWER SUPPLY CIRCUIT

- Disconnect battery current sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between battery current sensor harness connector and ground.

Battery cur	Battery current sensor		Voltage (V)
Connector	Terminal	Ground	voltage (v)
F5	1	Ground	Approx. 5



Is the inspection result normal?

YES >> GO TO 3.

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

${f 3.}$ CHECK BATTERY CURRENT SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between battery current sensor harness connector and ECM harness connector.

Battery cui	Battery current sensor		ECM	
Connector	Terminal	Connector	Terminal	Continuity
F5	2	F13	44	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, short to ground or short to power in harness or connectors.

4. CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between battery current sensor harness connector and ECM harness connector.

P1554 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

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Battery cui	Battery current sensor		ECM	
Connector	Terminal	Connector	Terminal	Continuity
F5	3	F13	42	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, short to ground or short to power in harness or connectors.

CHECK BATTERY CURRENT SENSOR

Refer to EC-537, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace battery negative cable assembly.

6.CHECK INTERMITTENT INCIDENT

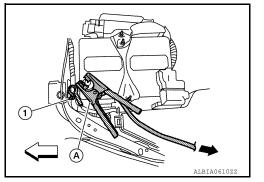
Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

1. CHECK BATTERY CURRENT SENSOR

- Turn ignition switch OFF.
- 2. Reconnect harness connectors disconnected.
- 3. Disconnect battery negative cable (1).
- ⟨□: Vehicle front
- To body ground
- 4. Install jumper cable (A) between battery negative terminal and body ground.
- 5. Turn ignition switch ON.



Check the voltage between ECM harness connector terminals under the following conditions.

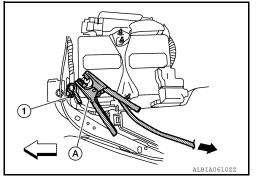
Connector	+	_	Voltage (V)
Connector	Terminal	Terminal	
F13	42 (Battery current sensor signal)	44 (Sensor ground)	Approx. 2.5

Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-3, "How to Handle Battery" (COUPE models) or PG-71, "How to Handle Battery" (SEDAN models).

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly.



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P1564 ASCD STEERING SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

P1564 ASCD STEERING SWITCH

Description INFOID.000000006392058

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-369, "System Diagram" for the ASCD function.

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P1564 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-518, "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 and wait at least 10 seconds.
- 2. Press MAIN switch for at least 10 seconds, then release it and wait at least 10 seconds.
- 3. 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.
- 5. 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-548, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392060

1.CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

2.check ascd steering switch circuit

(P) With CONSULT-III

- 1. Turn ignition switch ON.
- Select "MAIN SW", "CANCEL SW", "RESUME/ACC SW" and "SET SW" in "DATA MONITOR" mode with CONSULT-III.

P1564 ASCD STEERING SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

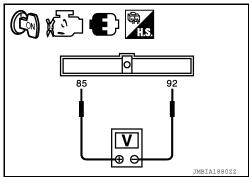
Check each item indication under the following conditions.

Monitor item	Condition		Indication
MAIN SW	MAIN switch	Pressed	ON
IVIAIIN SVV	WAIN SWILCH	Released	OFF
CANCEL SW	CANCEL switch	Pressed	ON
	CANCEL SWILLI	Released	OFF
RESUME/ACC SW	RESUME/ACCEL-	Pressed	ON
	ERATE switch	Released	OFF
SET SW	SET/COAST switch	Pressed	ON
		Released	OFF

⋈ Without CONSULT-III

- Turn ignition switch ON.
- Check the voltage between ECM harness connector terminals under the following conditions.

ECM					
Connector	+ –		Condition	Voltage (V)	
Connector	Terminal	Terminal			
			MAIN switch: Pressed	Approx. 0	
E10	85 (ASCD steering switch signal)	92 (ASCD steering switch ground)	CANCEL switch: Pressed	Approx. 1	
			SET/COAST switch: Pressed	Approx. 2	
			RESUME/ACCELERATE switch: Pressed	Approx. 3	
			All ASCD steering switches: Released	Approx. 4	



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

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

Combination switch	E	Continuity	
Terminal	Connector Terminal		Continuity
16	E10	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 E30, M1
- Combination switch (spiral cable)
- · Harness for open and short between ECM and combination switch

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P1564 ASCD STEERING SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

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

$5.\mathsf{check}$ ascd steering switch input signal circuit for open and short

1. Check the continuity between combination switch and ECM harness connector.

Combination switch	E	Continuity	
Terminal	Connector Terminal		Continuity
13	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 E30, M1
- Combination switch (spiral cable)
- · Harness for open and short between ECM and combination switch

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

7. CHECK ASCD STEERING SWITCH

Refer to EC-550, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace ASCD steering switch.

8. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

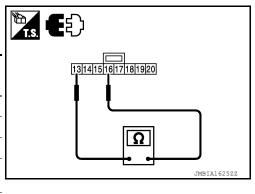
Component Inspection

INFOID:0000000006392061

1. CHECK ASCD STEERING SWITCH

- 1. Turn ignition switch OFF.
- Disconnect combination switch (spiral cable) harness connector.
- Check resistance between combination switch harness connector terminals as per the following.

Combination switch		Condition	Desigtance (O)	
Connector	Terminals	Condition	Resistance (Ω)	
M88 13 and 16	MAIN switch: Pressed	Approx. 0		
		CANCEL switch: Pressed	Approx. 250	
	13 and 16	SET/COAST switch: Pressed	Approx. 660	
		RESUME/ACCELERATE switch: Pressed	Approx. 1,480	
		All ASCD steering switches: Released	Approx. 4,000	



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD steering switch

P1572 ASCD BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

P1572 ASCD BRAKE SWITCH

Description

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-369, "System Diagram" 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 <u>EC-518</u>, "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. 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.

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 3.

3.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A-I $\,$

- 1. Start engine (VDC switch OFF).
- Select "DATA MONITOR" mode with CONSULT-III.
- 3. Press MAIN switch and make sure that CRUISE lamp lights up.
- 4. 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.

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< DTC/CIRCUIT DIAGNOSIS >

VHCL SPEED SE	More than 30 km/h (19 mph)
Selector lever	Suitable position

5. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-553, "Diagnosis Procedure".

NO >> GO TO 4.

4. PERFORM DTC CONFIRMATION PROCEDURE A-II

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.

VHCL SPEED SE	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-553, "Diagnosis Procedure".

NO >> INSPECTION END

5. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-552, "Component Function Check".

NOTE:

Use component function check to check the overall function of ASCD brake switch. During this check, a DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

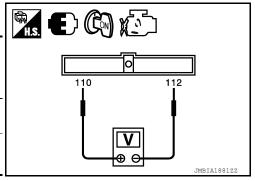
NO >> Go to EC-553, "Diagnosis Procedure".

Component Function Check

1.PERFORM COMPONENT FUNCTION CHECK

- Turn ignition switch ON.
- 2. Check the voltage between ECM harness connectors.

nector Terminal Terminal	Voltage
Terrilliai Terrilliai	
110 Climbile	
(ASCD depressed .	Approx. 0 V
E10 brake 112 Brake pedal Fully released Batt	attery voltage



INFOID:0000000006392064

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2. PERFORM COMPONENT FUNCTION CHECK-II

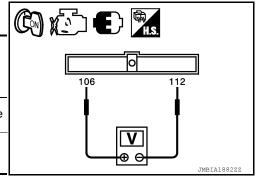
P1572 ASCD BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the voltage between ECM harness connectors.

	ECM		Condition		
Con-	+	-			Voltage
nector	Terminal	Terminal			
5 40	106 (Stop	110	5	Slightly depressed	Battery voltage
E10	lamp switch signal)	112	Brake pedal	Fully re- leased	Approx. 0 V



Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-553, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006896841

1. CHECK OVERALL FUNCTION-I

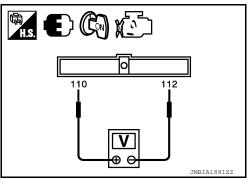
(P) With CONSULT-III

- 1. Turn ignition switch ON.
- Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-III.
- Check "BRAKE SW1" indication under the following conditions.

Monitor item	Condition	Indication	
BRAKE SW1	Brake pedal	Slightly depressed	OFF
DIVAILE OW I	Brake pedal	Fully released	ON

- Turn ignition switch ON.
- Check the voltage between ECM harness connectors.

	ECM		Condition		
Con-	+	1			Voltage
nector	Terminal	Terminal			
- 40	110 (ASCD	110	5	Slightly depressed	Approx. 0 V
E10	brake switch signal)	112	Brake pedal	Fully re- leased	Battery voltage



Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK OVERALL FUNCTION-II

(P) With CONSULT-III

Check "BRAKE SW2" indication in "DATA MONITOR" mode.

Monitor item	Condition	Indication	
BRAKE SW2	Brake pedal	Slightly depressed	ON
DRAKE SW2 Drake pedal		Fully released	OFF

(R) Without CONSULT-III

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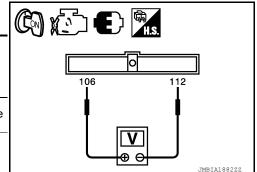
P1572 ASCD BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the voltage between ECM harness connectors.

	ECM		Condition		
Con-	+	-			Voltage
nector	Terminal	Terminal			
L 10	106 (Stop	440		Slightly depressed	Battery voltage
E10	lamp switch signal)	112	Brake pedal	Fully re- leased	Approx. 0 V



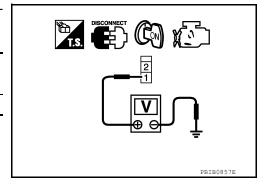
Is the inspection result normal?

YES >> GO TO 16. NO >> GO TO 7.

${f 3.}$ 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 bra	ASCD brake switch		Voltage
Connector	Terminal	Ground	voltage
E37	1	Ground	Battery voltage



Is the inspection result normal?

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

4. DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E6
- 10 A fuse (No. 3)
- · Harness for open or short between ASCD brake switch and fuse

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

${f 5.}$ CHECK ASCD BRAKE SWITCH INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between ASCD brake switch harness connector and ECM harness connector.

ASCD bra	ASCD brake switch		СМ	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E37	2	E10	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, short to ground or short to power in harness or connectors.

CHECK ASCD BRAKE SWITCH

Refer to EC-556, "Component Inspection (ASCD Brake Switch)".

Is the inspection result normal?

YES >> GO TO 9.

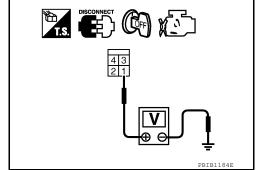
NO >> Replace ASCD brake switch. Refer to <u>BR-17</u>, "Exploded View".

[VQ35DE]

7. CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check the voltage between stop lamp switch harness connector and ground.

Stop lamp switch		Ground	Voltage	
Connector	Terminal	Ground	voltage	
E38	1	Ground	Battery voltage	



Is the inspection result normal?

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

8.DETECT MALFUNCTIONING PART

Check the following.

- Fuse block (J/B) connector E6
- 10 A fuse (No. 7)
- · Harness for open or short between stop lamp switch and battery

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

9. CHECK STOP LAMP RELAY-1 GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect stop lamp relay-1 harness connector.
- Check the continuity between stop lamp relay-1 harness connector and ground.

Stop lamp	relay-1	Ground	Continuity
Connector	Terminal	Ground	Continuity
E57	2	Ground	Existed

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 INPUT SIGNAL CIRCUIT

- 1. Connect stop lamp switch harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between stop lamp relay-1 harness connector and ground.

Stop lamp relay-1		Ground Condition		Voltage (V)	
Connector	Terminal	Ground	Condition		voitage (v)
E57	1	Ground	Brake pedal	Slightly de- pressed	Battery voltage
			pedai	Fully released	Approx. 0

Is the inspection result normal?

YES >> GO TO 12. NO >> GO TO 11.

11. DETECT MALFUNCTIONING PART

Check the following.

Joint connector-E14 E56

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< DTC/CIRCUIT DIAGNOSIS >

· Harness for open or short between stop lamp switch and stop lamp relay-1

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.

12. CHECK STOP LAMP RELAY-1 POWER SUPPLY CIRCUIT

1. Check the voltage between stop lamp relay-1 harness connector and ground.

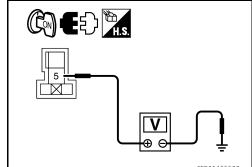
Check the voltage between stop lamp relay-1 harness connector and ground.

Stop lamp relay-1		Ground	Voltage (V)
Connector	Terminal	Ground	voltage (v)
E57	5	Ground	Battery voltage

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 stop Lamp relay-1 input signal circuit for open and short

- 1. Turn ignition switch OFF.
- Disconnect stop lamp relay-1 harness connector.
- 3. Check the continuity between stop lamp relay-1 harness connector and ECM harness connector.

ECM		Stop lamp relay-1		Continuity
Connector	Terminal	Connector Terminal		Continuity
E10	106	E57	3	Existed

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

Is the inspection result normal?

YES >> GO TO 15.

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

14. CHECK STOP LAMP SWITCH

Refer to EC-557, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace stop lamp switch.

15. CHECK STOP LAMP RELAY-1

Refer to EC-558, "Component Inspection (Stop Lamp Relay-1)".

Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace stop lamp relay-1.

16. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection (ASCD Brake Switch)

INFOID:0000000006392066

1.CHECK ASCD BRAKE SWITCH-I

- 1. Turn ignition switch OFF.
- 2. Disconnect ASCD brake switch harness connector.

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P1572 ASCD BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	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

1. Adjust ASCD brake switch installation. Refer to BR-13, "Inspection and Adjustment".

2. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake nedal	Fully released	Existed
i and 2	Brake pedal	Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD brake switch. Refer to BR-17, "Exploded

TS. DISCONNECT

Component Inspection (Stop Lamp Switch)

1. CHECK STOP LAMP SWITCH-I

- Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check harness continuity between stop lamp switch terminals under the following conditions.

Terminals	(Continuity	
1 and 2	Brake pedal	Fully released	Not existed
i aliu z	Diake pedal	Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK STOP LAMP SWITCH-II

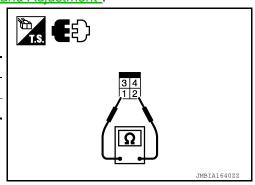
- Adjust stop lamp switch installation. Refer to BR-13, "Inspection and Adjustment".
- 2. Check harness continuity between stop lamp switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Not existed
		Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to BR-17, "Exploded View".



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P1572 ASCD BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

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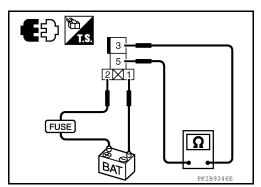
Component Inspection (Stop Lamp Relay-1)

INFOID:0000000006896819

1. STOP LAMP RELAY-1

- 1. Turn ignition switch OFF.
- 2. Remove stop lamp relay-1.
- 3. Check continuity between stop lamp relay-1 terminals under the following conditions.

Stop lamp relay-1		Conditions	Continuity
Terminal		Conditions	
3	5	12 V direct current supply between terminals 1 and 2	Existed
		No current supply	Not existed



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp relay-1.

P1574 ASCD VEHICLE SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

INFOID:0000000006392069

P1574 ASCD VEHICLE SPEED SENSOR

Description INFOID:0000000006392068

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-369, "System Diagram" 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-441, "DTC Logic".

- If DTC P1574 is displayed with DTC P0500, first perform the trouble diagnosis for DTC P0500. Refer to EC-511, "DTC Logic".
- If DTC P1574 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-518, "DTC Logic".
- If DTC P1574 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-520, "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 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 (ESP switch OFF).
- 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-559, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-196, "DTC Index".

Is the inspection result normal?

YES >> GO TO 2.

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INFOID:0000000006392070

P1574 ASCD VEHICLE SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

NO >> Perform trouble shooting relevant to DTC indicated.

 $2.\mathsf{CHECK}\ \mathsf{DTC}\ \mathsf{WITH}\ \mathsf{``ABS}\ \mathsf{ACTUATOR}\ \mathsf{AND}\ \mathsf{ELECTRIC}\ \mathsf{UNIT}\ (\mathsf{CONTROL}\ \mathsf{UNIT})"$

Refer to BRC-45, "DTC No. Index" (Without TCS) or BRC-115, "DTC No. Index" (With TCS).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace.

3. Check combination meter function

Refer to MWI-4, "Work Flow".

>> INSPECTION END

P1700 CVT CONTROL SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

P1700 CVT CONTROL SYSTEM

Description INFOID:0000000006392071

This DTC is displayed with other DTC regarding TCM. Perform the trouble diagnosis for corresponding DTC. Refer to EC-659, "DTC Index". When this DTC is detected, the ASCD control is canceled.

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[VQ35DE]

P1715 INPUT SPEED SENSOR

Description INFOID.000000006392072

ECM receives input speed sensor signal from TCM through CAN communication line. ECM uses this signal for engine control.

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 <u>EC-441</u>, "<u>DTC Logic</u>".
- If DTC P1715 is displayed with DTC P0335, first perform the trouble diagnosis for DTC P0335. Refer to EC-500, "DTC Logic".
- If DTC P1715 is displayed with DTC P0340, P0345, first perform the trouble diagnosis for DTC P0340, P0345. Refer to <u>EC-504, "DTC Logic"</u>.
- If DTC P1715 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-518, "DTC Logic".
- If DTC P1715 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-520</u>, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1715	Input speed sensor (TCM output)	Input speed sensor signal is different from the theoretical value calculated by ECM from output speed sensor signal and engine rpm signal.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (Input 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.
- Drive vehicle at a speed of more than 50 km/h (31 MPH) for at least 5 seconds.
- Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-562, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392074

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-196, "DTC Index".

OK or NG

OK >> GO TO 2.

NG >> Perform trouble shooting relevant to DTC indicated.

2.REPLACE TCM

Replace TCM. Refer to TM-239, "Removal and Installation".

>> INSPECTION END

[VQ35DE]

INFOID:0000000006392076

P1720 VSS

Description INFOID:0000000006392075

ECM receives two vehicle speed signals via CAN communication line. One is sent from "ABS actuator and electric unit (control unit)" via combination meter, and the other is from TCM (Transmission control module). ECM uses these signals for engine control.

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DTC Logic

DTC DETECTION LOGIC

NOTE:

• If DTC P1720 is displayed with DTC U1000, U1001 first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-441, "DTC Logic".

 If DTC P1720 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-520</u>, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	F
P1720	Vehicle speed sensor (TCM output)	A difference between two vehicle speed signals is out of the specified range.	Harness or connectors (Output speed sensor circuit is open or shorted.) Harness or connectors (Wheel sensor circuit is open or shorted.) TCM Output speed sensor ABS actuator and electric unit (control unit) Wheel sensor Combination meter	G

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.

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INFOID:0000000006392077

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2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine.
- Drive vehicle at a 20 km/h (12 MPH) or more for at least 5 seconds without brake pedal depressing.
- 3. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >> Go to EC-563, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-196, "DTC Index".

OK or NG

OK >> GO TO 2.

NG >> Perform trouble shooting relevant to DTC indicated.

2.CHECK DTC WITH "ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)"

Refer to BRC-45, "DTC No. Index" (Without TCS) or BRC-115, "DTC No. Index" (With TCS).

OK or NG

OK >> GO TO 3.

NG >> perform trouble shooting relevant to DTC indicated.

Revision: June 2012 EC-563 2011 Altima GCC

$\overline{3}$. CHECK COMBINATION METER FUNCTION

Refer to GI-38, "Work Flow".

>> INSPECTION END

P1800 VIAS CONTROL SOLENOID VALVE 1

< DTC/CIRCUIT DIAGNOSIS >

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INFOID:0000000006392080

P1800 VIAS CONTROL SOLENOID VALVE 1

Description INFOID:0000000006392078

The VIAS control solenoid valve 1 cuts the intake manifold vacuum signal for power valve 1 control. It responds to ON/OFF signals from the ECM. When the solenoid is OFF, the vacuum signal from the intake manifold is cut. When the ECM sends an ON signal the coil pulls the plunger downward and sends the vacuum signal to the power valve actuator 1.

INFOID:000000006392079

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1800	VIAS control solenoid valve 1 circuit	An excessively low or high voltage signal is sent to ECM through the VIAS control solenoid valve 1.	Harness or connectors (The solenoid valve 1 circuit is open or shorted.) VIAS control solenoid valve 1

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 11 V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

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

Is 1st trip DTC detected?

YES >> Go to EC-565, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK VIAS CONTROL SOLENOID VALVE 1 POWER SUPPLY CIRCUIT

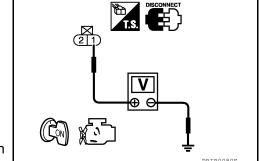
- Turn ignition switch OFF.
- Disconnect VIAS control solenoid valve 1 harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between VIAS control solenoid valve 1 harness connector and ground.

VIAS control solenoid valve 1		Ground	Voltage (V)
Connector	Terminal	Giodila	voltage (v)
F63	2	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

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



$2. \mathsf{CHECK}$ VIAS CONTROL SOLENOID VALVE 1 OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between VIAS control solenoid valve 1 harness connector and ECM harness connector.

Revision: June 2012 EC-565 2011 Altima GCC

< DTC/CIRCUIT DIAGNOSIS >

VIAS control s	olenoid valve 1	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F63	1	F14	27	Existed

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

Is the inspection result normal?

YES >> GO TO 3.

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

3.CHECK VIAS CONTROL SOLENOID VALVE 1

Refer to EC-566, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace VIAS control solenoid valve 1. Refer to EC-340, "Component Parts Location".

4. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

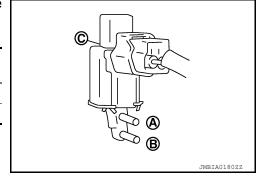
INFOID:0000000006392081

1. CHECK VIAS CONTROL SOLENOID VALVE 1

(E)With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Disconnect VIAS purge hoses connected to VIAS control solenoid valve 1.
- 4. Turn ignition switch ON.
- 5. Select "VIAS S/V 1" in "ACTIVE TEST" mode with CONSULT-III.
- 6. Check air passage continuity and operation delay time under the following conditions.

Condition (VIAS S/V 1)	Air passage continuity between (A) and (B)	Air passage continuity between (A) and (C)
ON	Existed	Not existed
OFF	Not existed	Existed



®Without CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Disconnect VIAS control solenoid valve 1 harness connector.
- 3. Disconnect VIAS purge hoses connected to VIAS volume control solenoid valve 1.
- 4. Check air passage continuity and operation delay time under the following conditions.

Condition	Air passage continuity between (A) and (B)	Air passage continuity between (A) and (C)
12 V direct current supply between terminals 1 and 2	Existed	Not existed
No supply	Not existed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace VIAS control solenoid valve 1. Refer to EC-340, "Component Parts Location".

P1801 VIAS CONTROL SOLENOID VALVE 2

< DTC/CIRCUIT DIAGNOSIS >

IVQ35DE1

P1801 VIAS CONTROL SOLENOID VALVE 2

Description INFOID:0000000006392082

The VIAS control solenoid valve 2 cuts the intake manifold vacuum signal for power valve 2 control. It responds to ON/OFF signals from the ECM. When the solenoid is OFF, the vacuum signal from the intake manifold is cut. When the ECM sends an ON signal the coil pulls the plunger downward and sends the vacuum signal to the power valve actuator 2.

INFOID:0000000006392083

DTC Logic

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1801	VIAS control solenoid valve 2 circuit	An excessively low or high voltage signal is sent to ECM through the VIAS control solenoid valve 2.	Harness or connectors (The solenoid valve 2 circuit is open or shorted.) VIAS control solenoid valve 2

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 11 V at idle.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

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

Is 1st trip DTC detected?

YES >> Go to EC-567, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

1.check vias control solenoid valve 2 power supply circuit

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

VIAS control s	olenoid valve 2	Ground	Voltage (V)	
Connector	Terminal	Ground	voltage (v)	
F65	2	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 2.

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

2.DETECT MALFUNCTIONING PART

Check harness for open or short between VIAS control solenoid valve 2 and IPDM E/R

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

EC-567 Revision: June 2012 2011 Altima GCC EC

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P1801 VIAS CONTROL SOLENOID VALVE 2

< DTC/CIRCUIT DIAGNOSIS >

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$\overline{3}$.check vias control solenoid valve 2 output signal circuit for open and short

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

VIAS control s	olenoid valve 2	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F65	1	F14	26	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, short to ground or short to power in harness or connectors.

4. CHECK VIAS CONTROL SOLENOID VALVE 2

Refer to EC-568, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace VIAS control solenoid valve 2. Refer to EC-340, "Component Parts Location".

5. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

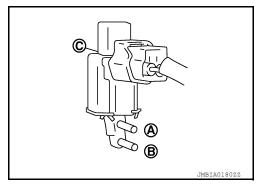
INFOID:0000000006392085

1. CHECK VIAS CONTROL SOLENOID VALVE 2

(P) With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Disconnect VIAS purge hoses connected to VIAS control solenoid valve 2.
- Turn ignition switch ON.
- 5. Select "VIAS S/V 2" in "ACTIVE TEST" mode with CONSULT-III.
- 6. Check air passage continuity and operation delay time under the following conditions.

Condition (VIAS S/V 2)	Air passage continuity between (A) and (B)	Air passage continuity between (A) and (C)
ON	Existed	Not existed
OFF	Not existed	Existed



♥Without CONSULT-III

- Turn ignition switch OFF.
- Disconnect VIAS control solenoid valve 2 harness connector.
- 3. Disconnect VIAS purge hoses connected to VIAS volume control solenoid valve 2.
- 4. Check air passage continuity and operation delay time under the following conditions.

P1801 VIAS CONTROL SOLENOID VALVE 2

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Condition	Air passage continuity between (A) and (B)	Air passage continuity between (A) and (C)
12 V direct current supply between terminals 1 and 2	Existed	Not existed
No supply	Not existed	Existed

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Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace VIAS control solenoid valve 2. Refer to EC-340, "Component Parts Location".

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[VQ35DE]

P1805 BRAKE SWITCH

Description INFOID:0000000006392086

Brake switch signal is applied to the ECM via the stop lamp switch when the brake pedal is depressed. This signal is used mainly to decrease the engine speed when the vehicle is driven.

DTC Logic INFOID:0000000006392087

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-570, "Diagnosis Procedure".

>> INSPECTION END NO

Diagnosis Procedure

INFOID:0000000006896842

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 the inspection result normal?

YES >> GO TO 11. NO >> GO TO 2.

2.CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- Disconnect stop lamp switch harness connector.
- Check the voltage between stop lamp switch harness connector and ground.

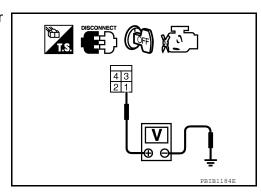
Stop lan	np switch	Ground	Voltage
Connector	Connector Terminal		voltage
E38	1	Ground	Battery voltage

Is the inspection result normal?

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

3.DETECT MALFUNCTIONING PART

Check the following.



< DTC/CIRCUIT DIAGNOSIS >

- Fuse block (J/B) connector E6
- 10 A fuse (No. 7)
- Harness for open or short between battery and stop lamp switch

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

4. CHECK STOP LAMP RELAY-1 GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect stop lamp relay-1 harness connector.
- Check the continuity between stop lamp relay-1 harness connector and ground.

Stop lamp	relay-1	Ground	Continuity
Connector Terminal		Ground	Continuity
E57	2	Ground	Existed

Is the inspection result normal?

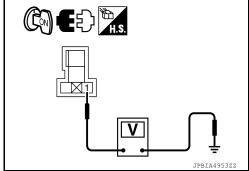
YES >> GO TO 5.

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

5.check stop Lamp switch input signal circuit

- 1. Connect stop lamp switch harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between stop lamp relay-1 harness connector and ground.

Stop lamp relay-1		Ground	Condition		Voltage (V)
Connector	Terminal	Ground	Condition		voltage (v)
E57	1	Ground	Brake pedal	Slightly de- pressed	Battery voltage
	pedai		Fully released	Approx. 0	



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Is the inspection result normal?

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

6. DETECT MALFUNCTIONING PART

Check the following.

- Joint connector-E14 E56
- Harness for open or short between stop lamp switch and stop lamp relay-1

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.

7.CHECK STOP LAMP RELAY-1 POWER SUPPLY CIRCUIT

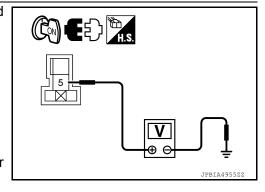
Check the voltage between stop lamp relay-1 harness connector and ground.

	Stop lam	p relay-1	Ground	Voltage (V)
٠	Connector Terminal		Ground	voitage (v)
	E57	5	Ground	Battery voltage

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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< DTC/CIRCUIT DIAGNOSIS >

$8.\mathsf{CHECK}$ STOP LAMP RELAY-1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- Disconnect stop lamp relay-1 harness connector.
- Check the continuity between stop lamp relay-1 harness connector and ECM harness connector.

ECM		Stop lamp relay-1		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E10	106	E57	3	Existed

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.

9. CHECK STOP LAMP SWITCH

Refer to EC-572, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace stop lamp switch.

10.CHECK STOP LAMP RELAY-1

Refer to EC-573, "Component Inspection (Stop Lamp Relay-1)".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace stop lamp relay-1.

11. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection (Stop Lamp Switch)

INFOID:0000000006903520

1. CHECK STOP LAMP SWITCH-I

- Turn ignition switch OFF.
- Disconnect stop lamp switch harness connector.
- Check harness continuity between stop lamp switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2 Brake pedal	Brake pedal	Fully released	Not existed
	Slightly depressed	Existed	

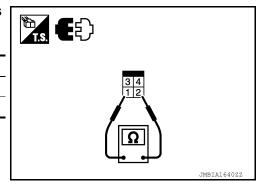
Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK STOP LAMP SWITCH-II

Adjust stop lamp switch installation. Refer to BR-13, "Inspection and Adjustment".



P1805 BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

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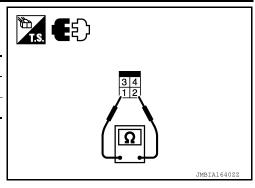
Check harness continuity between stop lamp switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	Brake pedal	Fully released	Not existed
I allu Z	Brake pedar	Slightly depressed	Existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-17, "Exploded View"</u>



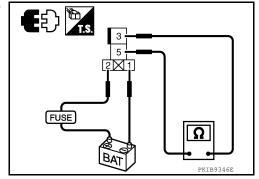
INFOID:0000000006896820

Component Inspection (Stop Lamp Relay-1)

1. STOP LAMP RELAY-1

- Turn ignition switch OFF.
- 2. Remove stop lamp relay-1.
- 3. Check continuity between stop lamp relay-1 terminals under the following conditions.

Stop lamp relay-1		Conditions	Continuity	
Terr	minal	Conditions	Continuity	
3	5	12 V direct current supply between terminals 1 and 2	Existed	
		No current supply	Not existed	



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp relay-1.

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P2100, P2103 THROTTLE CONTROL MOTOR RELAY

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

P2100, P2103 THROTTLE CONTROL MOTOR RELAY

Description INFOID:000000006392090

Power supply for the throttle control motor is provided to the ECM via the throttle control motor relay. The throttle control motor relay is controlled ON/OFF 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

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 8 V.

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.
- 3. Check DTC.

Is DTC detected?

YES >> Go to EC-574, "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-574, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392092

1. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Disconnect IPDM E/R harness connector F10.
- Check the continuity between IPDM E/R harness connector and ECM harness connector.

P2100, P2103 THROTTLE CONTROL MOTOR RELAY

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Connector Terminal Connector Terminal Fit0 70 F14 15 Existed 5. Also check harness for short to ground and short to power. Is the inspection result normal? YES >> GO TO 2. NO >> Repair open circuit, short to ground or short to power in harness or connectors. 2. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-II 1. Disconnect ECM harness connector F10. 3. Check the continuity between IPDM E/R harness connector and ECM harness connector. IPDM E/R ECM Connector Terminal Connector Terminal F10 54 F14 2 Existed 4. Also check harness for short to ground and short to power. Is the inspection result normal? YES >> GO TO 3. NO >> Repair open circuit, short to ground or short to power in harness or connectors. 3. CHECK FUSE 1. Disconnect 15 A fuse (No. 43) from IPDM E/R. 2. Check 15 A fuse for blown. Is the inspection result normal? YES >> GO TO 4. NO >> Replace 15A fuse. 4. CHECK INTERMITTENT INCIDENT Refer to GI-42, "Intermittent Incident". Is the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation". NO >> Repair or replace harness or connectors.	IPDM	E/R	EC	M	Continuity		
Also check harness for short to ground and short to power. It he inspection result normal? YES >> GO TO 2. NO >> Repair open circuit, short to ground or short to power in harness or connectors. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-II Disconnect ECM harness connector. Disconnect IPDM E/R harness connector F10. Check the continuity between IPDM E/R harness connector and ECM harness connector. IPDM E/R	Connector	Terminal	Connector	Terminal	Continuity	_	_
A the inspection result normal? YES >> GO TO 2. NO >> Repair open circuit, short to ground or short to power in harness or connectors. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-II Disconnect ECM harness connector. Disconnect IPDM E/R harness connector F10. Check the continuity between IPDM E/R harness connector and ECM harness connector. IPDM E/R Connector Terminal Connector Terminal F10 54 F14 2 Existed Also check harness for short to ground and short to power. In the inspection result normal? YES >> GO TO 3. CHECK FUSE Disconnect 15 A fuse (No. 43) from IPDM E/R. Check 15 A fuse for blown. Sthe inspection result normal? YES >> GO TO 4. NO >> Replace I5A fuse. CHECK INTERMITTENT INCIDENT Refer to GI-42, "Intermittent Incident". Sthe inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".	F10	70	F14	15	Existed	_	Ε
Separation of the content of the c	. Also chec	k harness fo	r short to grou	nd and short	to power.	_	
>> Repair open circuit, short to ground or short to power in harness or connectors. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-II Disconnect ECM harness connector. Disconnect IPDM E/R harness connector F10. Check the continuity between IPDM E/R harness connector and ECM harness connector. IPDM E/R	-		mal?				
Disconnect ECM harness connector. Disconnect IPDM E/R harness connector F10. Check the continuity between IPDM E/R harness connector and ECM harness connector. IPDM E/R Connector Terminal Connector Terminal F10 54 F14 2 Existed Also check harness for short to ground and short to power. In the inspection result normal? YES >> GO TO 3. CHECK FUSE Disconnect 15 A fuse (No. 43) from IPDM E/R. Check 15 A fuse for blown. The inspection result normal? YES >> GO TO 4. NO >> Replace 15A fuse. CHECK INTERMITTENT INCIDENT Lefer to GI-42, "Intermittent Incident". Sithe inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".			irouit abort to	around or ob	art to nowar in	harnoon ar connectors	
Disconnect ECM harness connector. Disconnect IPDM E/R harness connector F10. Check the continuity between IPDM E/R harness connector and ECM harness connector. IPDM E/R ECM Continuity Connector Terminal Connector Terminal F10 54 F14 2 Existed Also check harness for short to ground and short to power. The inspection result normal? YES >> GO TO 3. NO >> Repair open circuit, short to ground or short to power in harness or connectors. CHECK FUSE Disconnect 15 A fuse (No. 43) from IPDM E/R. Check 15 A fuse for blown. The inspection result normal? YES >> GO TO 4. NO >> Replace 15A fuse. CHECK INTERMITTENT INCIDENT Refer to GI-42, "Intermittent Incident". The inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45. "Removal and Installation".							
Disconnect IPDM E/R harness connector F10. Check the continuity between IPDM E/R harness connector and ECM harness connector. IPDM E/R					NPUT SIGNAL	CIRCUIT-II	_
IPDM E/R ECM Continuity Connector Terminal Connector Terminal F10 54 F14 2 Existed Also check harness for short to ground and short to power. the inspection result normal? YES >> GO TO 3. NO >> Repair open circuit, short to ground or short to power in harness or connectors. CHECK FUSE Disconnect 15 A fuse (No. 43) from IPDM E/R. Check 15 A fuse for blown. The inspection result normal? YES >> GO TO 4. NO >> Replace 15A fuse. CHECK INTERMITTENT INCIDENT Refer to GI-42, "Intermittent Incident". The inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".							
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Connector Terminal Connector Terminal F10							
Connector Terminal Connector Terminal F10 54 F14 2 Existed Also check harness for short to ground and short to power. the inspection result normal? YES >> GO TO 3. NO >> Repair open circuit, short to ground or short to power in harness or connectors. CHECK FUSE Disconnect 15 A fuse (No. 43) from IPDM E/R. Check 15 A fuse for blown. the inspection result normal? YES >> GO TO 4. NO >> Replace 15A fuse. CHECK INTERMITTENT INCIDENT efer to GI-42, "Intermittent Incident". Ithe inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".	IPDM	E/R	EC	М	Continuity	_	
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PYES >> GO TO 3. NO >> Repair open circuit, short to ground or short to power in harness or connectors. CHECK FUSE Disconnect 15 A fuse (No. 43) from IPDM E/R. Check 15 A fuse for blown. In the inspection result normal? YES >> GO TO 4. NO >> Replace 15A fuse. CHECK INTERMITTENT INCIDENT effer to GI-42, "Intermittent Incident". In the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".	. Also chec	k harness fo	r short to grou	nd and short	to power.	_	
NO >> Repair open circuit, short to ground or short to power in harness or connectors. CHECK FUSE Disconnect 15 A fuse (No. 43) from IPDM E/R. Check 15 A fuse for blown. the inspection result normal? YES >> GO TO 4. NO >> Replace 15A fuse. CHECK INTERMITTENT INCIDENT efer to GI-42, "Intermittent Incident". the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".	the inspection	on result nor	mal?				
Disconnect 15 A fuse (No. 43) from IPDM E/R. Check 15 A fuse for blown. the inspection result normal? YES >> GO TO 4. NO >> Replace 15A fuse. CHECK INTERMITTENT INCIDENT efer to GI-42, "Intermittent Incident". the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".							
Disconnect 15 A fuse (No. 43) from IPDM E/R. Check 15 A fuse for blown. the inspection result normal? YES >> GO TO 4. NO >> Replace 15A fuse. CHECK INTERMITTENT INCIDENT efer to GI-42, "Intermittent Incident". the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".			ircuit, short to	ground or sho	ort to power in I	harness or connectors.	
Check 15 A fuse for blown. the inspection result normal? YES >> GO TO 4. NO >> Replace 15A fuse. CHECK INTERMITTENT INCIDENT efer to GI-42, "Intermittent Incident". the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".	.CHECK FU	SE					
the inspection result normal? YES >> GO TO 4. NO >> Replace 15A fuse. CHECK INTERMITTENT INCIDENT efer to GI-42, "Intermittent Incident". the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".				PDM E/R.			_
YES >> GO TO 4. NO >> Replace 15A fuse. • CHECK INTERMITTENT INCIDENT efer to GI-42, "Intermittent Incident". • the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".							
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YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".	· · · · · · · · · · · · · · · · · · ·						
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Revision: June 2012 EC-575 2011 Altima GCC

P2101 ELECTRIC THROTTLE CONTROL FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

P2101 ELECTRIC THROTTLE CONTROL FUNCTION

Description INFOID:000000006392093

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. The throttle position sensor provides feedback to the ECM, when opens/closes the throttle valve in response to driving conditions via the throttle control motor.

DTC Logic

DTC DETECTION LOGIC

NOTE:

If DTC P2101 is displayed with DTC P2100 or 2119, first perform the trouble diagnosis for DTC P2100 or P2119. Refer to <u>EC-574, "DTC Logic"</u> or <u>EC-583, "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 11 V 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-576, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392095

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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

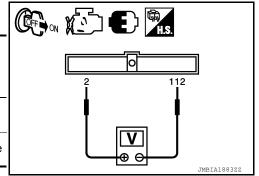
P2101 ELECTRIC THROTTLE CONTROL FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the voltage between ECM harness connectors.

	EC				
	+	_		Condition	Voltage (V)
Connector	Terminal	Connector	Terminal		l
F14	F14 2 E10 112		Ignition switch OFF	Approx. 0	
	2	2 E10 11		Ignition switch ON	Battery voltage



Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 3.

3.CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT-II

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect IPDM E/R harness connector F10.
- Check the continuity between IPDM E/R harness connector and ECM harness connector.

IPDI	IPDM E/R		ECM		
Connector	Terminal	Connector Terminal		Continuity	
F10	70	F14	15	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, short to ground or short to power in harness or connectors.

f 4.CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT-II

- Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector F10.
- 3. Check the continuity between IPDM E/R harness connector and ECM harness connector.

IPDI	IPDM E/R		CM	Continuity
Connector	Terminal	Connector Terminal		Continuity
F10	54	F14	2	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, short to ground or short to power in harness or connectors.

5.CHECK FUSE

- 1. Disconnect 15 A fuse (No. 43) from IPDM E/R.
- 2. Check 15 A fuse for blown.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace 15 A fuse.

6.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".

NO >> Repair or replace harness or connectors.

7. CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT FOR OPEN OR SHORT

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Revision: June 2012 EC-577 2011 Altima GCC

P2101 ELECTRIC THROTTLE CONTROL FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

- 1. Turn ignition switch OFF.
- 2. Disconnect electric throttle control actuator harness connector.
- 3. 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 F51 6		5	Not existed
F51		F14	6	Existed
			5	Existed
			6	Not existed

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

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace.

8.check electric throttle control actuator visually

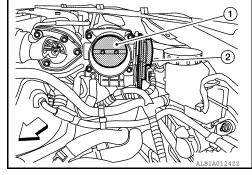
- 1. Remove the intake air duct. Refer to EM-131, "Removal and Installation".
- 2. Check if foreign matter is caught between the throttle valve (1) and the housing.
- Electric throttle control actuator (2)
- <⊐: Vehicle front

Is the inspection result normal?

YES >> GO TO 9.

NO

>> Remove the foreign matter and clean the electric throttle control actuator inside. Refer to EM-132, "Removal and Installation".



9. CHECK THROTTLE CONTROL MOTOR

Refer to EC-578, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 11.

10. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace harness or connectors.

11. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace electric throttle control actuator. Refer to EM-132, "Removal and Installation".
- Refer to <u>EC-579</u>, "Special Repair Requirement".

>> INSPECTION END

Component Inspection

INFOID:0000000006392096

[VQ35DE]

1. CHECK THROTTLE CONTROL MOTOR

- 1. Turn ignition switch OFF.
- Disconnect electric throttle control actuator harness connector.

Revision: June 2012 EC-578 2011 Altima GCC

P2101 ELECTRIC THROTTLE CONTROL FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

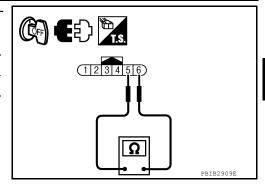
 Check resistance between electric throttle control actuator terminals as per the following.

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. Refer to EM-132, "Removal and Installation".
- 2. Go to EC-579, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-336, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

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P2118 THROTTLE CONTROL MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

P2118 THROTTLE CONTROL MOTOR

Description INFOID:000000006392098

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. The throttle position sensor it provides feedback to the ECM, when opens/closes the throttle valve in response to driving conditions via the throttle control motor.

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-580, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392100

1. CHECK GROUND CONNECTIONS

- 1. Turn ignition switch OFF.
- 2. Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connections.

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
F51		F14	6	Existed
F31	6		5	Existed
	0		6	Not existed

P2118 THROTTLE CONTROL MOTOR

< DTC/CIRCUIT DIAGNOSIS >

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-581, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 5.

4. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace harness or connectors.

REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace electric throttle control actuator. Refer to <u>EM-132</u>, "<u>Removal and Installation</u>".
- Go to <u>EC-581</u>, "Special Repair Requirement".

>> INSPECTION END

Component Inspection

1. CHECK THROTTLE CONTROL MOTOR

- 1. Turn ignition switch OFF.
- Disconnect electric throttle control actuator harness connector.
- Check resistance between electric throttle control actuator terminals as per the following.

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. Refer to EM-132, "Removal and Installation".
- Go to <u>EC-579</u>, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

1.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

EC-581

>> GO TO 2.

Revision: June 2012

2. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-336. "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

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INFOID:0000000006392102

P2118 THROTTLE CONTROL MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

>> END

P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

< DTC/CIRCUIT DIAGNOSIS >

IVQ35DE1

P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

Description INFOID:0000000006392103

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 sends the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and opens/closes the throttle valve in response to driving conditions via the throttle control motor.

DTC Logic INFOID:0000000006392104

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. Shift selector lever position to D position and wait at least 3 seconds.
- 3. Shift selector lever position to P position.
- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON and wait at least 1 second.
- Shift selector lever position to D position and wait at least 3 seconds.
- Shift selector lever position to P position.
- Turn ignition switch OFF, wait at least 10 seconds, and then turn ON. 8.
- Check DTC.

Is DTC detected?

YES >> Go to EC-583, "Diagnosis Procedure".

NO >> GO TO 3.

3.perform dtc confirmation procedure for malfunction c

- Turn ignition switch ON and wait at least 1 second.
- Shift selector lever position to D position and wait at least 3 seconds.
- Shift selector lever position to N, P or neutral position.
- Start engine and let it idle for 3 seconds.
- 5. Check DTC.

Is DTC detected?

YES >> Go to EC-583, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

 ${f 1.}$ CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

EC-583 Revision: June 2012 2011 Altima GCC EC

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INFOID:0000000006392105

P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

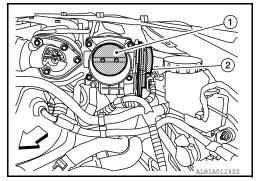
- 1. Turn ignition switch OFF.
- Remove the intake air duct. Refer to <u>EM-131, "Removal and Installation"</u>.
- 3. Check if foreign matter is caught between the throttle valve (1) and the housing.
- Electric throttle control actuator (2)
- <□: Vehicle front

Is the inspection result normal?

YES >> GO TO 2.

NO

>> Remove the foreign matter and clean the electric throttle control actuator inside. Refer to EM-132, "Removal and Installation".



2.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator. Refer to EM-132, "Removal and Installation".
- 2. Go to EC-533, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000006392106

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-336, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

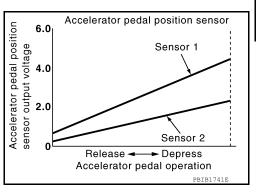
P2122, P2123 APP SENSOR

Description INFOID:0000000006392107

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 potentiometer which transform the accelerator pedal position into output voltage, and emit the voltage signal 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 <u>EC-521</u>, "<u>DTC Logic"</u>.

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 8 V 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-585, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1.CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

EC-585

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

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INFOID:0000000006392109

$\overline{2}$.check app sensor 1 power supply circuit

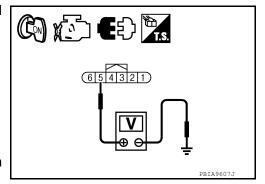
- Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

APP s	sensor	Ground	Voltage (V)	
Connector	Connector Terminal		voltage (v)	
E40	5	Ground	Approx. 5	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit, 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		E	Continuity	
Connector	Terminal	Connector Terminal		Continuity
E40	4	E10	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, short to ground or short to power in harness or connectors.

4. CHECK APP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between APP sensor harness connector and ECM harness connector.

APP :	APP sensor		ECM		
Connector	Terminal	Connector Terminal		Continuity	
E40	3	E10	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, short to ground or short to power in harness or connectors.

5. CHECK APP SENSOR

Refer to EC-587, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6.REPLACE ACCELERATOR PEDAL ASSEMBLY

- Replace accelerator pedal assembly. Refer to ACC-4, "Exploded View".
- Refer to EC-587, "Special Repair Requirement".

>> INSPECTION END

7_{\cdot} CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

P2122, P2123 APP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

>> INSPECTION END

Component Inspection

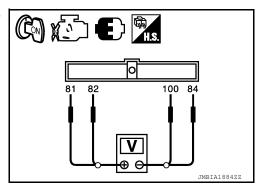
INFOID:0000000006392110

[VQ35DE]

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 under the following conditions.

	ECM				
Connector	+	_	Condition		Voltage (V)
Connector	Terminal	Terminal			
	81	84		Fully released	0.65 - 0.87
E10	(APP sensor 1 signal)	(Sensor ground)	Accelerator	Fully de- pressed	More than 4.3
LIU	82	100 (Sensor ground)	pedal	Fully released	0.28 - 0.48
	(APP sensor 2 signal)			Fully de- pressed	More than 2.0



Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.REPLACE ACCELERATOR PEDAL ASSEMBLY

- Replace accelerator pedal assembly. Refer to <u>ACC-4, "Exploded View"</u>.
- 2. Go to EC-587, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000006392111

1.PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-335, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 2.

2.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-336. "THROTTLE VALVE CLOSED POSITION LEARNING; Special Repair Requirement".

>> GO TO 3.

3.perform idle air volume learning

Refer to EC-336, "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END

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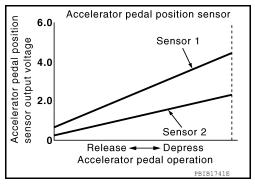
P2127, P2128 APP SENSOR

Description INFOID:0000000006392112

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 potentiometer which transform the accelerator pedal position into output voltage, and emit the voltage signal 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.) [CKP sensor (POS) circuit is shorted.]
P2128	Accelerator pedal position sensor 2 circuit high input	An excessively high voltage from the APP sensor 2 is sent to ECM.	 (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 8 V 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-588, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392114

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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

P2127, P2128 APP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

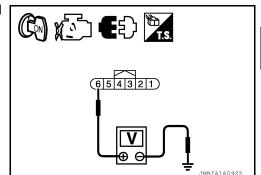
[VQ35DE]

Disconnect accelerator pedal position (APP) sensor harness connector.

Turn ignition switch ON.

3. Check the voltage between APP sensor harness connector and ground.

APP s	sensor	Ground	Voltage (V)	
Connector	Terminal	Giodila	voitage (v)	
E40	6	Ground	Approx. 5	



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.
- Disconnect ECM harness connector. 2.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

APP sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E40	6	E10	87	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit.

$oldsymbol{4}.$ CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-III

Check harness for short to power and short to ground, between the following terminals.

E	CM	Sensor			
Connector	Terminal	Name	Connector	Terminal	
F13 72		Refrigerant pressure sensor	E219	1	
1 13	76 CKP sensor (POS)		F30	1	
E10	87	APP sensor	E40	6	

Is the inspection result normal?

YES >> GO TO 5.

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

5. CHECK COMPONENTS

Check the following.

- Crankshaft position sensor (POS) (Refer to EC-503. "Component Inspection".)
- Refrigerant pressure sensor (Refer to <u>EC-636, "Diagnosis Procedure"</u>.)

Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace malfunctioning components.

$oldsymbol{6}$.CHECK APP SENSOR 2 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 s	sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E40	2	E10	100	Existed

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< DTC/CIRCUIT DIAGNOSIS >

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, 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
E40	1	E10	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, short to ground or short to power in harness or connectors.

8.CHECK APP SENSOR

Refer to EC-590, "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-4, "Exploded View"</u>.
- 2. Refer to EC-591, "Special Repair Requirement".

>> INSPECTION END

10. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

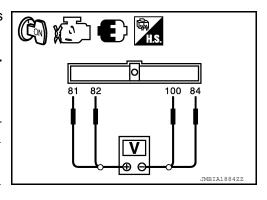
>> INSPECTION END

Component Inspection

1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- 1. Reconnect all harness connectors disconnected.
- Turn ignition switch ON.
- 3. Check the voltage between ECM harness connector terminals under the following conditions.

	ECM				
Connector	+	_	Condition		Voltage (V)
Connector	Terminal	Terminal			
	81	84		Fully released	0.65 - 0.87
F40	(APP sensor 1 signal)	(Sensor ground)	`	Fully de- pressed	More than 4.3
E10 —	82	100	pedal	Fully released	0.28 - 0.48
	(APP sensor 2 signal) (Sensor ground)		Fully de- pressed	More than 2.0	



INFOID:0000000006392115

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

Revision: June 2012 EC-590 2011 Altima GCC

P2127, P2128 APP SENSOR

[VQ35DE] < DTC/CIRCUIT DIAGNOSIS > $\overline{2}$.REPLACE ACCELERATOR PEDAL ASSEMBLY Replace accelerator pedal assembly. Refer to ACC-4, "Exploded View". 2. Go to EC-587, "Special Repair Requirement". EC >> INSPECTION END Special Repair Requirement INFOID:0000000006392116 1. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING Refer to EC-335, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Require-D ment". >> GO TO 2. Е 2.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING Refer to EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement". F >> GO TO 3. 3.PERFORM IDLE AIR VOLUME LEARNING Refer to EC-336, "IDLE AIR VOLUME LEARNING: Special Repair Requirement". Н >> END M Ν

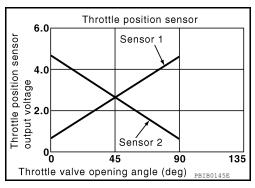
EC-591 Revision: June 2012 2011 Altima GCC

P2135 TP SENSOR

Description INFOID:000000006392117

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 EC-521, "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 8 V 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-592, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006392119

1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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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- 2. Turn ignition switch ON.
- Check the voltage between electric throttle control actuator harness connector and ground.

Electric throttle	control actuator	Ground	Voltage (V)	
Connector	Terminal	Ground	voltage (v)	
F51	1	Ground	Battery voltage	

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Is the inspection result normal?

YES >> GO TO 3.

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

${f 3.}$ CHECK THROTTLE POSITION SENSOR 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
F51	4	F13	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, short to ground or short to power in harness or connectors.

f 4.CHECK THROTTLE POSITION SENSOR 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
F51	2	F13	37	Existed
гэт	3	1 13	38	LAISIEU

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, short to ground or short to power in harness or connectors.

CHECK THROTTLE POSITION SENSOR

Refer to EC-594, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- Replace electric throttle control actuator. Refer to <u>EM-132</u>, "Removal and Installation".
- Refer to <u>EC-594</u>, "Special Repair Requirement"

>> INSPECTION END

1.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Revision: June 2012 EC-593 2011 Altima GCC

>> INSPECTION END

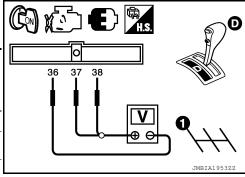
Component Inspection

INFOID:0000000006392120

1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform EC-470, "Special Repair Requirement".
- 4. Turn ignition switch ON.
- 5. Set selector lever position to D position.
- 6. Check the voltage between ECM harness connector terminals under the following conditions.

ECM					
Con- nector + Terminal		_	Condition		Voltage
		Terminal			
	37		36 Sensor ground) Accelera- tor pedal	Fully released	More than 0.36 V
F13 -	(TP sensor 1 signal)			Fully depressed	Less than 4.75 V
	38	ground)		Fully released	Less than 4.75 V
	(TP sensor 2 signal)			Fully depressed	More than 0.36 V



Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

- 1. Replace electric throttle control actuator. Refer to EM-132, "Removal and Installation".
- 2. Go to EC-470, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000006392121

1. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement"

>> GO TO 2.

2.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-336, "IDLE AIR VOLUME LEARNING: Special Repair Requirement"

>> END

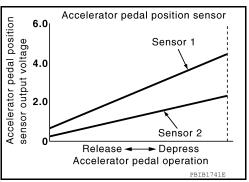
P2138 APP SENSOR

Description INFOID:0000000006392122

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 potentiometer which transform the accelerator pedal position into output voltage, and emit the voltage signal 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:0000000006392123

DTC DETECTION LOGIC

NOTE:

If DTC P2138 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-521, "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.) [CKP sensor (POS) circuit is shorted.] (Refrigerant pressure 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 8 V 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-595, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

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< DTC/CIRCUIT DIAGNOSIS >

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. 2.
- Check the voltage between APP sensor harness connector and ground.

APP s	sensor	Ground	Voltage (V)	
Connector	Connector Terminal		voltage (v)	
E40	5	Ground	Approx. 5	



Is the inspection result normal?

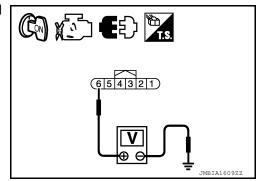
YES >> GO TO 3.

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

3.CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-I

- Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

APP :	sensor	Ground	Voltage (V)	
Connector	Connector Terminal		voltage (v)	
E40 6		Ground	Approx. 5	



(615 413 211)

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

APP sensor		ECM		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
E40	6	E10	87	Existed	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit.

5. CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-III

Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor		
Connector	Terminal	Name	Connector	Terminal
F13	72	Refrigerant pressure sensor	E219	1
1 10	76	CKP sensor (POS)	F30	1
E10	87	APP sensor	E40	6

Is the inspection result normal?

YES

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

P2138 APP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

6. CHECK COMPONENTS

Check the following.

- Crankshaft position sensor (POS) (Refer to EC-503, "Component Inspection".)
- Refrigerant pressure sensor (Refer to EC-636, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace malfunctioning components.

7.CHECK APP SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- 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
E40	4	E10	84	Existed
	2	L10	100	LAISICU

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, short to ground or short 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.

APP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E40	3	E10	81	Existed
	1	LIU	82	LXISICU

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, short to ground or short to power in harness or connectors.

9. CHECK APP SENSOR

Refer to EC-598, "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 EM-132, "Removal and Installation".
- 2. Refer to EC-598, "Special Repair Requirement".

>> INSPECTION END

11. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

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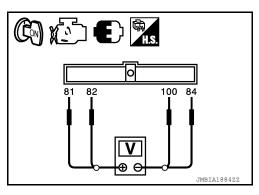
Component Inspection

INFOID:0000000006392125

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 under the following conditions.

	ECM				
Connector	+	_	Condition		Voltage (V)
Connector	Terminal	Terminal			
	81	84		Fully released	0.65 - 0.87
E10	(APP sensor 1 signal)	(Sensor ground)		Fully de- pressed	More than 4.3
	82	100	pedal	Fully released	0.28 - 0.48
	(APP sensor 2 signal)	(Sensor ground)		Fully de- pressed	More than 2.0



Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.REPLACE ACCELERATOR PEDAL ASSEMBLY

- 1. Replace accelerator pedal assembly. Refer to ACC-4, "Exploded View".
- 2. Go to EC-587, "Special Repair Requirement".

>> INSPECTION END

Special Repair Requirement

INFOID:0000000006392126

1. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-335, "ACCELERATOR PEDAL RELEASED POSITION LEARNING: Special Repair Requirement".

>> GO TO 2.

2.PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-336, "THROTTLE VALVE CLOSED POSITION LEARNING: Special Repair Requirement".

>> GO TO 3.

3.PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-336. "IDLE AIR VOLUME LEARNING: Special Repair Requirement".

>> END

INFOID:0000000006392128

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ASCD BRAKE SWITCH

Description INFOID:0000000006392127

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-369, "System Diagram" for the ASCD function.

Component Function Check

${f 1}$.CHECK ASCD BRAKE SWITCH FUNCTION

(P) With CONSULT-III

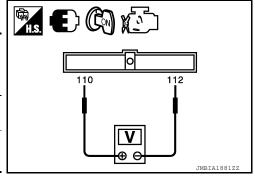
- Turn ignition switch ON.
- Select "BRAKE SW1" in "DATA MONITOR" mode with CONSULT-III.
- Check "BRAKE SW1" indication under the following conditions.

Monitor item	Condition		Indication
BRAKE SW1	Brake nedal	Slightly depressed	OFF
	Brake pedal	Fully released	ON

Without CONSULT-III

- 1. Turn ignition switch ON.
- Check the voltage between ECM harness connectors.

ECM				_		
Con-	+	_	Condition		Voltage	
nector	Terminal	Terminal				
5 40	110 (ASCD	440		Slightly depressed	Approx. 0 V	
E10	brake switch signal)	112	Brake pedal	Fully re- leased	Battery voltage	



Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-599, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK ASCD BRAKE SWITCH POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ASCD brake switch harness connector. 2.
- Turn ignition switch ON. 3.
- Check the voltage between ASCD brake switch harness connector and ground.

ASCD brake switch		Ground	Voltage (V)	
Connector	Terminal	Giouna	voltage (v)	
E37	1	Ground	Battery voltage	

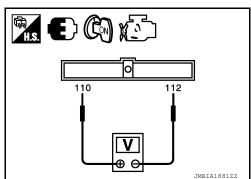
YES >> GO TO 3. NO >> GO TO 2.

Is the inspection result normal?

2.DETECT MALFUNCTIONING PART

Check the following.

Fuse block (J/B) connector E6



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EC-599 Revision: June 2012 2011 Altima GCC

< DTC/CIRCUIT DIAGNOSIS >

- 10 A fuse (No. 3)
- · Harness for open or short between ASCD brake switch and fuse

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

3.check ascd brake switch input signal circuit for open and short

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

ASCD brake switch		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
E37	2	E10	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, short to ground or short to power in harness or connectors.

4. CHECK ASCD BRAKE SWITCH

Refer to EC-600, "Component Inspection (ASCD Brake Switch)"

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace ASCD brake switch. Refer to <u>BR-17</u>, "Exploded View".

5. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection (ASCD Brake Switch)

INFOID:0000000006392130

1. CHECK ASCD BRAKE SWITCH-I

- Turn ignition switch OFF.
- Disconnect ASCD brake switch harness connector.
- 3. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals		Continuity	
1 and 2	Brake nedal	Fully released	Existed
i aliu Z	nd 2 Brake pedal	Slightly depressed	Not existed

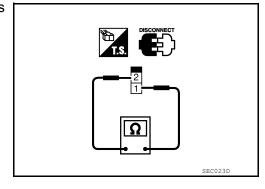
Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK ASCD BRAKE SWITCH-II

1. Adjust ASCD brake switch installation. Refer to BR-13, "Inspection and Adjustment".



ASCD BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

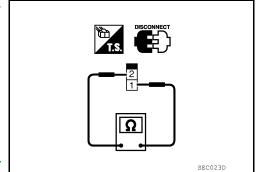
2. Check the continuity between ASCD brake switch terminals under the following conditions.

Terminals	Condition		Continuity
1 and 2	1 and 2 Brake pedal	Fully released	Existed
i dila 2		Slightly depressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD brake switch. Refer to <u>BR-17</u>, "<u>Exploded View"</u>.



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ASCD INDICATOR

Description INFOID:000000006392131

The ASCD operation status is indicated by two indicators, (CRUISE and SET on the information display) on the combination meter.

CRUISE indicator is displayed to indicate that ASCD system is ready for operation when MAIN switch on ASCD steering switch is turned ON.

SET indicator is displayed when the following conditions are met.

- · CRUISE indicator is displayed.
- SET/COAST switch on ASCD steering switch is turned ON while vehicle speed is within the range of ASCD setting.

SET indicator is displayed during ASCD control.

Refer to EC-369, "System Description" for the ASCD function.

Component Function Check

INFOID:0000000006392132

1. CHECK ASCD INDICATOR FUNCTION

Check ASCD indicator under the following conditions.

ASCD INDICATOR	CONDITION		SPECIFICATION
CRUISE	Ignition switch: ON MAIN switch: Pressed at the 1st time → at the 2nd time		$ON \rightarrow OFF$
	MAIN switch: ON	ASCD: Operating	ON
SET	When vehicle speed is be- tween 40 km/h (25 MPH) and 210 km/h (130 MPH)	ASCD: Not operating	OFF

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-602, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006392133

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-441, "Diagnosis Procedure".

2.CHECK COMBINATION METER OPERATION

Refer to MWI-4, "Work Flow".

Is the inspection result normal?

YES >> GO TO 3

NO >> Check combination meter circuit. Refer to EC-441, "Diagnosis Procedure".

3. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

COOLING FAN

Description INFOID:000000006392134

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 4-step control [HIGH/MIDDLE/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		
Middle (MID)	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-378, "System Diagram".

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INFOID:0000000006392135

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Component Function Check

1. CHECK COOLING FAN FUNCTION

(II) With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Perform "COOLING FAN" in "ACTIVE TEST" mode with CONSULT-III.
- 3. Check that cooling fan speed varies according to the percent.

Without CONSULT-III

- 1. Perform IPDM E/R auto active test and check cooling fan motors operation, refer to PCS-11, "Diagnosis <a href="Description".
- 2. Check that cooling fan operates.

Is the inspection result normal?

YES >> INSPECTION END

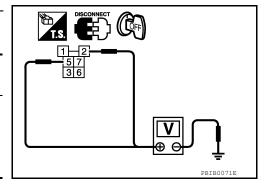
NO >> Go to EC-603, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK COOLING FAN RELAY POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect cooling fan relays-2, -3.
- Turn ignition switch ON.
- Check the voltage between cooling fan relays-2, -3 harness connectors and ground.

Cooling fan rel	Ground	Voltage	
Connector	Connector Terminal		
E42	2	Ground	Battery voltage
(cooling fan relay-2)	5		
E43	2	Giouna	Battery voltage
(cooling fan relay-3)	5		



Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

2.DETECT MALFUNCTIONING PART

Check the following.

- 10 A fuse (No. 33)
- 40 A fusible link (letter K)
- IPDM E/R harness connector E18
- · Harness for open or short between cooling fan relay-2 and battery
- · Harness for open or short between cooling fan relay-3 and battery
- Harness for open or short between cooling fan relay-2 and IPDM E/R
- Harness for open or short between cooling fan relay-3 and IPDM E/R

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

${f 3.}$ CHECK COOLING FAN RELAY OUTPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connectors.
- Check the continuity between cooling fan relay-2, -3 harness connectors and IPDM E/R harness connector.

Cooling fan relay		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E42 (cooling fan relay-2)	1	E17	42	Existed
E43 (cooling fan relay-3)	1	E18	34	LAISted

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.

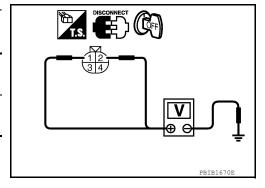
- Harness for open or short between cooling fan relay-2 and IPDM E/R
- Harness for open or short between cooling fan relay-3 and IPDM E/R

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

5. CHECK COOLING FAN MOTOR POWER SUPPLY CIRCUIT

- 1. Disconnect cooling fan motor-1 harness connector.
- Check the voltage between cooling fan motor-1 harness connector and ground.

Cooling fan n	notor-1	Ground	Voltage	
Connector	Connector Terminal		Voltage	
E220	1	Ground	Battery voltage	
	2	Glound	Dattery Voltage	



Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 6.

6. DETECT MALFUNCTIONING PART

Check the following.

- 40 A fusible link (letter M)
- Harness connector E12, E203
- Harness for open or short between cooling fan motor-1 and battery

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

7. CHECK COOLING FAN MOTOR CIRCUIT-I

- 1. Disconnect cooling fan motor-2 harness connector.
- 2. Check the continuity between cooling fan relay-2, -3 harness connectors and cooling fan motor-1, -2 harness connectors.

Cooling fan ı	elay	Cooling fan motor		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E42	3	E221 (Cooling fan motor-2)	2	
(cooling fan relay-2)	7	E220 (Cooling fan motor-1)	3	Existed
E43 (cooling fan relay-3)	3	E221 (Cooling fan motor-2)	1	LAISIEU
	7	E220 (Cooling fan motor-1)	4	

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

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 8.

8.DETECT MALFUNCTIONING PART

Check the following.

- Harness connector E12, E203
- Harness for open or short between cooling fan motor-1 and cooling fan relay-2
- Harness for open or short between cooling fan motor-1 and cooling fan relay-3
- Harness for open or short between cooling fan motor-2 and cooling fan relay-2
- Harness for open or short between cooling fan motor-2 and cooling fan relay-3

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

9. CHECK COOLING FAN MOTOR CIRCUIT-II

1. Check the continuity between IPDM E/R harness connector and cooling fan motor-1, -2 harness connector.

IPDN	IPDM E/R		n motor	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E18	35	E220 (Cooling fan motor-1)	4	Existed
210	38	E221 (Cooling fan motor-2)	1	LAISIGU

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

Is the inspection result normal?

YES >> GO TO 11. NO >> GO TO 10.

10.DETECT MALFUNCTIONING PART

Check the following.

- Harness connector E70, E305
- Harness for open or short between cooling fan motor-1 and IPDM E/R
- Harness for open or short between cooling fan motor-2 and IPDM E/R

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

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11. CHECK COOLING FAN MOTOR CIRCUIT-III

1. Check the continuity between cooling fan relay-2, -3 harness connectors and ground.

Cooling fan	motor	Ground	Continuity
Connector Terminal		Ground	Continuity
E42 (cooling fan relay-2)	6	Ground	Existed
E43 (cooling fan relay-3)	6	Ground	LAISIGU

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

Is the inspection result normal?

YES >> GO TO 12.

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

12. CHECK COOLING FAN MOTOR CIRCUIT-IV

1. Check the continuity between cooling fan motor-2 harness connector and ground.

Cooling fan motor-2		Ground	Continuity	
Connector	Terminal			
E221	3	Ground	Existed	
LZZ I	4	Giodila	LAISIEU	

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

Is the inspection result normal?

YES >> GO TO 13.

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

13. CHECK COOLING FAN RELAYS-2 AND -3

Refer to EC-607, "Component Inspection (Cooling Fan Relay)".

Is the inspection result normal?

YES >> GO TO 14.

NO >> Replace malfunctioning cooling fan relay.

14.CHECK COOLING FAN MOTORS-1 AND -2

Refer to EC-606, "Component Inspection (Cooling Fan Motor)".

Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace malfunctioning cooling fan motor. Refer to <u>CO-40, "Exploded View"</u>.

15. CHECK INTERMITTENT INCIDENT

Perform GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".

NO >> Repair or replace harness connectors.

Component Inspection (Cooling Fan Motor)

INFOID:0000000006392137

1. CHECK COOLING FAN MOTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect cooling fan motor harness connector.

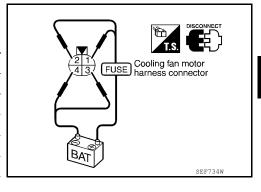
COOLING FAN

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

3. Supply cooling fan motor terminals with battery voltage and check operation.

	Condition -	Terminals		
		+	_	
Cooling fan motor	А	1	3 and 4	
		2	3 and 4	
		1 and 2	3	
		1 and 2	4	
	В	1, 2	3, 4	



Check that cooling fan speed of condition B is higher than that of A.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace cooling fan motor. Refer to CO-40, "Exploded View".

Component Inspection (Cooling Fan Relay)

1. CHECK COOLING FAN RELAY

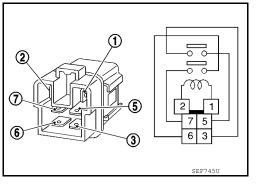
- 1. Disconnect cooling fan relays -2, -3 harness connectors.
- 2. Check continuity between cooling fan relay -2, -3 terminals under the following conditions.

Terminals	Conditions	Continuity
3 and 5	12 V direct current supply between terminals 1 and 2	Existed
6 and 7	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

Description INFOID.000000006392139

The electrical load signal (Headlamp switch signal, rear window defogger switch signal, etc.) is transferred via the CAN communication.

Component Function Check

INFOID:0000000006392140

1. CHECK REAR WINDOW DEFOGGER SWITCH FUNCTION

- 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	AL Rear window defogger switch		ON
LOAD SIGNAL	Rear window derogger switch	OFF	OFF

Is the inspection result normal?

YES >> GO TO 2.

NO >> Go to EC-608, "Diagnosis Procedure".

2. CHECK LIGHTING SWITCH FUNCTION

Check "LOAD SIGNAL" indication under the following conditions.

Monitor item	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-608, "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
TIEATERTANOW	Treater fair control switch	OFF	OFF

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-608, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006392141

1. INSPECTION START

Confirm the malfunctioning circuit (rear window defogger, headlamp or heater fan). Refer to <u>EC-608</u>, "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-3, "Work Flow".

ELECTRICAL LOAD SIGNAL [VQ35DE] < DTC/CIRCUIT DIAGNOSIS > >> INSPECTION END 3.CHECK HEADLAMP SYSTEM Α Refer to EXL-4, "Work Flow". EC >> INSPECTION END 4. CHECK HEATER FAN CONTROL SYSTEM Refer to HAC-4, "Work Flow" (Automatic air conditioner) or HAC-107, "Work Flow" (Manual air conditioner). >> INSPECTION END D Е F Н K L Ν

Revision: June 2012 EC-609 2011 Altima GCC

ELECTRONIC CONTROLLED ENGINE MOUNT

< DTC/CIRCUIT DIAGNOSIS >

IVQ35DE1

ELECTRONIC CONTROLLED ENGINE MOUNT

Description INFOID:0000000006392142

The electronic controlled engine mount control solenoid valve controls the intake manifold vacuum signal for electronic controlled engine mount. The electronic controlled engine mount control solenoid valve is moved by ON/OFF signal from the ECM. When the solenoid is OFF, the vacuum signal from the intake manifold is cut. When the solenoid is ON, the intake manifold vacuum signal is sent to the electronic controlled engine mount.

Component Function Check

CHECK OVERALL FUNCTION

(P) With CONSULT-III

- Start engine and warm it up to normal operating temperature.
- Select "ENGINE MOUNTING" in "ACTIVE TEST" mode with CONSULT-III and touch "ON/OFF" on the CONSULT-III screen.
- Check that the motor operating sound is heard from front electronic controlled engine mount and rear electronic controlled engine mount for about 0.5 seconds according to the switching condition of "ENGINE MOUNTING".

Without CONSULT-III

- Make sure that gear position is P or N.
- Start engine and let it idle.
- Change the engine speed from idle to more than 1,000 rpm and then return to idle (with vehicle stopped).
- Check that the motor operating sound is heard from front electronic controlled engine mount for and rear electronic controlled engine mount about 0.5 seconds when changing engine speed. It is better to hear the operating sound around the left side front wheel house.

Is the inspection result normal?

YES >> INSPECTION END

>> EC-610, "Diagnosis Procedure". NO

Diagnosis Procedure

INFOID:0000000006392144

1. CHECK VACUUM SOURCE

- Turn ignition switch OFF.
- Reconnect electronic controlled engine mount control solenoid valve harness connector.
- Disconnect vacuum hose connected to electronic controlled engine mount.
- Start engine and let it idle.
- Check vacuum hose for vacuum existence.

Vacuum should exist.

Is the inspection result normal?

YES >> GO TO 7.

>> GO TO 2. NO

2.CHECK VACUUM HOSES AND VACUUM GALLERY

- Turn ignition switch OFF.
- Check vacuum hoses and vacuum gallery for clogging, cracks or improper connection. Refer to EC-386. "System Description".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace vacuum hoses and vacuum gallery.

3.check electronic controlled engine mount control solenoid valve power supply CIRCUIT

- Disconnect electronic controlled engine mount control solenoid valve harness connector.
- Turn ignition switch ON.

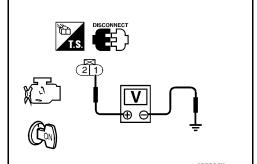
ELECTRONIC CONTROLLED ENGINE MOUNT

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the voltage between front electronic controlled engine mount harness connector and ground.

Electronic controlled engine mount control solenoid valve		Ground	Voltage
Connector	Terminal		
F64	1	Ground	Battery voltage



Is the inspection result normal?

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

f 4.DETECT MALFUNCTIONING PART

Check the following.

- 10 A fuse (No. 3)
- Fuse block (J/B) connector E6
- Harness connectors E3, F1
- Harness for open or short between electronic controlled engine mount control solenoid valve and fuse

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

5.CHECK ELECTRONIC CONTROLLED ENGINE MOUNT CONTROL SOLENOID VALVE OUTPUT SIG-NAL CIRCUIT FOR OPEN AND SHORT

- Disconnect ECM harness connector.
- 2. Check the continuity between ECM harness connector and electronic controlled engine mount control solenoid valve harness connector.

ECM		Electronic controlled engine mount control solenoid valve		Continuity
Connector	Terminal	Connector	Terminal	
F14	28	F64	2	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, short to ground or short to power in harness connectors.

$oldsymbol{6}$.CHECK ELECTRONIC CONTROLLED ENGINE MOUNT CONTROL SOLENOID VALVE

Refer to EC-612, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace electronic controlled engine mount control solenoid valve.

7.CHECK ELECTRONIC CONTROLLED ENGINE MOUNT

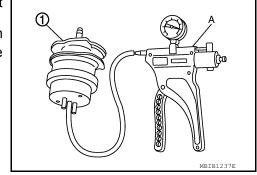
- Turn ignition switch OFF.
- Install vacuum pump (A) to electronic controlled engine mount 2.
- 3. Check that a vacuum is maintained when applying the vacuum of -40 kPa (-0.41 kg/cm², -5.8 psi) to electronic controlled engine mount.
- 4. Also visually check electronic controlled engine mount.

Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace electronic controlled engine mount.

8.CHECK INTERMITTENT INCIDENT



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ELECTRONIC CONTROLLED ENGINE MOUNT

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace intake manifold collector. Refer to EM-132, "Removal and Installation".

NO >> Repair or replace malfunctioning part.

Component Inspection

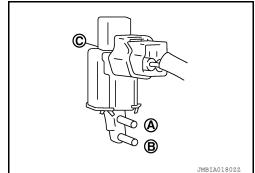
INFOID:0000000006392145

1. CHECK ELECTRONIC CONTROLLED ENGINE MOUNT CONTROL SOLENOID VALVE

(P) With CONSULT-III

- 1. Turn ignition switch OFF.
- Reconnect electronic controlled engine mount control solenoid valve harness connector.
- 3. Disconnect vacuum hoses connected to electronic controlled engine mount control solenoid valve.
- 4. Turn ignition switch ON.
- 5. Select "ENGINE MOUNTING" in "ACTIVE TEST" mode with CONSULT-III.
- 6. Check air passage continuity and operation delay time under the following conditions.

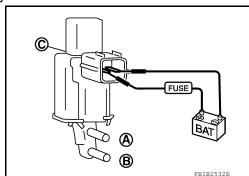
Condition (ENGINE MOUNTING)	Air passage continuity between (A) and (B)	Air passage continuity between (A) and (C)
TRVL	Existed	Not existed
IDLE	Not existed	Existed



Without CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Disconnect electronic controlled engine mount control solenoid valve harness connector.
- 3. Disconnect vacuum hoses connected to electronic controlled engine mount control solenoid valve.
- 4. Check air passage continuity and operation delay time under the following conditions.

Condition	Air passage continuity between (A) and (B)	Air passage continuity between (A) and (C)
12 V direct current supply between terminals 1 and 2	Existed	Not existed
No supply	Not existed	Existed



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace electronic controlled engine mount control solenoid valve.

EVAP CANISTER VENT CONTROL VALVE

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

INFOID:0000000006392147

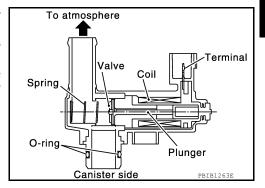
EVAP CANISTER VENT CONTROL VALVE

Description INFOID:0000000006392146

The EVAP canister vent control valve is located on the EVAP canister.

This solenoid valve is not used for engine control, and always remains open.

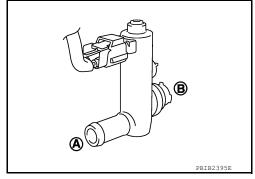
If the vent is closed by any reason under EVAP purge conditions, the evaporative emission control system is depressurized and EVAP canister may be damaged.



Component Function Check

1. CHECK EVAP CANISTER VENT CONTROL VALVE FUNCTION

- 1. Turn ignition switch OFF.
- Remove EVAP canister vent control valve with its harness connector connected from EVAP canister.
- Start engine.
- 4. Blow air into port A and check that it flows freely out of port B.



YES >> INSPECTION END

NO >> Go to EC-613, "Diagnosis Procedure".

Diagnosis Procedure

1. CHECK VACUUM LINE

- 1. Turn ignition switch OFF.
- 2. Check vacuum line between EVAP canister purge volume control solenoid valve and intake manifold collector for crack, clogging, improper connection or disconnection. Refer to EC-394, "System Diagram".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace.

2.CHECK EVAP CANISTER VENT CONTROL VALVE POWER SUPPLY CIRCUIT

- 1. Disconnect EVAP canister vent control valve harness connector.
- 2. Turn ignition switch ON.

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EVAP CANISTER VENT CONTROL VALVE

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check voltage between EVAP canister vent control valve harness connector and ground.

EVAP canister vent control valve		Ground	Voltage
Connector	Terminal		
B39	B39 1		Battery voltage

Is the inspection result normal?

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

3. DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E29, B10
- · Harness connectors F2, E11
- · Harness for open or short between EVAP canister vent control valve and IPDM E/R

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

4. CHECK EVAP CANISTER VENT CONTROL VALVE OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP canister vent control valve harness connector and ECM harness connector

EVAP canister purge vol- ume control solenoid valve		ECM		Continuity
Connector	Terminal	Connector Terminal		
B39	2	E10 109		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 E29, B10
- · Harness for open or short between EVAP canister vent control valve and ECM

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

6. CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-614, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace EVAP canister vent control valve.

7 .CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006392149

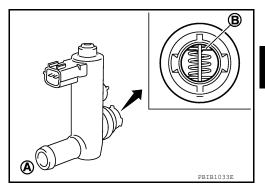
1.CHECK EVAP CANISTER VENT CONTROL VALVE

EVAP CANISTER VENT CONTROL VALVE

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

- 1. Remove EVAP canister vent control valve from EVAP canister.
- Check portion B of EVAP canister vent control valve for being rusted.



3. 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
12 V direct current supply between terminals 1 and 2	No
OFF	Yes

Operation takes less than 1 second.

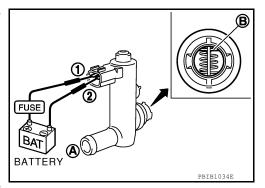
If NG, go to next step.

- 4. Clean the air passage (portion A to B) of EVAP canister vent control valve using an air blower.
- 5. Perform step 3 again.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister vent control solenoid valve



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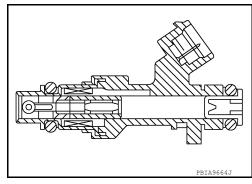
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FUEL INJECTOR

Description INFOID:000000006392150

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:0000000006392151

1. INSPECTION START

Turn ignition switch to START.

Is any cylinder ignited?

YES >> GO TO 2.

NO >> Go to EC-616, "Diagnosis Procedure".

2. CHECK FUEL INJECTOR FUNCTION

(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

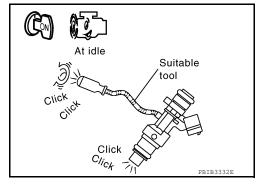
- Start engine.
- 2. Listen to each fuel injector operating sound.

Clicking sound should be heard.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-616, "Diagnosis Procedure".



INFOID:0000000006392152

Diagnosis Procedure

1. CHECK FUEL INJECTOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect fuel injector harness connector.
- 3. Turn ignition switch ON.

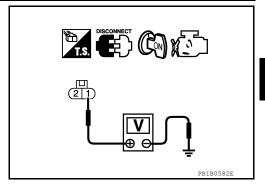
FUEL INJECTOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the voltage between fuel injector harness connector and ground.

Fuel injector			Ground	Voltage (V)
Cylinder	Connector	Terminal	Ground	voltage (v)
1	F17	1		Battery voltage
2	F18	1	- Ground	
3	F19	1		
4	F20	1		
5	F21	1		
6	F22	1		



Is the inspection result normal?

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

2.DETECT MALFUNCTIONING PART

Check the following.

- 10 A fuse (No. 35)
- IPDM E/R harness connector F10
- Harness for open or short between fuel injector and fuse

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

${f 3.}$ CHECK FUEL INJECTOR OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

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

Fuel injector			ECM		Continuity
Cylinder	Connector	Terminal	Connector	Terminal	Continuity
1	F17	2		32	
2	F18	2	F14	31	
3	F19	2		30	Existed
4	F20	2	F1 4	29	Existed
5	F21	2		3	
6	F22	2		1	

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

Is the inspection result normal?

YES >> GO TO 4.

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

4. CHECK FUEL INJECTOR

Refer to EC-618, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace malfunctioning fuel injector. Refer to EM-148, "Removal and Installation".

5. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

OK or NG

OK >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation".

NG >> INSPECTION END

EC-617 Revision: June 2012 2011 Altima GCC Α

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FUEL INJECTOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Component Inspection

INFOID:0000000006392153

1. CHECK FUEL INJECTOR

- Turn ignition switch OFF.
- Disconnect fuel injector harness connector.
- Check resistance between fuel injector terminals as per the fol-

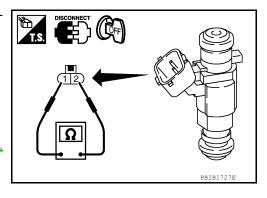
Terminals	Resistance
1 and 2	11.1 - 14.5 Ω [at 10 - 60°C (50 - 140°F)]

Is the inspection result normal?

YES >> INSPECTION END

NO

>> Replace malfunctioning fuel injector. Refer to EM-148. "Removal and Installation".



FUEL PUMP

Description INFOID:0000000006392154

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 start ability. 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.
- 2. Pinch fuel feed hose with two fingers.

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-619, "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 connectors.

	ECM			
+			_	Voltage
Connector	Terminal	Connector	Terminal	
F14	14	E10	112	Battery voltage

Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 2. 14 112 V

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2.CHECK FUEL PUMP POWER SUPPLY CIRCUIT-II

Check the voltage between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Voltage	
Connector	Terminal	Ground	voltage	
F10	77	Ground	Battery voltage	

Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 10.

3. DETECT MALFUNCTIONING PART

Check the following.

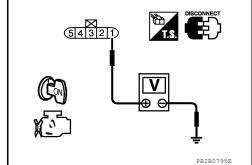
- IPDM E/R harness connector F10
- Harness for open or short between IPDM E/R and ECM

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

4. CHECK FUEL PUMP POWER SUPPLY CIRCUIT-III

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Disconnect "fuel level sensor unit and fuel pump" harness connector.
- 4. Turn ignition switch ON.
- 5. 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	Terminal		
B42	1	Ground	Battery voltage should exist 1 second after ignition switch is turn ON.



Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 5.

5. CHECK 15 A FUSE

- 1. Turn ignition switch OFF.
- 2. Disconnect 15 A fuse (No. 32).
- 3. Check 15 A fuse.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace fuse.

$oldsymbol{6}$.CHECK FUEL PUMP POWER SUPPLY CIRCUIT-IV

- 1. Disconnect IPDM E/R harness connector E18.
- 2. Check the continuity between IPDM E/R harness connector and "fuel level sensor unit and fuel pump" harness connector.

IPDM E/R		Fuel level sensor unit and fuel pump		Continuity
Connector	Terminal	Connector Terminal		
E18	13	B42 1		Existed

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

FUEL PUMP

NO >> GO TO 7. / DETECT MALFUNCTIONING PART Check the following. Harness connectors B10, E29 IPDM E/R harness connector E18 Harness for open or short between IPDM E/R and "fuel level sensor unit and fuel pump" >> Repair open circuit or short to power in harness or connectors. 3. CHECK FUEL PUMP GROUND CIRCUIT . Turn ignition switch OFF Check the continuity between "fuel level sensor unit and fuel pump" and ground. Fuel level sensor unit and fuel pump" and ground. Fuel level sensor unit and fuel pump" and ground. Fuel level sensor unit and fuel pump" and ground. Fuel level sensor unit and fuel pump" and ground. Continuity Connector Terminal B42 3 Ground Existed . Also check harness for short to power. she inspection result normal? YES >> GO TO 10. NO >> GO TO 9. .). DETECT MALFUNCTIONING PART Check the following. Harness connectors B10, E29 IPDM E/R harness connector E18 Harness for open or short between IPDM E/R and "fuel level sensor unit and fuel pump" >> Repair open circuit or short to power in harness or connectors. 0. CHECK FUEL PUMP Refer to GC-621, "Component Inspection (Fuel Pump)". she inspection result normal? YES >> GO TO 11. NO >> Replace "fuel level sensor unit and fuel pump". Refer to FL-7, "Removal and Installation". 1. CHECK INTERMITTENT INCIDENT Refer to GI-42, "Intermittent Incident". she inspection result normal?	DTC/CIRCUIT DIAGNOS	SIS >	[VQ35DE]
Check the following. Harness connectors B10, E29 IPDM E/R harness connector E18 Harness for open or short between IPDM E/R and "fuel level sensor unit and fuel pump" > Repair open circuit or short to power in harness or connectors. 3. CHECK FUEL PUMP GROUND CIRCUIT Turn ignition switch OFF. Check the continuity between "fuel level sensor unit and fuel pump" and ground. Fuel level sensor unit and fuel pump Ground Continuity Connector Terminal B42 3 Ground Existed Also check harness for short to power. site inspection result normal? YES > GO TO 10. NO >> GO TO 9. DETECT MALFUNCTIONING PART Check the following. Harness connectors B10, E29 IPDM E/R harness connector E18 Harness for open or short between IPDM E/R and "fuel level sensor unit and fuel pump" > Repair open circuit or short to power in harness or connectors. 10. CHECK FUEL PUMP Refer to EC-621, "Component Inspection (Fuel Pump)". Refer to EC-621, "Component Inspection (Fuel Pump)". Refer to GI-42, "Intermittent Incident". 1. CHECK INTERMITTENT INCIDENT Refer to GI-42, "Intermittent Incident". Set the inspection result normal? YES >> Replace "Fuel level sensor unit and Installation". 1. CHECK INTERMITTENT INCIDENT Refer to GI-42, "Intermittent Incident". Set the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation". NO >> Repair or replace harness or connectors.	YES >> GO TO 10.	<u>nal?</u>	
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>> Repair open circuit or short to power in harness or connectors. 3. CHECK FUEL PUMP GROUND CIRCUIT Turn ignition switch OFF. Check the continuity between "fuel level sensor unit and fuel pump" and ground. Fuel level sensor unit and fuel pump Ground Continuity Connector Terminal B42 3 Ground Existed Also check harness for short to power. Sithe inspection result normal? YES >> GO TO 10. NO >> GO TO 9. 3. DETECT MALFUNCTIONING PART Check the following. Harness connectors B10, E29 IPDM E/R harness connector E18 Harness for open or short between IPDM E/R and "fuel level sensor unit and fuel pump" >> Repair open circuit or short to power in harness or connectors. O.CHECK FUEL PUMP Refer to EC-621, "Component inspection (Fuel Pump)". Sithe inspection result normal? YES >> Replace "fuel level sensor unit and fuel pump". Refer to FL-7, "Removal and Installation". 1. CHECK INTERMITTENT INCIDENT Refer to GI-42, "Intermittent Incident". Sithe inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation". >> Repair or replace harness or connectors.	IPDM E/R harness connection	ctor E18	
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PYES >> GO TO 10. NO >> GO TO 9. DETECT MALFUNCTIONING PART Check the following. Harness connectors B10, E29 IPDM E/R harness connector E18 Harness for open or short between IPDM E/R and "fuel level sensor unit and fuel pump" >> Repair open circuit or short to power in harness or connectors. O.CHECK FUEL PUMP Refer to EC-621, "Component Inspection (Fuel Pump)". Is the inspection result normal? YES >> GO TO 11. NO >> Replace "fuel level sensor unit and fuel pump". Refer to FL-7, "Removal and Installation". I.CHECK INTERMITTENT INCIDENT Refer to GI-42, "Intermittent Incident". Sthe inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation". >> Repair or replace harness or connectors.		·	
DETECT MALFUNCTIONING PART Check the following. Harness connectors B10, E29 IPDM E/R harness connector E18 Harness for open or short between IPDM E/R and "fuel level sensor unit and fuel pump" >> Repair open circuit or short to power in harness or connectors. O.CHECK FUEL PUMP Refer to EC-621, "Component Inspection (Fuel Pump)". Is the inspection result normal? YES >> GO TO 11. NO >> Replace "fuel level sensor unit and fuel pump". Refer to FL-7, "Removal and Installation". 1.CHECK INTERMITTENT INCIDENT Refer to GI-42, "Intermittent Incident". So the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation". NO >> Repair or replace harness or connectors.	YES >> GO TO 10.		
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>> Repair open circuit or short to power in harness or connectors. O.CHECK FUEL PUMP Refer to EC-621, "Component Inspection (Fuel Pump)". In the inspection result normal? YES >> GO TO 11. NO >> Replace "fuel level sensor unit and fuel pump". Refer to FL-7, "Removal and Installation". I.CHECK INTERMITTENT INCIDENT Refer to GI-42, "Intermittent Incident". In the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation". NO >> Repair or replace harness or connectors.	IPDM E/R harness connection	ctor E18	
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Refer to GI-42, "Intermittent Incident". So the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation". NO >> Repair or replace harness or connectors.		· · · · · · · · · · · · · · · · · · ·	
s the inspection result normal? YES >> Replace IPDM E/R. Refer to PCS-45, "Removal and Installation". NO >> Repair or replace harness or connectors.			
YES >> Replace IPDM E/R. Refer to <u>PCS-45, "Removal and Installation"</u> . NO >> Repair or replace harness or connectors.	telel to <u>GI-42, Intermittent</u>	<u>. incluent</u> .	
NO >> Repair or replace harness or connectors.	s the inspection result norm	nal?	
·			
component inspection (Fuel Pump)			
	,omponent inspection	n (Fuel Pump)	INFOID:000000006392157
.CHECK FUEL PUMP	.CHECK FUEL PUMP		
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Revision: June 2012 EC-621 2011 Altima GCC

FUEL PUMP

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

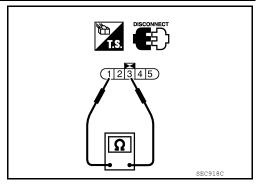
Check resistance between "fuel level sensor unit and fuel pump" terminals as per the following.

Terminals	Resistance
1 and 3	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". Refer to <u>FL-7, "Exploded View"</u>.



INFOID:0000000006392158

Component Inspection (Condenser-1)

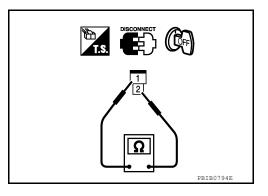
1. CHECK CONDENSER

- 1. Turn ignition switch OFF.
- 2. Disconnect condenser-1 harness connector.
- 3. Check resistance between condenser-1 terminals as per the following.

Terminals	Resistance
1 and 2	Above 1 MΩ [at 25°C (77°F)]

Is the inspection result normal?

YES >> INSPECTION END NO >> Replace condenser.



HO2S2

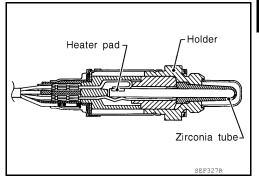
Description INFOID:0000000006392159

The heated oxygen sensor 2, after three way catalyst 1, 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 1 V in richer conditions to 0 V in leaner conditions.

Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.

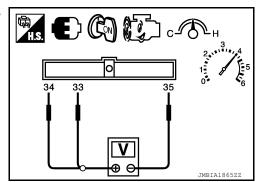


INFOID:0000000006392160

Component Function Check

1. CHECK HEATED OXYGEN SENSOR 2 FUNCTION-I

- Start engine and warm it up to the normal operating temperature.
- 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. 3.
- 4. Let engine idle for 1 minute.
- Check the voltage between ECM harness connector terminals under the following conditions.



	ECM			
Connector	+	_	Condition	Voltage
Connector	Terminal	Terminal]	
F13	33 [HO2S2 (bank 1) signal]	35 (Sensor	Revving up to 4,000 rpm under no	The voltage does not remain in the range of
FI3	34 [HO2S2 (bank 2) signal]	Ground)	load at least 10 times	0.2 - 0.4 V.

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

2.CHECK HEATED OXYGEN SENSOR 2 FUNCTION-II

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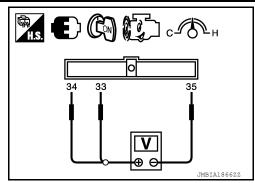
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EC-623 Revision: June 2012 2011 Altima GCC Check the voltage between ECM harness connector and ground under the following condition.



	ECM				
Connector	+	_	Condition	Voltage	
Connector	Terminal	Terminal			
F13	33 [HO2S2 (bank 1) signal]	35 (Sensor	Keeping engine at idle for 10 minutes	The voltage does not remain in the range of	
1 13	34 [HO2S2 (bank 2) signal]	Ground)	recepting engine at tale for 10 milliates	0.2 - 0.4 V.	

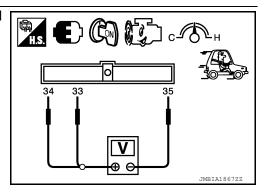
Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

3.CHECK HEATED OXYGEN SENSOR 2 FUNCTION-III

Check the voltage between ECM harness connector and ground under the following condition.



INFOID:0000000006392161

	ECM			
Connector	+	-	Condition	Voltage
Connector	Terminal	Terminal		
F13	33 [HO2S2 (bank 1) signal] 34 [HO2S2 (bank 2) signal]	35 (Sensor Ground)	Coasting from 80 km/h (50 MPH) in D position	The voltage does not remain in the range of 0.2 - 0.4 V.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to <u>EC-624</u>, "<u>Diagnosis Procedure</u>".

Diagnosis Procedure

1. CHECK GROUND CONNECTION

1. Turn ignition switch OFF.

2. Check ground connection M95. Refer to Ground Inspection in GI-45, "Circuit Inspection".

Is the inspection result normal?

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YES >> GO TO 2.

NO >> Repair or replace ground connection.

2 .CHECK HO2S2 GROUND CIRCUIT FOR OPEN AND SHORT

Turn ignition switch OFF.

- 2. Disconnect heated oxygen sensor 2 (HO2S2) harness connector.
- 3. Disconnect ECM harness connector.
- Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2S2			EC	M	Continuity
Bank	Connector	Terminal	Connector	Terminal	Continuity
1	F62	1	F13	35	Existed
2	F56	1	1 13	33	LXISIEU

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

Is the inspection result normal?

YES >> GO TO 3.

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

3.CHECK HO2S2 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

Check the continuity between HO2S2 harness connector and ECM harness connector.

HO2S2			ECM		Continuity
Bank	k Connector Terminal		Connector	Terminal	Continuity
1	F62	4	F13	33	Existed
2	F56	4	FIS	34	Existed

Check the continuity between HO2S2 harness connector and ground, or ECM harness connector and ground.

	HO2S2	Ground	Continuity	
Bank	Connector Terminal		Ground	Continuity
1	F62	4	Ground	Not existed
2	F56	4	Ground	NOI EXISIEU

EC	M	Ground	Continuity	
Connector Terminal		Ground	Continuity	
F13	33	Cround	Not existed	
гю	34	Ground	Not existed	

3. Also check harness for short to power.

Is the inspection result normal?

YFS >> GO TO 4.

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

f 4.CHECK HEATED OXYGEN SENSOR 2

Refer to EC-626, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

5.REPLACE HEATED OXYGEN SENSOR 2

Replace malfunctioning heated oxygen sensor 2. Refer to EM-138, "Removal and Installation". **CAUTION:**

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- 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 [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

6. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006392162

1.INSPECTION START

Will CONSULT-III be used?

Will CONSULT-III be used?

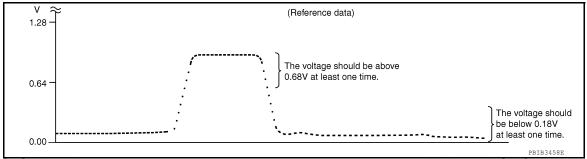
YES >> GO TO 2.

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)/(B2)" as the monitor item with CONSULT-III.
- Check "HO2S2 (B1)/(B2)" at idle speed when adjusting "FUEL INJECTION" to ± 25%.



"HO2S2 (B1)/(B2)" should be above 0.68 V at least once when the "FUEL INJECTION" is + 25%. "HO2S2 (B1)/(B2)" should be below 0.18 V 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

- 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 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.

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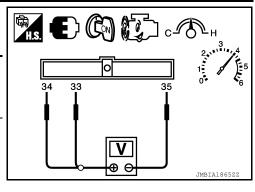
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5. Check the voltage between ECM harness connector terminals under the following conditions.

	ECM			
Con-	+	_	Condition	Voltage
nector	Terminal	Terminal		
F13	33 [HO2S2 (bank 1) signal]	35 (Sensor	Revving up to 4,000 rpm under no load at	The voltage should be above 0.68 V at least once during this procedure.
FIS	34 [HO2S2 (bank 2) signal]	ground)	least 10 times	The voltage should be below 0.18 V at least once during this procedure.



Is the inspection result normal?

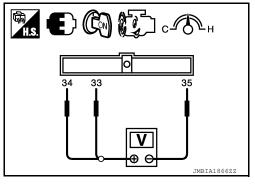
YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector terminals under the following conditions.

	ECM			
Con-	+	_	Condition	Voltage
nector	Terminal	Terminal		
F13	33 [HO2S2 (bank 1) signal]	35 (Sensor ground)	Keeping engine at idle for 10 minutes	The voltage should be above 0.68 V at least once during this procedure. The voltage should be
	[HO2S2 (bank 2) signal]	J 22 2,		below 0.18 V at least once during this procedure.



Is the inspection result normal?

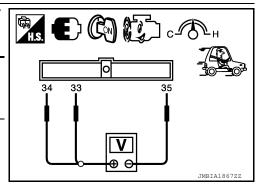
YES >> INSPECTION END

NO >> GO TO 5.

5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector terminals under the following conditions.

	ECM			Voltage
Con-	+	_	Condition	
nector	Terminal	Terminal		
F13	33 [HO2S2 (bank 1) signal]	35 (Sensor	Coasting from 80 km/ h (50 MPH) while se- lector lever is in the D position	The voltage should be above 0.68 V at least once during this procedure.
F13	34 [HO2S2 (bank 2) signal]	ground)		The voltage should be below 0.18 V at least once during this procedure.



Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

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6. REPLACE HEATED OXYGEN SENSOR 2

Replace malfunctioning heated oxygen sensor 2. Refer to <u>EM-138</u>, "Removal and Installation". **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 [commercial service tool (J-43897-18 or J-43897-12)] and approved anti-seize lubricant (commercial service tool).

>> INSPECTION END

INFOID:0000000006392164

IGNITION SIGNAL

Description INFOID:0000000000392163

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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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-629</u>, "<u>Diagnosis Procedure</u>".

2.CHECK 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

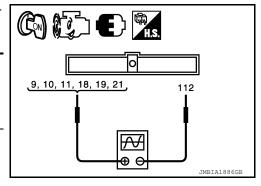
NO >> Go to EC-629, "Diagnosis Procedure".

3.check ignition signal function

(X) Without CONSULT-III

- 1. Let engine idle.
- Read the voltage signal between ECM harness connector terminals with an oscilloscope.

	ECM					
+		_		Voltage signal		
Connec- tor	Terminal	Connec- tor	Terminal	. Tollago olgilar		
	9					
•	10			50mSec/div		
- 14	11	F10	110			
F14	18	E10	112	=		
	19					
•	21			2V/div JMBIA0035GB		
NOTE						



NOTE:

The pulse cycle changes depending on rpm at idle.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-629, "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.

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< DTC/CIRCUIT DIAGNOSIS >

Check the voltage between ECM harness connector terminals.

Connector	+	_	Voltage (V)
Connector	Terminal	Terminal	
E10	105	112	Battery voltage

105 112

Is the inspection result normal?

YES >> GO TO 2.

NO >> Refer to EC-629, "Diagnosis Procedure".

2.CHECK IGNITION COIL POWER SUPPLY CIRCUIT-II

- Turn ignition switch OFF.
- Disconnect condenser-2 harness connector.
- Turn ignition switch ON.
- Check the voltage between condenser-2 harness connector and around.

Conde	enser-2	Ground	Voltage (V)
Connector Terminal		Glound	voitage (v)
F26	1	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.check ignition coil power supply circuit-iii

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector F10.
- Check the continuity between IPDM E/R harness connector and condenser-2 harness connector.

IPDI	M E/R	Conde	Continuity	
Connector Terminal		Connector	Terminal	Continuity
F10	49	F26	1	Existed

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

Is the inspection result normal?

YES >> Refer to EC-629, "Diagnosis Procedure".

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

4. CHECK CONDENSER-2 GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Check the continuity between condenser-2 harness connector and ground.

Conde	enser-2	Ground	Continuity
Connector Terminal		Ground	Continuity
F26	2	Ground	Existed

Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 5.

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

5. CHECK CONDENSER-2

Refer to EC-633, "Component Inspection (Condenser-2)"

Is the inspection result normal?

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IGNITION SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

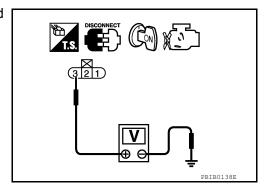
YES >> GO TO 6.

NO >> Replace condenser-2.

$oldsymbol{6}$.CHECK IGNITION COIL POWER SUPPLY CIRCUIT-V

- Reconnect all harness connectors disconnected.
- 2. Disconnect ignition coil harness connector.
- Turn ignition switch ON.
- Check the voltage between ignition coil harness connector and ground.

	Ignition coil	Ground	Voltage (V)	
Cylinder	Cylinder Connector Terminal		Giodila	voltage (v)
1	F34	3		
2	F35	3		
3	F36	3	Ground	Pattory voltage
4	F37	3	Giodila	Battery voltage
5	F38	3		
6	F39	3		



Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace harness or connectors.

1. 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	Cylinder Connector Terminal		Giodila	Continuity
1	F34	2		
2	F35	2		
3	F36	2	Ground	Existed
4	F37	2	Glound	
5	F38	2		
6	F39	2		

3. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 8.

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

8.check ignition coil output signal circuit for open and short

- Disconnect ECM harness connector.
- 2. Check the continuity between ignition coil harness connector and ECM harness connector.

	Ignition coil		E	CM	Continuity
Cylinder	Connector	Terminal	Connector	Terminal	Continuity
1	F34	1		11	
2	F35	1		10	
3	F36	1	F14	9	Existed
4	F37	1	1 14	21	LXISIEU
5	F38	1		19	
6	F39	1		18	

EC-631 Revision: June 2012 2011 Altima GCC EC

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< DTC/CIRCUIT DIAGNOSIS >

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, short to ground or short to power in harness or connectors.

9. CHECK IGNITION COIL WITH POWER TRANSISTOR

Refer to EC-632, "Component Inspection (Ignition Coil with Power Transistor)".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace malfunctioning ignition coil with power transistor. Refer to EM-146, "Exploded View".

10. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

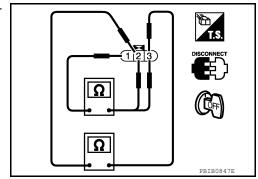
Component Inspection (Ignition Coil with Power Transistor)

INFOID:0000000006392166

1. CHECK IGNITION COIL WITH POWER TRANSISTOR-I

- 1. Turn ignition switch OFF.
- Disconnect ignition coil harness connector.
- Check resistance between ignition coil terminals as per the following.

Terminal No. (Polarity)	Resistance Ω [at 25°C (77°F)]	
1 and 2	Except 0 or ∞	
1 and 3	Except 0	
2 and 3	Εχτορί σ	



Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace malfunctioning ignition coil with power transistor. Refer to EM-146, "Exploded View".

2. CHECK IGNITION COIL WITH POWER TRANSISTOR-II

CAUTION:

Perform 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. Refer to <u>PG-64, "Fuse, Connector and Terminal Arrangement"</u>

NOTE:

Do not use CONSULT-III to release fuel pressure, or fuel pressure applies again during the following procedure.

- 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. Refer to EM-146, "Exploded View".
- Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 10. Connect spark plug and harness connector to ignition coil.

IGNITION SIGNAL

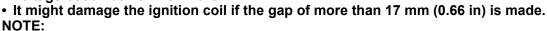
< DTC/CIRCUIT DIAGNOSIS >

- 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:

Never place the spark plug and the ignition coil within 50 cm (19.7 in) each other. Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20kV or more.



When the gap is less than 13 mm (0.52 in), a 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. Refer to EM-146, "Exploded View".

Component Inspection (Condenser-2)

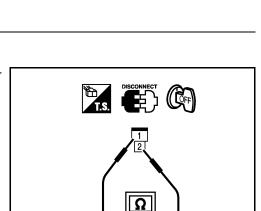
1. CHECK CONDENSER-2

- Turn ignition switch OFF.
- Disconnect condenser-2 harness connector.
- Check resistance between condenser-2 terminals as per the following.

Terminals	Resistance
1 and 2	Above 1 M Ω [at 25C $^{\circ}$ (77C $^{\circ}$)]

OK or NG

OK >> INSPECTION END NG >> Replace condenser-2.



Grounded metal portion

(Cylinder head, cylinder block, etc.)

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[VQ35DE]

13 - 17 mm (0.52-0.66 in) EC

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MALFUNCTION INDICATOR LAMP

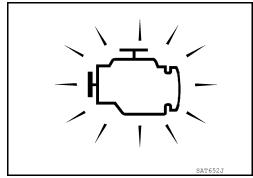
Description

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 turn off. If the MIL remains illuminated, the on board diagnostic system has detected an engine system malfunction.

For details, refer to <u>EC-420</u>, "<u>DIAGNOSIS DESCRIPTION</u>: <u>Malfunction Indicator Lamp (MIL)</u>".



Component Function Check

INFOID:0000000006392169

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-634, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006392170

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-441, "Description".

2.CHECK COMBINATION METER FUNCTION

Refer to MWI-4, "Work Flow".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace.

3. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

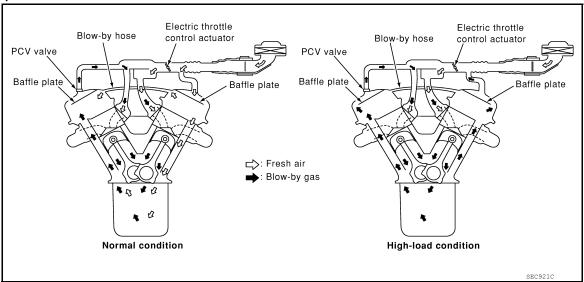
Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-139, "Removal and Installation".

NO >> Repair or replace.

POSITIVE CRANKCASE VENTILATION

Description INFOID:0000000000392171



This system returns blow-by gas to the intake manifold.

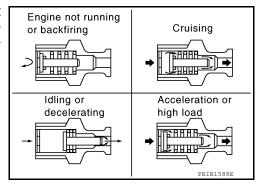
The positive crankcase ventilation (PCV) valve is provided to conduct crankcase blow-by gas to the intake manifold.

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 in let 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

NO

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

>> Replace PCV valve. Refer to <u>EM-26</u>, "Removal and Installation".



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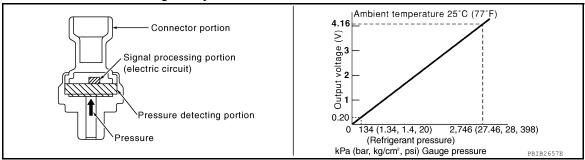
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Revision: June 2012 EC-635 2011 Altima GCC

REFRIGERANT PRESSURE SENSOR

Description INFOID.000000006392173

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.



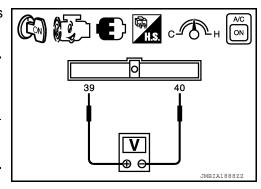
Component Function Check

INFOID:0000000006392174

1. CHECK REFRIGERANT PRESSURE SENSOR FUNCTION

- 1. Start engine and warm it up to normal operating temperature.
- Turn A/C switch and blower fan switch ON.
- 3. Check the voltage between ECM harness connector terminals under the following conditions.

Connector	+	_	Voltage (V)
Connector	Terminal	Terminal	
F13	39 (Refrigerant pressure sensor signal)	40 (Sensor ground)	1.0 - 4.0



Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to EC-636, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006392175

1. CHECK GROUND CONNECTION

- 1. Turn A/C switch and blower fan switch OFF.
- Stop engine.
- 3. Turn ignition switch OFF.
- Check ground connection E9. Refer to Ground Inspection in GI-45, "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.
- 2. Turn ignition switch ON.

REFRIGERANT PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Check the voltage between refrigerant pressure sensor harness connector and ground.

Refrigerant pressure sensor		Ground	Voltage (V)	
Connector	Terminal	Ground	voltage (v)	
E219	1	Ground	Approx. 5	

Is the inspection result normal?

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

3. DETECT MALFUNCTIONING PART

Check the following.

- · Harness connectors F1, E3
- IPDM E/R harness connectors E18, E201
- Harness for open or short between ECM and refrigerant pressure sensor

>> Repair open circuit, 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.
- 2. Disconnect ECM harness connector.
- Check the continuity between refrigerant pressure sensor harness connector and ECM harness connec-

Refrigerant pressure sensor		ECM		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
E219	3	F13	40	Existed	

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 F1, E3
- IPDM E/R harness connectors E18, E201
- Harness for open or short between ECM and refrigerant pressure sensor

>> Repair open circuit, 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 refrigerant pressure sensor harness connector and ECM harness connector.

Refrigerant pressure sensor		ECM		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
E219	2	F13	39	Existed	

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

Is the inspection result normal?

YES >> GO TO 8.

>> GO TO 7. NO

$7.\mathsf{DETECT}$ MALFUNCTIONING PART

Check the following.

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REFRIGERANT PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

- · Harness connectors F1, E3
- IPDM E/R harness connectors E18, E201
- · Harness for open or short between ECM and refrigerant pressure sensor

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

8.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace refrigerant pressure sensor. Refer to HA-29, "Component".

NO >> Repair or replace.

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VARIABLE INDUCTION AIR SYSTEM

Description INFOID:0000000006392176

Power Valves 1 and 2

The power valves 1 and 2 are installed in intake manifold collector and used to control the suction passage of the variable induction air control system. They are set in the fully closed or fully opened position by the power valve actuators 1 and 2 operated by the vacuum stored in the vacuum tank. The vacuum to power valve actuators is controlled by the VIAS control solenoid valves 1 and 2.

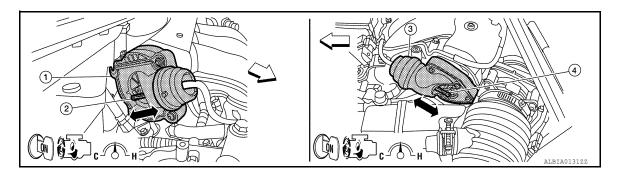
Component Function Check

INFOID:0000000006392177

CHECK OVERALL FUNCTION-I

(P) With CONSULT-III

- Start engine and let it idle.
- Perform "VIAS S/V 1" in "ACTIVE TEST" mode with CONSULT-III.
- Turn VIAS control solenoid valve 1 "ON" and "OFF", and make sure that power valve actuator 1 rod moves.

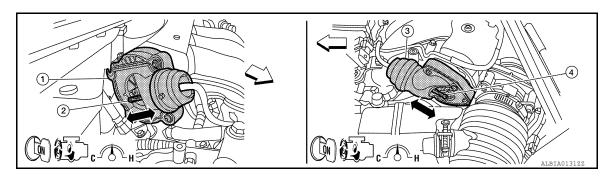


- Power valve actuator 1
- Power valve actuator 1 rod
- Power valve actuator 2

- Power valve actuator 2 rod
- : Vehicle front

(R) Without CONSULT-III

- Start engine and warm it up to the normal operating temperature.
- Rev engine quickly up to approximately 5000 rpm.
- Check that power valve actuator 1 rod moves.



- Power valve actuator 1
- Power valve actuator 1 rod
- 3. Power valve actuator 2

Power valve actuator 2 rod : Vehicle front

Is the inspection result normal?

YES >> GO TO 2.

NO >> EC-640, "Diagnosis Procedure".

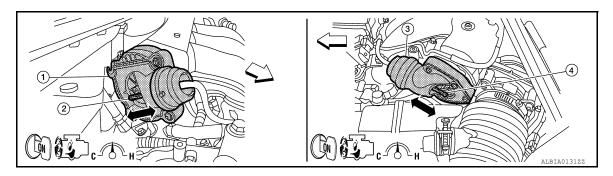
2.CHECK OVERALL FUNCTION-II

EC-639 Revision: June 2012 2011 Altima GCC Н

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(P) With CONSULT-III

- 1. Perform "VIAS S/V B2" in "ACTIVE TEST" mode with CONSULT-III.
- Turn VIAS control solenoid valve 2 "ON" and "OFF", and make sure that power valve actuator 2 rod moves.

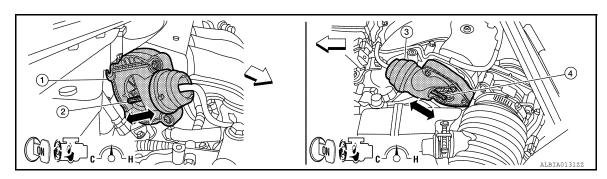


- Power valve actuator 1
- 2. Power valve actuator 1 rod
- Power valve actuator 2

- 4. Power valve actuator 2 rod
- : Vehicle front

W Without CONSULT-III

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Rev engine quickly up to approximately 5000 rpm.
- Check that power valve actuator 2 rod moves.



- Power valve actuator 1
- 2. Power valve actuator 1 rod
- 3. Power valve actuator 2

Power valve actuator 2 rod

\triangleleft : Vehicle front

Is the inspection result normal?

YES >> INSPECTION END

NO >> EC-640, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006392178

1. INSPECTION START

Confirm the malfunctioning system (power valve 1 or power valve 2). Refer to <u>EC-639</u>, "Component Function <u>Check"</u>.

Which system is related to the incident?

Power valve 1>>GO TO 2.

Power valve 2>>GO TO 6.

2.CHECK VACUUM EXISTENCE-I

(P) With CONSULT-III

- 1. Stop engine and disconnect vacuum hose connected to power valve actuator 1.
- Start engine and let it idle.
- Perform WIAS SOL VALVE in "ACTIVE TEST" mode with CONSULT-III.

VARIABLE INDUCTION AIR SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[VQ35DE]

Turn VIAS control solenoid valve 1 ON and OFF, and check vacuum existence under the following conditions.

VIAS SOL VALVE	Vacuum
ON	Existed
OFF	Not existed

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Without CONSULT-III

- Stop engine and disconnect vacuum hose connected to power valve actuator 1. Refer to EC-340, "Component Parts Location".
- Disconnect VIAS control solenoid valve 1 harness connector.
- 3. Start engine.
- Rev engine quickly up to approximately 5,000 rpm.
- 5. Check vacuum existence under the following conditions.

Condition	Vacuum
Idle	Existed
Rev engine quickly up to approximately 5,000 rpm	Not existed

Is the inspection result normal?

YES >> Repair or replace power valve actuator 1. Refer to <u>EC-340, "Component Parts Location"</u>.

NO >> GO TO 3.

3. CHECK VACUUM TANK

- Stop engine and disconnect vacuum hose connected to intake manifold collector.
- 2. Start engine and let it idle.
- Check vacuum existence from intake manifold collector.

Does vacuum existence from the intake manifold collector?

YES >> GO TO 4.

NO >> Replace intake manifold collector.

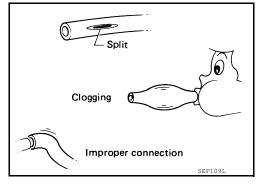
CHECK VACUUM HOSE

- Stop engine.
- Check vacuum hose for cracks, clogging, improper connection or disconnection. Refer to EC-410, "System Diagram".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair hoses or tubes.



${f 5}$.CHECK VIAS CONTROL SOLENOID VALVE 1

Refer to EC-566, "Component Inspection".

Is the inspection result normal?

YFS >> GO TO 9.

NO >> Replace VIAS control solenoid valve 1.

O.CHECK VACUUM EXISTENCE-II

(P) With CONSULT-III

- 1. Stop engine and disconnect vacuum hose connected to power valve actuator 2.
- Start engine and let it idle.
- Perform "VIAS S/V B2" in "ACTIVE TEST" mode with CONSULT-III.
- Turn VIAS control solenoid valve 2 ON and OFF, and check vacuum existence under the following conditions.

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VIAS S/V B2	Vacuum
ON	Existed
OFF	Not existed

⋈ Without CONSULT-III

- 1. Stop engine and disconnect vacuum hose connected to power valve actuator 2.
- Disconnect VIAS control solenoid valve 1 harness connector.
- 3. Start engine.
- 4. Rev engine quickly up to approximately 5,000 rpm.
- 5. Check vacuum existence under the following conditions.

Condition	Vacuum
Idle	Existed
Rev engine quickly up to approximately 5,000 rpm	Not existed

Is the inspection result normal?

YES >> Repair or replace power valve actuator 2. Refer to EC-340, "Component Parts Location".

NO >> GO TO 7.

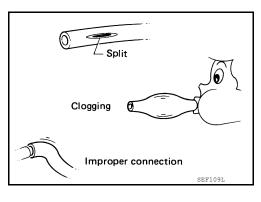
7. CHECK VACUUM HOSE

- 1. Stop engine.
- 2. Check vacuum hose for cracks, clogging, improper connection or disconnection. Refer to <u>EC-410</u>, "System Diagram".

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair hoses or tubes.



8. CHECK VIAS CONTROL SOLENOID VALVE 2

Refer to EC-568, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace VIAS control solenoid valve 2.

9. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

ECU DIAGNOSIS INFORMATION

ECM

Reference Value INFOID:0000000006392179 EC

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VALUES ON THE DIAGNOSIS TOOL

Remarks:

- Specification data are reference values.
- 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 TIM-ING 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 CONSULT-III value with the tachometer indication.		Almost the same speed as the tachometer indication.
MAS A/F SE-B1	See EC-430, "Description".		
B/FUEL SCHDL	See EC-430, "Description".		
A/F ALPHA-B1	See EC-430, "Description".		
A/F ALPHA-B2	See EC-430, "Description".		
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
A/F SEN1 (B2)	Engine: After warming up	Maintaining engine speed at 2,000 rpm	Fluctuates around 2.2 V
HO2S2 (B1)	are met Engine: After warming up	rpm quickly after the following conditions en 3,500 and 4,000 rpm for 1 minute and at	0 - 0.3 V ←→ Approx. 0.6 - 1.0 V
HO2S2 (B2)	 Revving engine from idle 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 - 0.3 V ←→ Approx. 0.6 - 1.0 V
HO2S2 MNTR (B1)	 Revving engine from idle 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
HO2S2 MNTR (B2)	 Revving engine from idle 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)		11 - 14 V
ACCEL CEN 4	Ignition switch: ON	Accelerator pedal: Fully released	0.65 - 0.87 V
ACCEL SEN 1	(Engine stopped)	Accelerator pedal: Fully depressed	More than 4.3 V
4.00EL 0EN 0±1	Ignition switch: ON	Accelerator pedal: Fully released	0.56 - 0.96 V
ACCEL SEN 2*1 (Engine stopped)		Accelerator pedal: Fully depressed	More than 4.0 V

Monitor Item		Condition	Values/Status	
	Ignition switch: ON	Accelerator pedal: Fully released	More than 0.36 V	
TP SEN 1-B1	(Engine stopped) • Selector lever position: D	Accelerator pedal: Fully depressed	Less than 4.75 V	
	Ignition switch: ON	Accelerator pedal: Fully released	More than 0.36 V	
TP SEN 2-B1*1	(Engine stopped)Selector lever position: D	Accelerator pedal: Fully depressed	Less than 4.75 V	
FUEL T/TMP SE	Ignition switch: ON		Indicates fuel tank tempera- ture	
INT/A TEMP SE	Ignition switch: ON		Indicates intake air tempera ture	
EVAP SYS PRES	Ignition switch: ON		Approx. 1.8 - 4.8 V	
START SIGNAL	• Ignition switch: $ON \rightarrow START \rightarrow O$	NC	$OFF \to ON \to OFF$	
CLED THE DOS	Ignition switch: ON	Accelerator pedal: Fully released	ON	
CLSD THL POS	(Engine stopped)	Accelerator pedal: Slightly depressed	OFF	
	Facility Affair acceptance with the	Air conditioner switch: OFF	OFF	
AIR COND SIG	Engine: After warming up, idle the engine	Air conditioner switch: ON (Compressor operates.)	ON	
D/M D001 0M/		Selector lever position: P or N	ON	
P/N POSI SW	Ignition switch: ON	Selector lever position: Except above	OFF	
	Engine: After warming up, idle the	Steering wheel: Not being turned	OFF	
PW/ST SIGNAL	engine	Steering wheel: Being turned	ON	
LOAD SIGNAL	Ignition switch: ON	Rear window defogger switch: ON and/or Lighting switch: 2nd position	ON	
		Rear window defogger switch and lighting switch: OFF	OFF	
IGNITION SW	• Ignition switch: $ON \rightarrow OFF \rightarrow ON$	• Ignition switch: $ON \rightarrow OFF \rightarrow ON$		
• Engine: After warming up, idle		Heater fan switch: ON	ON	
HEATER FAN SW	engine	Heater fan switch: OFF	OFF	
		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	 Selector lever position: P or N Air conditioner switch: OFF No load 	2,000 rpm	1.9 - 2.9 msec	
	Engine: After warming up	Idle	2.0 - 3.0 msec	
INJ PULSE-B2	Selector lever position: P or N Air conditioner switch: OFF No load	2,000 rpm	1.9 - 2.9 msec	
	Engine: After warming up	Idle	7 - 17° BTDC	
IGN TIMING	Selector lever position: P or N Air conditioner switch: OFF No load	2,000 rpm	25 - 45° BTDC	
	Engine: After warming up	Idle	2.0 - 6.0 g/s	
MASS AIRFLOW	Selector lever position: P or NAir conditioner switch: OFFNo load	2,500 rpm	7.0 - 20.0 g/s	
PURG VOL C/V	 Engine: After warming up Selector lever position: P or N Air conditioner switch: OFF 	Idle (Accelerator pedal: Not depressed even slightly, after engine starting.)	0%	
	No load	2,000 rpm		

Monitor Item	С	ondition	Values/Status
NT/V TIM (B1)	Engine: After warming up Selector lever position: P or N	Idle	−5 - 5°CA
INT/V TIM (DT)	Air conditioner switch: OFFNo load	2,000 rpm	Approx. 0 - 30°CA
NT/V TIM (B2)	Engine: After warming upSelector lever position: P or N	Idle	_5 - 5°CA
(52)	Air conditioner switch: OFF No load	2,000 rpm	Approx. 0 - 30°CA
NTALCOL (D4)	Engine: After warming upSelector lever position: P or N	Idle	0 - 2%
NT/V SOL (B1)	 Air conditioner switch: OFF No load	2,000 rpm	Approx. 0 - 50%
	Engine: After warming upSelector lever position: P or N	Idle	0 - 2%
NT/V SOL (B2)	Air conditioner switch: OFF No load	2,000 rpm	Approx. 0 - 50%
/IAS S/V-1	 Engine: After warming up Selector lever position: P or N Air conditioner switch: OFF No load 	Rev engine quickly up to approximately 5,000 rpm	OFF →ON → OFF
/IAS S/V-2	 Engine: After warming up Selector lever position: P or N Air conditioner switch: OFF No load 	Rev engine quickly up to approximately 5,000 rpm	$OFF \to ON \to OFF$
	Engine: After warming up, idle the	Air conditioner switch: OFF	OFF
AIR COND RLY engine. After warming up, idie the	Air conditioner switch: ON (Compressor operates)	ON	
NGINE MOUNT	Engine: After warming up	Idle (With vehicle stopped)	IDLE
		Except above conditions	TRVL
UEL PUMP RLY	For 1 second after turning ignition switch: ONEngine running or cranking		ON
	Except above		OFF
/ENT CONT/V	Ignition switch: ON		OFF
HRTL RELAY	Ignition switch: ON		ON
		Engine coolant temperature: 97°C (206°F) or less	OFF
COOLING FAN	Engine: After warming up, idle the engine	Engine coolant temperature: Between 98°C (208°F) and 99°C (210°F)	Low
	Air conditioner switch: OFF	Engine coolant temperature: Between 100°C (212°F) and 104°C (219°F)	Mid
		Engine coolant temperature: 105°C (221°F) or more	Hi
HO2S2 HTR (B1)	 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 		ON
	Engine speed: Above 3,600 rpm		OFF
102S2 HTR (B2)	 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 		ON
	Engine speed: Above 3,600 rpm		OFF
/EHICLE SPEED	Turn drive wheels and compare Codication.	Almost the same speed as the speedometer indication	

	IS INFORMATION >		[VQ35DE]
Monitor Item	C	condition	Values/Status
IDL A/V LEARN	a Engine: Bunning	Idle air volume learning has not been performed yet.	YET
IDL AVV LEARN	Engine: Running	Idle air volume learning has already been performed successfully.	CMPLT
ENG OIL TEMP	Engine: After warming up		More than 70°C (158°F)
TRVL AFTER MIL	Ignition switch: ON	Vehicle has traveled after MIL has illuminated.	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%
A/F S1 HTR (B2)	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 - 4.0 V
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
WAIN SW	- Ignition switch. ON	MAIN switch: Released	OFF
CANCEL SW	a Ignition quitob: ON	CANCEL switch: Pressed	ON
CANCEL SW	Ignition switch: ON	CANCEL switch: Released	OFF
DECLIME/ACC OW	Ignition switch: ON	RESUME/ACCELERATE switch: Pressed	ON
RESUME/ACC SW		RESUME/ACCELERATE switch: Released	OFF
OFT OW	Leading and Make ON	SET/COAST switch: Pressed	ON
SET SW	Ignition switch: ON	SET/COAST switch: Released	OFF
BRAKE SW1	. Ignition awitch: ON	Brake pedal: Fully released	ON
(ASCD brake switch)	Ignition switch: ON	Brake pedal: Slightly depressed	OFF
BRAKE SW2	• Janitian awitch: 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	$ON \rightarrow OFF$
	MAIN switch: ON	ASCD: Operating	ON
SET LAMP	 When vehicle speed is between 40 km/h (25 MPH) and 144 km/h (89 MPH) 	ASCD: Not operating	OFF
ALT DUTY	• Engine: Idle		0 - 80%
A/F ADJ-B1	Engine: Running		-0.330 - 0.330
A/F ADJ-B2	Engine: Running		-0.330 - 0.330
	Power generation voltage variable control: Operating		ON
ALT DUTY SIG	Power generation voltage variable		OFF
I/P PULLY SPD	Vehicle speed: More than 20 km/h (12 MPH)		Almost the same speed as the tachometer indication

^{*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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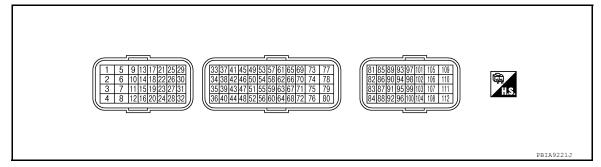
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*2: Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-71, "How to Handle Battery".

TERMINAL LAYOUT



PHYSICAL VALUES

NOTE:

- ECM is located in the engine room left side near battery.
- Specification data are reference values.
- Pulse signal is measured by CONSULT-III.

Termi	nal No.	Description			Value	
+		Signal name	Input/ Output	Condition	(Approx.)	
1 (P) 3 (Y)	(P) 3	Fuel injector No. 6 Fuel injector No. 5	Output -	[Engine is running] • Warm-up condition • Idle speed	BATTERY VOLTAGE (11 - 14 V)★ 50mSec/div	
29 (LG)	112	Fuel injector No. 4		Output	NOTE: The pulse cycle changes depending on rpm at idle	10V/div JMBIA0047GB
30 (O)	(B)	Fuel injector No. 3				BATTERY VOLTAGE (11 - 14 V)★
31 (SB) 32 (V)	Fuel injector No. 2 Fuel injector No. 1		[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	50mSec/div 5 10V/div JMBIA0048GB		
2 (GR)	112 (B)	Throttle control motor power supply	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)	
4 (V)	112 (B)	A/F sensor 1 heater (bank 1)	Output	[Engine is running]Warm-up conditionIdle speed (More than 140 seconds after starting engine)	2.9 - 8.8 V★ 50mSec/div 5V/div JMBIA0902GB	

Terminal No.		Description			Value
+		Signal name	Input/ Output	Condition	(Approx.)
5 (R)	112 (B)	Throttle control motor (Open)	Output	[Ignition switch: ON] • Engine stopped • Selector lever position: D • Accelerator pedal: Fully depressed	0 - 14 V★ 500µSec/div 5V/div JMBIA0031GB
				[Ignition switch: ON] • Engine stopped • Selector lever position: D • Accelerator pedal: Fully released	0 - 14 V★ 500μSec/div 5V/div JMBIA0032GB
6 (BR)	112 (B)	Throttle control motor (Close)	Output	[Ignition switch: ON] • Engine stopped • Selector lever position: D • Accelerator pedal: Fully released	0 - 14 V★ 500 µSec/div 5V/div JMBIA1125GB
8 (SB)	112 (B)	A/F sensor 1 heater (bank 2)	Output	[Engine is running]Warm-up conditionIdle speed (More than 140 seconds after starting engine)	2.9 - 8.8 V★ 50mSec/div 5V/div JMBIA0030GB
9 (P) 10 (G)	112 (B)	Ignition signal No. 3 Ignition signal No. 2	Output -	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	0 - 0.2 V★ 50mSec/div
11 (Y)		Ignition signal No. 1			2V/div JMBIA0035GB
18 (L)		Ignition signal No. 6		[Engine is running] • Warm-up condition • Engine speed: 2,000 rpm	0.1 - 0.4 V★ 50mSec/div
19 (R)		Ignition signal No. 5			-
21 (GR)		Ignition signal No. 4			2V/div JMBIA0036GB
12 (B)	_	ECM ground	_		

Termir	nal No.	Description			Value	
+		Signal name	Input/ Output	Condition	value (Approx.)	
13 (O)	112 (B)	Heated oxygen sensor 2 heater (bank 1)	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 (B/R)	112 (B)	Fuel pump relay	Output	[Ignition switch: ON] • For 1 second after turning ignition switch ON [Engine is running]	0 - 1.5 V	
(D/IX)	(B/K) (B)		[Ignition switch: ON] • More than 1 second after turning ignition switch ON	BATTERY VOLTAGE (11 - 14 V)		
15 (R)	112 (B)	Throttle control motor relay	Output	[Ignition switch: $ON \rightarrow OFF$]	0 - 1.0 V ↓ BATTERY VOLTAGE (11 - 14 V) ↓ 0 V	
				[Ignition switch: ON]	0 - 1.0 V	
16 (B)	_	ECM ground	_	_	_	
17 (G)	112 (B)	Heated oxygen sensor 2 heater (bank 2)	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)		
24 (SB)	112 (B)	ECM relay (Self shut-off)	Output	[Engine is running][Ignition switch: OFF]A few seconds after turning ignition switch OFF	0 - 1.5 V	
(SB) (B	(0)	(Self shut-off)		[Ignition switch: OFF] • More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14 V)	

Termin	al No.	Description			Value	
+	-	Signal name	Input/ Output	Condition	Value (Approx.)	
25	112	EVAP canister purge volume control solenoid valve	Output	[Engine is running]Idle speedAccelerator pedal: Not depressed even slightly, after engine starting	BATTERY VOLTAGE (11 - 14 V)★ 50mSec/div 10V/div JMBIA0039GB	
(W)	(B)			[Engine is running] • Engine speed: approximately 2,000 rpm (More than 100 seconds after starting engine)	BATTERY VOLTAGE (11 - 14 V)★ 50mSec/div 10V/div JMBIA0040GB	
		VIAS CONTROL COLONOID VAIVE 2	Output	[Engine is running]Warm-up conditionIdle speed	BATTERY VOLTAGE (11 - 14 V)	
26 (B)	112 (B)			[Engine is running]Warm-up conditionWhen revving engine up to 5,000 rpm quickly	BATTERY VOLTAGE (11 - 14 V) ↓ 0 - 1.0 V ↓ BATTERY VOLTAGE (11 - 14 V)	
		VIAS control solenoid valve 1	Output	[Engine is running]Warm-up conditionIdle speed	BATTERY VOLTAGE (11 - 14 V)	
27 (B/W)	112 (B)			[Engine is running]Warm-up conditionWhen revving engine up to 5,000 rpm quickly	BATTERY VOLTAGE (11 - 14 V) ↓ 0 - 1.0 V ↓ BATTERY VOLTAGE (11 - 14 V)	
				[Engine is running] • Engine speed: For 2 seconds after reaching 950 rpm or less	0 - 1.0 V	
28 (BR)	112 (B)	Electronic controlled engine mount control solenoid valve	Output	[Engine is running]Engine speed: After a lapse of 2 seconds after reaching 950 rpm or less	2.0 - 3.0 V	
				[Engine is running]Engine speed: 950 rpm or more	BATTERY VOLTAGE (11 - 14 V)	
33 (Y)	35 (B)	Heated oxygen sensor 2 (bank 1)	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	

Termir	nal No.	Description			Value
+		Signal name	Input/ Output	Condition	value (Approx.)
34 (V)	35 (B)	Heated oxygen sensor 2 (bank 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 (B)	_	Sensor ground (Heated oxygen sensor 2)	_	_	_
36 (G)	_	Sensor ground (Throttle position sensor)	_	_	_
37	36	Throttle position corpor 1	lpp://	[Ignition switch: ON]Engine stoppedSelector lever position: DAccelerator pedal: Fully released	More than 0.36 V
(B)	(G)		[Ignition switch: ON]Engine stoppedSelector lever position: D	Engine stoppedSelector lever position: DAccelerator pedal: Fully de-	Less than 4.75 V
38	36	Throttle position concer 2	Input	[Ignition switch: ON]Engine stoppedSelector lever position: DAccelerator pedal: Fully released	Less than 4.75 V
(R)	I hrottle nogition genear 2	Throthe position sensor 2	[Ignition switch: ON] • Engine stopped • Selector lever position: D	Selector lever position: DAccelerator pedal: Fully de-	More than 0.36 V
39 (O)	40 (SB)	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 (SB)	_	Sensor ground (Refrigerant pressure sensor)	_	_	_
41	48	Douger attenting procesure con		[Engine is running] • Steering wheel: Being turned	0.5 - 4.5 V
41 (SB)	(GR)	Power steering pressure sensor	Input	[Engine is running]Steering wheel: Not being turned	0.4 - 0.8 V
42 (G)	44 (O)	Battery current sensor	Input	[Engine is running] • Battery: Fully charged*2 • Idle speed	2.6 - 3.5 V
44 (O)	_	Sensor ground (Battery current sensor)	_	_	_
45 (L)	49 (G)	A/F sensor 1 (bank 1)	Input	[Ignition switch: ON]	2.2 V
46 (P)	52 (L)	Engine coolant temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with engine coolant temperature.

Termir	nal No.	Description			Value
+		Signal name	Input/ Output	Condition	(Approx.)
47 (W)	36 (G)	Sensor power supply (Throttle position sensor)	_	[Ignition switch: ON]	5 V
48 (GR)	_	Sensor ground (Power steering pressure sensor)	_	_	_
49 (G)	112 (B)	A/F sensor 1 (bank 1)	Input	[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	1.8 V Output voltage varies with air fuel ratio.
50 (O)	56 (Y)	Intake air temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with intake air temperature.
51 (P)	44 (O)	Sensor power supply (Battery current sensor)	_	[Ignition switch: ON]	5 V
52 (L)	_	Sensor ground (Engine coolant temperature sensor/Engine oil tempera- ture sensor)	_	_	_
53 (V)	112 (B)	A/F sensor 1 (bank 2)	Input	[Ignition switch: ON]	2.2 V
54 (GR)	52 (L)	Engine oil temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with engine oil temperature.
55 (LG)	48 (GR)	Sensor power supply (Power steering pressure sensor)	_	[Ignition switch: ON]	5 V
56 (Y)	_	Sensor ground (Mass air flow sensor/Intake air temperature sensor)	_	_	_
57 (LG)	112 (B)	A/F sensor 1 (bank 2)	Input	[Engine is running] • Warm-up condition • Engine speed: 2,000 rpm	1.8 V Output voltage varies with air fuel ratio.
58	56	Mass air flow sensor	Input	[Engine is running] • Warm-up condition • Idle speed	0.9 - 1.2 V
(BR)	(Y)	Mass all new sensor	mput	[Engine is running]Warm-up conditionEngine speed: 2,500 rpm	1.6 - 1.9 V
59 (L)	64 (BR)	Sensor power supply [Camshaft position sensor (PHASE) (bank 1)]	_	[Ignition switch: ON]	5 V
60 (W)	_	Sensor ground [Crankshaft position sensor (POS)]	_	_	_
61 (GR)	67 (BR)	Knock sensor (bank 1)	Input	[Engine is running] • Idle speed	2.5 V* ¹
62 (W)	67 (BR)	Knock sensor (bank 2)	Input	[Engine is running] • Idle speed	2.5 V* ¹
63 (O)	68 (V)	Sensor power supply [Camshaft position sensor (PHASE) (bank 2)]	_	[Ignition switch: ON]	5 V
64 (BR)	_	Sensor ground [Camshaft position sensor (PHASE) (bank 1)]	_	_	_

Termir	nal No.	Description			Value	
+		Signal name	Input/ Output	Condition	(Approx.)	
65	65 60	Crankshaft position sensor	Input	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	4.0 - 5.0 V★ 1mSec/div 2V/div JMBIA0041GB	
	(POS)	input	[Engine is running] • Engine speed: 2,000 rpm	4.0 - 5.0 V★ 1mSec/div 2V/div JMBIA0042GB		
67 (GR)	_	Sensor ground (Knock sensor)	_	_	_	
68 (V)	_	Sensor ground [Camshaft position sensor (PHASE) (bank 2)]	_	_	_	
69 (P)		Camshaft position sensor (PHASE) (bank 2)	Input	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	3.0 - 5.0 V★ 20mSec/div 2V/div JMBIA0045GB	
			[Engine is running] • Engine speed is 2,000 rpm	20mSec/div 2V/div JMBIA0046GB		
70	64	Camshaft position sensor	law i	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	3.0 - 5.0 V★ 20mSec/div 2V/div JMBIA0045GB	
	(BR)		Input	[Engine is running] • Engine speed is 2,000 rpm	3.0 - 5.0 V★ 20mSec/div 2V/div JMBIA0046GB	

Termir	nal No.	Description			
+		Signal name	Input/ Output	Condition	Value (Approx.)
72 (R)	40 (SB)	Sensor power supply (Refrigerant pressure sensor)	_	[Ignition switch: ON]	5 V
				[Engine is running] • Warm-up condition • Idle speed	BATTERY VOLTAGE (11 - 14 V)
75 (Y)	112 (B)	Intake valve timing control so- lenoid valve (bank 2)	Output	[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	7 - 12 V★ 5V/div JMBIA0038GB
76 (BR)	60 (W)	Sensor power supply [Crankshaft position sensor (POS)]	_	[Ignition switch: ON]	5 V
77 (LG)	112 (B)	Power supply for ECM (Back-up)	Input	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14 V)
		Intake valve timing control so- lenoid valve (bank 1)		[Engine is running] • Warm-up condition • Idle speed	BATTERY VOLTAGE (11 - 14 V)
78 (L)	112 (B)		Output	[Engine is running]Warm-up conditionEngine speed: 2,000 rpm	7 - 12 V* 5V/div JMBIA0038GB
81	84	Accelerator pedal position	loout	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully released	0.65 - 0.87 V
(W)	(B)	sensor 1	Input	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully depressed	More than 4.3 V
82	100	Accelerator pedal position	Input	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully released	0.28 - 0.48 V
(O)	(G)	sensor 2		[Ignition switch: ON]Engine stoppedAccelerator pedal: Fully depressed	More than 2.0 V
83 (GR)	84 (B)	Sensor power supply (Accelerator pedal position sensor 1)	_	[Ignition switch: ON]	5 V
84 (B)	_	Sensor ground (Accelerator pedal position sensor 1)			_

Termir	nal No.	Description			Value	
+		Signal name	Input/ Output	Condition	(Approx.)	
				[Ignition switch: ON] • ASCD steering switch: OFF	4 V	
				[Ignition switch: ON] • MAIN switch: Pressed	0 V	
85 (Y)	92 (R)	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	
87 (BR)	100 (G)	Sensor power supply (Accelerator pedal position sensor 2)	_	[Ignition switch: ON]	5 V	
(O)	_	Data link connector	Input/ Output	_	_	
92 (BR)	_	Sensor ground (ASCD steering switch)	_	_	_	
93	112			[Ignition switch: OFF]	0 V	
(Y)	(B)	Ignition switch	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)	
94			2	Output	 [Engine is running] Warm-up condition Idle speed NOTE: The pulse cycle changes depending on rpm at idle 	1 V★ 10mSec/div 2V/div JMBIA0076GB
94 112 (GR) (B) Engine speed output signal	[E	[Engine is running] • Engine speed: 2,000 rpm	1 V★ 10mSec/div 2V/div JMBIA0077GB			
95 (Y)	104 (P)	Fuel tank temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with fuel tank temperature.	
97 (P)	_	CAN communication line	Input/ Output	_	_	
98 (L)	_	CAN communication line	Input/ Output	_		
100 (G)	_	Sensor ground (Accelerator pedal position sensor 2)	_	_	_	
102	110			[Ignition switch: ON] • Selector lever position: P or N	BATTERY VOLTAGE (11 - 14 V)	
102 (R)	(B)	PNP signal	Input	[Ignition switch: ON] • Selector lever position: Except above	0 V	

Termir	Terminal No. Description				Value
+		Signal name	Input/ Output	Condition	(Approx.)
104 (P)	_	Sensor ground (Fuel tank temperature sensor)	_	_	_
105 (V)	112 (B)	Power supply for ECM	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
106	106 112			[Ignition switch: OFF] • Brake pedal: Fully released	0 V
(SB)	Ston Jamp switch	Stop lamp 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 (G)	112 (B)	ASCD brake switch	Input	[Ignition switch: ON] • Brake pedal: Slightly depressed	0 V
(G)	(6)			[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.)

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.	<u>EC-634</u>

DTC RELATED ITEM

DTC No.	Detected items	Engine operating condition in fail-safe mode
P0011 P0021	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 than 2,400 rpm due to the fuel cut.

^{*1:} This may vary depending on internal resistance of the tester.

^{*2:} Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-71, "How to Handle Battery".

ECM

[VQ35DE]

DTC No.	Detected items	Engine opera	Engine operating condition in fail-safe mode				
P0117 P0118	Engine coolant tempera- ture sensor circuit		determined by ECM based on the following condition colant 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 engine starting	80°C (176°F)				
		Except as shown above	40 - 80°C (104 - 176°F) (Depends on the time)				
		When the fail-safe system for engin fan operates while engine is runnin	e coolant temperature sensor is activated, the cooling g.				
P0122 P0123 P0222 P0223 P2135	Throttle position sensor	order for the idle position to be with					
P0196 P0197 P0198	Engine oil temperaturesensor	Intake valve timing control does not function.					
P0500	Vehicle speed sensor	When the fail-safe system for vehicle speed sensor is activated, the cooling fan operates (Highest) while engine is running.					
P0605	ECM	ECM stops the electric throttle cont	(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.				
P0643	Sensor power supply	ECM stops the electric throttle confixed opening (approx. 5 degrees) I	rol actuator control, throttle valve is maintained at a by the return spring.				
P1805	Brake switch	ECM controls the electric throttle cosmall range. Therefore, acceleration will be poor	ontrol actuator by regulating the throttle opening to a				
		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	rol 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.				
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.					

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DTC No.	Detected items	Engine operating condition in fail-safe mode
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 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 P0102 P0103 Mass air flow sensor P0112 P0113 Intake air temperature sensor P0117 P0118 Engine coolant temperature sensor P0122 P0123 P0222 P0223 P1225 P1226 P2135 Throttle position sensor P0196 P0197 P0198 Engine oil temperature sensor P0327 P0328 P0332 P0333 Knock sensor P0335 Crankshaft position sensor (POS) P0340 P0345 Camshaft position sensor (PHASE) P0500 Vehicle speed sensor P0605 P0607 ECM P0643 Sensor power supply P0705 Transmission range switch P0850 Park/Neutral position (PNP) switch P1550 P1551 P1552 P1553 P1554 Battery current sensor P1610 - P1615 NATS P1700 CVT control system P2122 P2123 P2127 P2128 P2138 Accelerator pedal position sensor

Priority	Detected items (DTC)	_
2	 P0031 P0032 P0051 P0052 Air fuel ratio (A/F) sensor 1 heater P0037 P0038 P0057 P0058 Heated oxygen sensor 2 heater 	- A
	P0075 P0081 Intake valve timing control solenoid valve	
	P0130 P0131 P0132 P0150 P0151 P0152 Air fuel ratio (A/F) sensor 1	EC
	P0138 P0158 Heated oxygen sensor 2	
	P0444 EVAP canister purge volume control solenoid valve	
	P0550 Power steering pressure sensor	
	P0603 ECM power supply	С
	 P0710 P0715 P0720 P0740 P0745 P0746 P0776 P0778 P0840 P0845 P1740 CVT related sensors, solenoid valvesand switches 	
	P1217 Engine over temperature (OVERHEAT)	_
	P1720 Vehicle speed sensor	D
	P1777 P1778 CVT step motor	
	P1805 Brake switch	
	P2101 Electric throttle control function	Е
	P2118 Throttle control motor	
	P2100 P2103 Throttle control motor relay	
3	P0011 P0021 Intake valve timing control	
	P1212 TCS communication line	F
	P1564 ASCD steering switch	
	P1572 ASCD brake switch	
	P1574 ASCD vehicle speed sensor	
	P1715 Input speed sensor	G
	P1800 P1801 VIAS control solenoid valve	
	P2119 Electric throttle control actuator	

DTC Index

 \times :Applicable —: Not applicable

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DTC		Items (CONSULT-III screen terms)	Trip	MIL	Reference
CONSULT-III	ECM* ²	(CONSOLT-III screen terms)			page
U1000	1000* ³	CAN COMM CIRCUIT	2	_	EC-441
U1001	1001* ³	CAN COMM CIRCUIT	2	_	EC-441
P0000	0000	NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	_	_	_
P0011	0011	INT/V TIM CONT-B1	2	_	EC-442
P0021	0021	INT/V TIM CONT-B2	2	_	EC-442
P0031	0031	A/F SEN1 HTR (B1)	2	×	EC-447
P0032	0032	A/F SEN1 HTR (B1)	2	×	EC-447
P0037	0037	HO2S2 HTR (B1)	2	×	EC-450
P0038	0038	HO2S2 HTR (B1)	2	×	EC-450
P0051	0051	A/F SEN1 HTR (B2)	2	×	EC-447
P0052	0052	A/F SEN1 HTR (B2)	2	×	EC-447
P0057	0057	HO2S2 HTR (B2)	2	×	EC-450
P0058	0058	HO2S2 HTR (B2)	2	×	EC-450
P0075	0075	INT/V TIM V/CIR-B1	2	×	EC-453
P0081	0081	INT/V TIM V/CIR-B2	2	×	EC-453
P0102	0102	MAF SEN/CIRCUIT-B1	1	×	EC-456
P0103	0103	MAF SEN/CIRCUIT-B1	1	×	EC-456
P0112	0112	IAT SEN/CIRCUIT-B1	2	×	EC-462
P0113	0113	IAT SEN/CIRCUIT-B1	2	×	EC-462
P0117	0117	ECT SEN/CIRC	2	×	EC-465

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DTC	* 1	Items	Trip	MIL	Referenc
CONSULT-III	ECM*2	(CONSULT-III screen terms)	Пр	IVIIL	page
P0118	0118	ECT SEN/CIRC	2	×	EC-465
P0122	0122	TP SEN 2/CIRC-B1	1	×	EC-468
P0123	0123	TP SEN 2/CIRC-B1	1	×	EC-468
P0130	0130	A/F SENSOR1 (B1)	2	×	EC-471
P0131	0131	A/F SENSOR1 (B1)	2	×	EC-475
P0132	0132	A/F SENSOR1 (B1)	2	×	EC-479
P0138	0138	HO2S2 (B1)	2	×	EC-483
P0150	0150	A/F SENSOR1 (B2)	2	×	EC-471
P0151	0151	A/F SENSOR1 (B2)	2	×	EC-475
P0152	0152	A/F SENSOR1 (B2)	2	×	EC-479
P0158	0158	HO2S2 (B2)	2	×	EC-483
P0196	0196	EOT SEN/CIRC	2	_	EC-488
P0197	0197	EOT SEN/CIRC	2	×	EC-491
P0198	0198	EOT SEN/CIRC	2	×	EC-49 ²
P0222	0222	TP SEN 1/CIRC-B1	1	×	EC-494
P0223	0223	TP SEN 1/CIRC-B1	1	×	EC-494
P0327	0327	KNOCK SEN/CIRC-B1	2	_	EC-497
P0328	0328	KNOCK SEN/CIRC-B1	2	_	EC-497
P0332	0332	KNOCK SEN/CIRC-B2	2	_	EC-497
P0333	0333	KNOCK SEN/CIRC-B2	2	_	EC-497
P0335	0335	CKP SEN/CIRCUIT	2	×	EC-500
P0340	0340	CMP SEN/CIRC-B1	2	×	EC-504
P0345	0345	CMP SEN/CIRC-B2	2	×	EC-504
P0444	0444	PURG VOLUME CONT/V	2	×	EC-508
P0500	0500	VEH SPEED SEN/CIRC	2	×	EC-511
P0550	0550	PW ST P SEN/CIRC	2	_	EC-513
P0603	0603	ECM BACK UP/CIRCUIT	2	×	EC-516
P0605	0605	ECM	1 or 2	× or —	EC-518
P0607	0607	ECM	2	_	EC-520
P0643	0643	SENSOR POWER/CIRC	1	×	EC-521
P0705	0705	T/M RANGE SENSOR A	2	_	TM-13
P0710	0710	FLUID TEMP SENSOR A	2	_	TM-138
P0715	0715	INPUT SPEED SENSOR A	2	_	TM-14
P0720	0720	OUTPUT SPEED SENSOR*4	2	_	TM-144
P0740	0740	TORQUE CONVERTER	2	_	TM-150
P0745	0745	PC SOLENOID A	2	_	TM-154
P0746	0746	PC SOLENOID A	2	_	TM-156
P0776	0776	PC SOLENOID B	2	_	TM-158
P0778	0778	PC SOLENOID B	2	_	TM-160
P0840	0840	FLUID PRESS SEN/SW A	2	_	TM-165
P0850	0850	P-N POS SW/CIRCUIT	2	×	EC-524
P1212	1212	TCS/CIRC	2	_	EC-527
P1217	1217	ENG OVER TEMP	1	×	EC-528

DTC*	k1 	Items	Trip	MIL	Reference
CONSULT-III	ECM* ²	(CONSULT-III screen terms)	тір	IVIIL	page
P1225	1225	CTP LEARNING-B1	2	_	EC-532
P1226	1226	CTP LEARNING-B1	2	_	EC-534
P1550	1550	BAT CURRENT SENSOR	2	_	EC-536
P1551	1551	BAT CURRENT SENSOR	2	_	EC-539
P1552	1552	BAT CURRENT SENSOR	2	_	EC-539
P1553	1553	BAT CURRENT SENSOR	2	_	EC-542
P1554	1554	BAT CURRENT SENSOR	2	_	EC-545
P1564	1564	ASCD SW	1	_	EC-548
P1572	1572	ASCD BRAKE SW	1	_	EC-551
P1574	1574	ASCD VHL SPD SEN	1	_	EC-559
P1610	1610	LOCK MODE	2	_	SEC-65 (COUPE) or SEC-281 (SE- DAN)
P1611	1611	ID DISCORD, IMMU-ECM	2	_	SEC-70 (COUPE) or SEC-286 (SE- DAN)
P1612	1612	CHAIN OF ECM-IMMU	2	_	SEC- 71(COUPE) or SEC-287 (SEDAN)
P1615	1615	DIFFERENCE OF KEY	2	-	SEC- 69(COUPE) or SEC-285 (SEDAN)
P1700	1700	CVT C/U FUNCT	2	_	EC-561
P1715	1715	IN PULY SPEED	2	_	EC-562
P1720	1720	V/SP SEN (A/T OUT)	2	_	EC-563
P1740	1740	SLCT SOLENOID	2	_	<u>TM-181</u>
P1777	1777	STEP MOTOR	2	_	TM-184
P1778	1778	STEP MOTOR	2	_	TM-187
P1800	1800	VIAS S/V-1	2	_	EC-565
P1801	1801	VIAS S/V-2	2	_	EC-567
P1805	1805	BRAKE SW/CIRCUIT	1	×	EC-570
P2100	2100	ETC MOT PWR-B1	1	×	EC-574
P2101	2101	ETC FNCTN/CIRC-B1	1	×	EC-576
P2103	2103	ETC MOT PWR	1	×	EC-574
P2118	2118	ETC MOT-B1	1	×	EC-580
P2119	2119	ETC ACTR-B1	1	×	EC-583
P2122	2122	APP SEN 1/CIRC	1	×	EC-585
P2123	2123	APP SEN 1/CIRC	1	×	EC-585
P2127	2127	APP SEN 2/CIRC	1	×	EC-588
P2128	2128	APP SEN 2/CIRC	1	×	EC-588
P2135	2135	TP SENSOR-B1	1	×	EC-592
P2138	2138	APP SENSOR	1	×	EC-595

^{*1: 1}st trip DTC No. is the same as DTC No.

^{*2:} In Diagnostic Test Mode II (Self-diagnostic results), this number is controlled by NISSAN.

^{*3:} The troubleshooting for this DTC needs CONSULT-III.

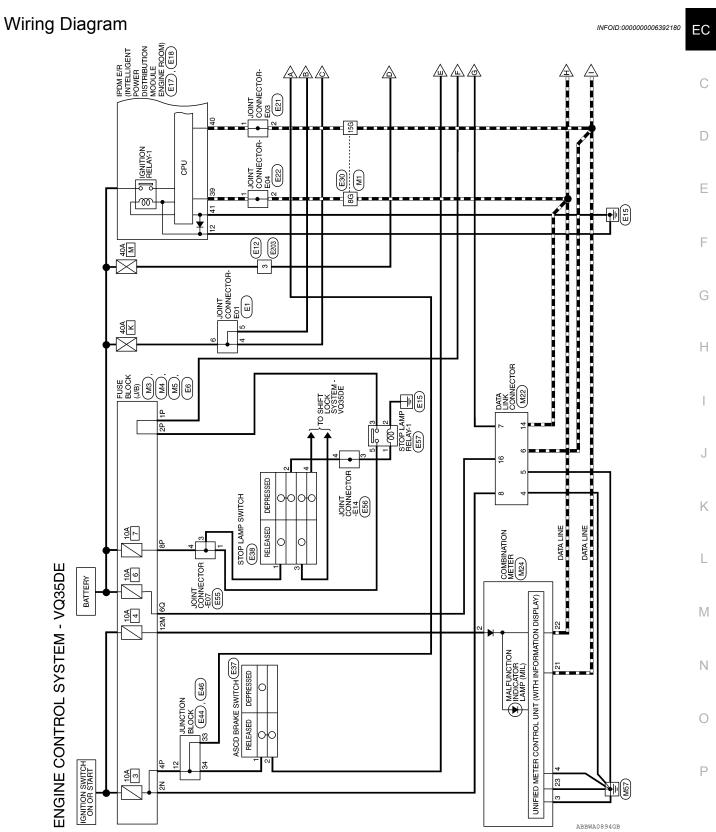
^{*4:} When the fail-safe operations for both self-diagnoses occur, the MIL illuminates.

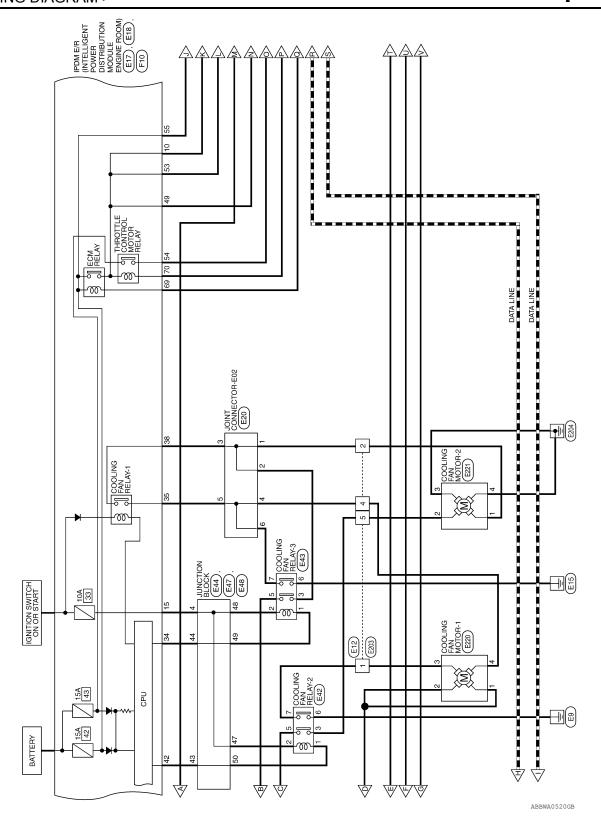
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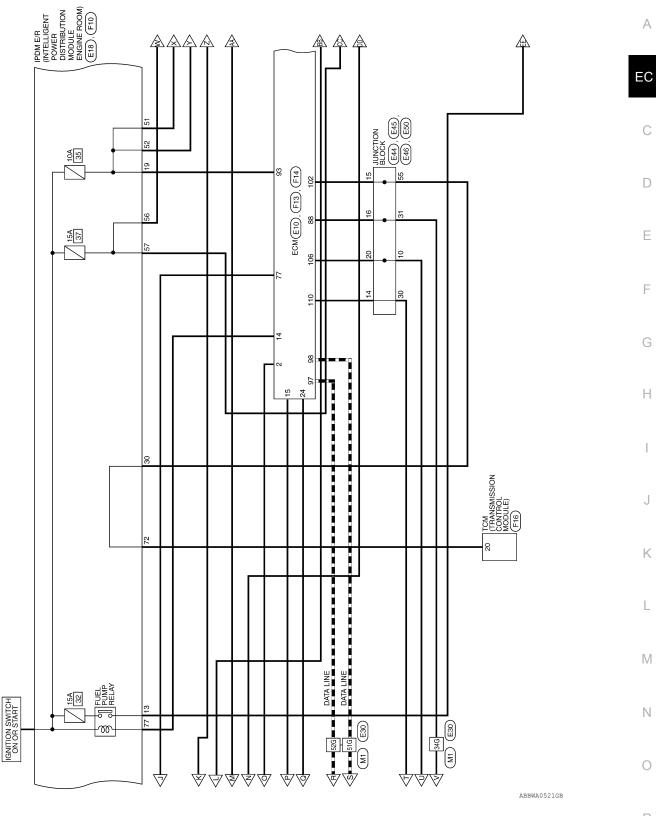
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WIRING DIAGRAM

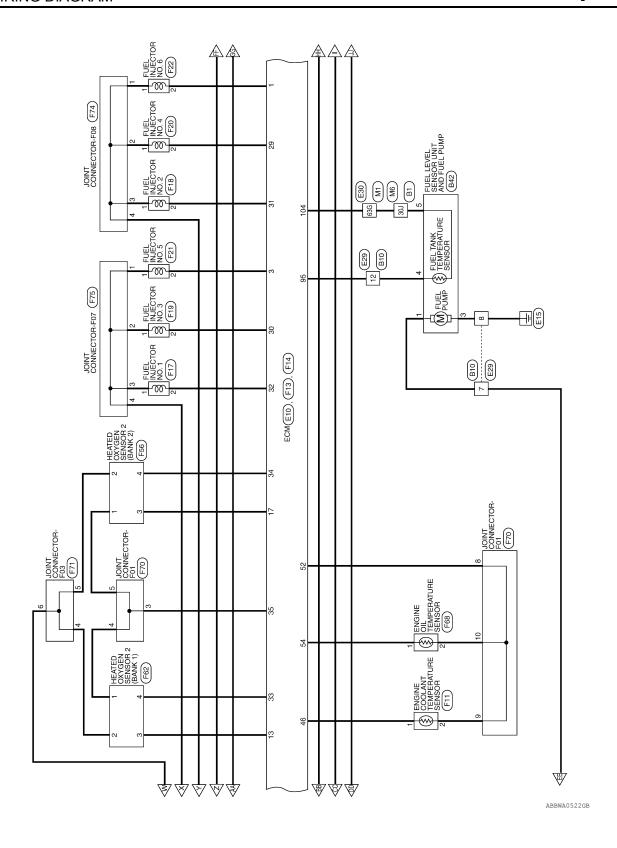
ENGINE CONTROL SYSTEM

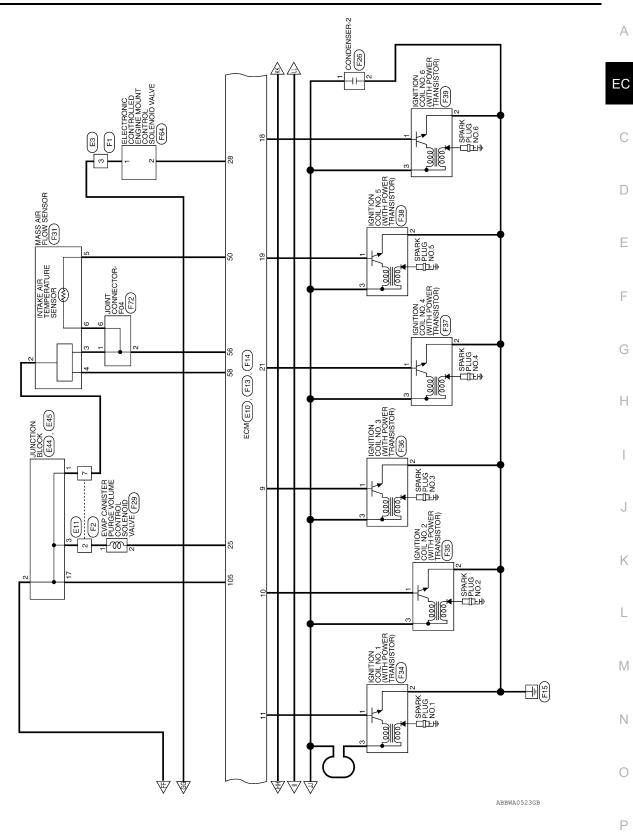




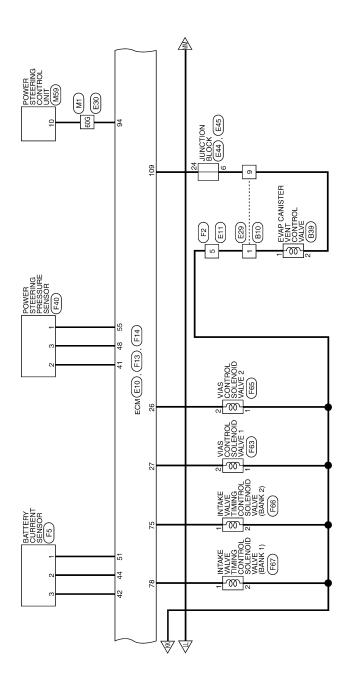


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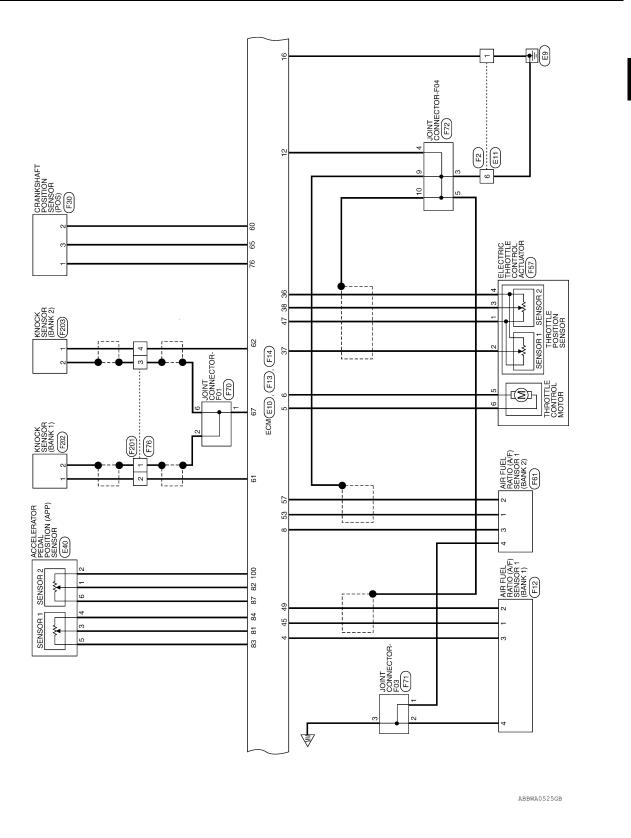




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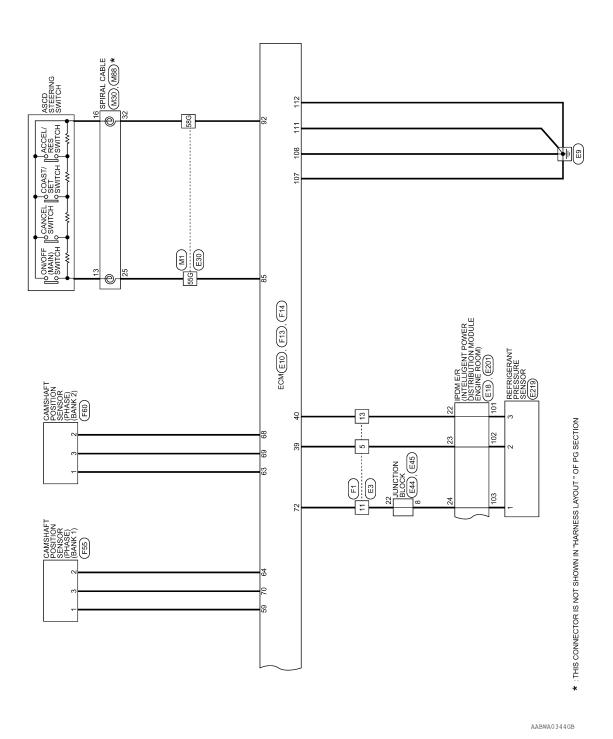
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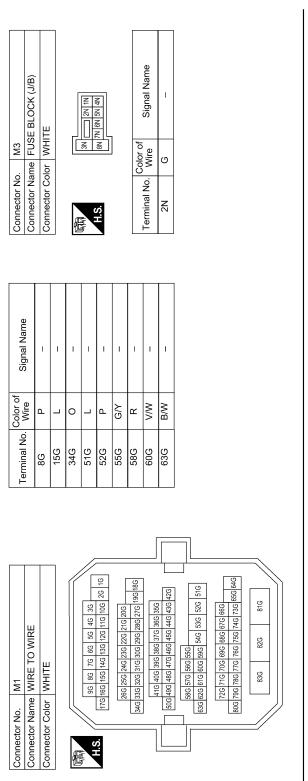
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ENGINE CONTROL SYSTEM CONNECTORS - VQ35DE



	Connector Name FUSE BLOCK (J/B)	HITE	2M/17M/10M/9M/8M/77M/6M/	Signal Name	1
. M5	me FU	lor W	5M 4M 12M11M	Color of Wire	0
Connector No.	Connector Na	Connector Color WHITE	明 H.S.	Terminal No. Wire	12M
No. M4	Connector Name FUSE BLOCK (J/B)	Connector Color WHITE	40 30 20 10	Color of Signal Name	Y/R
Connector No.	Connector N	Connector C	南 H.S.	Terminal No. Wire	9 09

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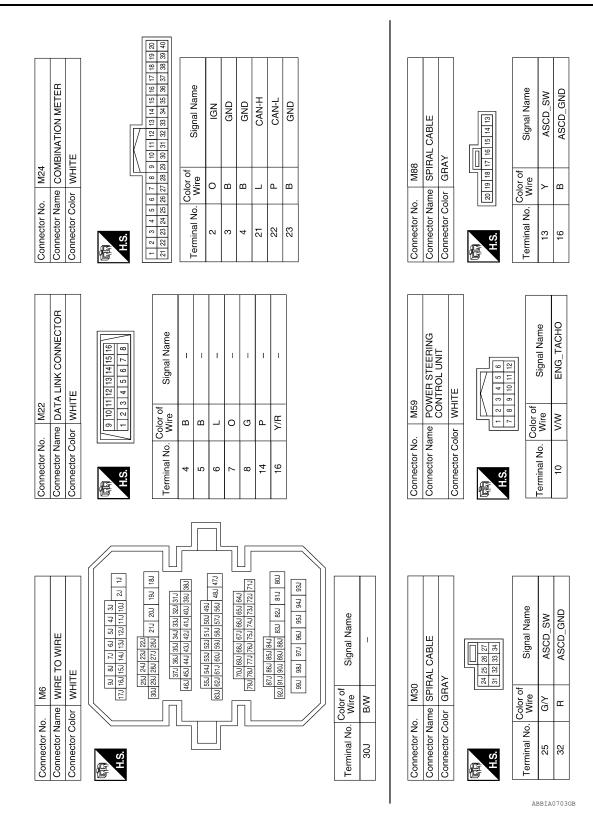
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-	Connector No.		E3 WIRE TO WIRE	Terminal No.	Vo. Wire	Signal Name	
Connector Color WHITE	Connector Color	lor WHITE		יו מי	- [ſ	
[0 7	5 0	1	
	E	1 2 3	4 5 6 7	- 0	5 8	I	
H.S.	H.S.	8 9 10 1	8 9 10 11 12 13 14 15 16	2	90	ı	_
Celor of Color Wire Signal Name							
· >-							
	Connector No.			Terminal No.	No. Wire	Signal Name	
Connector Name FUSE BLOCK (J/B)	Connector Name	ame ECM		92	BB	GNDA-ASCDSW	
_				66	>	IGNSW	
dc dc T dd dd dz dz dz dz dz				94	GR	TACHO(CABIN)	
16P 15P 14P 13P 12P 11P 10P 9P 8P	= (81 85 89 93	8	95	>	Ŧ	
	Ġ.	82 86 90 94 98 102 1	98 102 106 110	96	1	-	
Terminal No. Wire Signal Name		84 88 92 96	18	26	Ь	CAN-L	
2 8	<i>y</i>			86	_	CAN-H	
		Color of		66	1	1	
L C	Terminal No.	Wire	Signal Name	100	G	GNDA-APS2	
ר נ	81	×	APS1	101	ı	1	
l T	82	0	APS2	102	В	NEUT-H	
	83	GR	AVCC1-APS1	103	I	1	
	84	В	GNDA-APS1	104	۵	GNDA-TF	
	85	>	ASCDSW	105	۸	VBR	
	98	1	ı	106	SB	BRAKE	
	87	BR	AVCC2-APS2	107	В	GND	
	88	0	KLINE	108	В	GND	
	88	1	ı	109	>	CDCV	
	06	1	I	110	ŋ	BNCSW	
	91	1	ı	111	В	GND	
				112	В	GND	

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Connector No. E29 Connector Name WIRE TO WIRE Connector Color WHITE 7 6 5 4	Terminal No. Wire Signal Name 1 R -	Connector No. E37 Connector Name ASCD BRAKE SWITCH Connector Color BROWN Terminal No. Wire Signal Name 1 L 2 W -
Connector No. E22 Connector Name JOINT CONNECTOR-E04 Connector Color WHITE	Terminal No. Mire Signal Name 1 P	Terminal No. Wire Signal Name 8G P
Connector No. E21 Connector Name JOINT CONNECTOR-E03 Connector Color WHITE	Terminal No. Wire Signal Name	Connector No. E30 Connector Name WIRE TO WIRE Connector Color WHITE Connector Color WHITE Connector Glor WHITE 16 26 106 116 126 136 146 156 166 176 36 46 26 26 26 26 26 26 26 26 26 26 26 26 26

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E42 COOLING FAN RELAY-2 BROWN		Signal Name	I	ı	ı	1	I	1		Connector Name JUNCTION BLOCK	Щ	15 14 13 21 20 19 18	Signal Name	ı	ı	ı	_	_	ı	ı	
	2 9	Color of Wire	SB	5	_	>	В	æ	. E45	me JUNC	lor WHITE	17 16 24 23 22	Color of Wire	g	æ	0	۸	SB	GR	Μ	
Connector No. Connector Name Connector Color	国 H.S.	Terminal No.	-	7	က	2	9	7	Connector No.	Connector Na	Connector Color	原 H.S.	Terminal No.	14	15	16	17	20	22	24	
	1													Ι	Ι				I	Γ	
E40 ACCELERATOR PEDAL POSITION (APP) SENSOR BLACK	9 8 9	Signal Name	APS2	GND-A2	APS1	GND-A1	AVCC1	AVCC2		TION BLOCK	Z	9 3 7 6	Signal Name	ı	ı	ı	ı	ı	1	ı	
9 5	1 2 3 4 4	Color of Wire	0	ŋ	>	В	GR	BR	E44	JUNC-	or BROWN	5 4 11 10	Color of Wire	0	BR	_	*	>	ŋ	SB	G/R
Connector No. Connector Name Connector Color	赋引 H.S.	Terminal No.	-	2	က	4	Ŋ	9	Connector No.	Connector Name JUNCTION BLOCK	Connector Color	南 H.S.	Terminal No.	-	2	ဧ	4	9	80	10	12
		Г																		1	
LAMP SWITCH	8 H		Signal Name	_	1	ı	1			DLING FAN RELAY-3	NWN	2 1 2 1 2 2 2 3 3 3 3 3 3 3	Signal Name	1	1	1	1	1	1		
E38 ne STOP LA or WHITE		30,00	Wire	В	LG	>	_		. E43	me COC	lor BROWN		Color of Wire	0	>	GR	>	В	۵		
Connector No. Connector Name Connector Color	ffi		Terminal No.	1	2	က	4		Connector No.	Connector Name COOLIN	Connector Color	H.S.	Terminal No.	-	2	က	5	9	7		

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Connector No. E46	Connector No. E47	Connector No. E48	
Connector Name JUNCTION BLOCK	Connector Name JUNCTION BLOCK	Connector Name JUNCTION BLOCK	
Connector Color WHITE	Connector Color WHITE	Connector Color WHITE	
H.S. (31 30 28 28 (37 36 35 34 33 22)	42 14 43 H.S.	(150) 43) 48) 47)	
No.	o O O	Terminal No. Wire Signal Name	
30 W –	43 SB –		
))	49 O –	
		50 SB –	
	Connector No.	Connector No.	
Connector No. E50	Connector No. E55	Connector No. E56	
Connector Name JUNCTION BLOCK	-		
Connector Color WHITE	Connector Color WHITE	Connector Color WHITE	
		D 1 3 2 1 1 D	
15.			
Color of Signal Name	Terminal No. Wire Signal Name	Terminal No. Wire Signal Name	
BB C		3 LG –	
		4 LG –	
	4 B -		
L M	H J	C D	EC
1	J	=	

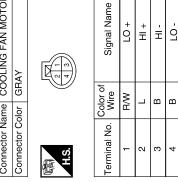
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Connector No. E203	Connector Name WIRE TO WIRE	Connector Color WHITE
E201	IPDM E/R (INTELLIGENT	MODULE ENGINE ROOM)

Signal Name	_	-	_	ı	-	
Color of Wire	В	B/W	R/Y	L/B	٦	
Terminal No. Wire	1	2	3	4	5	

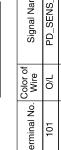


E221	Connector Name COOLING FAN MOTOR-2	r GRAY	
Connector No.	Connector Nam	Connector Color GRAY	



œ		_			
MODULE ENGINE R			91	66	I
፵		ᆜ	92	100	II
		117	93	101	II
Щ		IV .	8	102	II
⋾	Ш	l٨	98	103	II
	WHIT	$ \setminus$	96	104	II
ž	∣≷	S	97	105	II





Vo. Wire Signal	O/L PD_SE	R/B PD_SE	P PD_SE	
Terminal No.	101	102	103	

Signal Name	PD_SENS_GND	PD_SENS_SIG	PD_SEND_PWR	
Color of Wire	J/O	B/B	Д	
Ferminal No.	101	102	103	





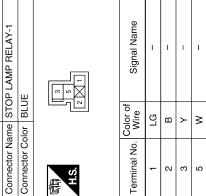
Signal Nan	+ O7	+ IH	-H	- 07
Color of Wire	R/Y	R/Y	ш	I/B
Ferminal No.	1	2	3	4



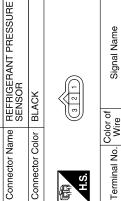
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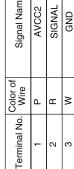
Connector No.











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E219

Connector No.

	Connector Name BATTERY CURRENT	SENSOR	OK		2 3		Signal Name	AVCC1	GND	SIGNAL		
No. F5	Vame BAT	NEW NEW	Solor BLA				o. Wire	Ь	0	5		
Connector No.	Connector		Connector Color BLACK	d		6	Terminal No. Wire	-	2	က		
	Connector Name WIRE TO WIRE	IITE		3 2 1	98765		Signal Name	I	ı	ı	I	
o. F2	ame WIF	olor WH		4	0		Color of Wire	В	>	В	В	
Connector No.	Connector Na	Connector Color WHITE			H.S.		Terminal No. Wire	-	2	5	9	
	TO WIRE			3 2 1	2 11 10 9 8		Signal Name	1	1	1	1	
Ε	ne WIRE	or WHITE		7 6 5 4	16 15 14 13 12 11			GR	0	æ	SB	
Connector No.	Connector Name WIRE TO WIRE	Connector Color WHITE			H.S.		Terminal No. Wire	က	2	11	13	

Terminal No. Color of Wire Signal Name Connector No. F11 49 V IGN_COIL Connector Name FNGINE COLANT 51 SB INJECTOR_#1 Connector Color GRAY 52 Y INJECTOR_#2 Connector Color GRAY 53 G ENG_SOL FN 54 GR ETC HS 55 LG ECM_BAT Terminal No. Color of Wire Signal Name 56 R O.2_SENS_#1 TW TW 69 SB SSOFF 2 L GND 70 G MOTRLY 2 L GND 72 R/B NPSW L GND	Signal Name Connector No. Figure Terminal No. Color of Signal Name Connector No. Factor F	
Signal Name	Terminal No. Color of Signal Name Connector No. Factor F	Reginal Figure Paraminal No. Paraminal N
	20lor of Wire 49 V 49 V 51 SB 52 Y 52 Y 53 G 54 GR 55 LG 55 LG 55 C G	Reminal No. Wire Color of State
Terminal No. Color of Wire 49 V 51 SB 52 Υ 53 GR 54 GR 55 LG 56 R 56 R 69 SB 70 G 72 R/B	8 8	## (INTELLIGENT 1 1 1 1 1 1 1 1 1
72 Terminal No. 49 49 51 52 53 54 55 56 57 70 70 72	8 8	## (INTELLIGENT 1 1 1 1 1 1 1 1 1
		## (INTELLIGENT 1 1 1 1 1 1 1 1 1

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r of Signal Name	AVCC1-PHASE 1	V GND-POS	R KNK1	V KNK2	AVCC1-PHASE 2, E-PHASE#2		POS	1	R GNDA-KNK 1, KNK 2	GND-PHASE 2, E-PHASE#2	PHASE 2	PHASE 1	1	AVCC2-PDPRES	1	-	CVTC#2	R AVCC2-POS	3 BATT	CVTC#1	1	
Color of Wire	-	≥	GR	≯	0	BR	۳		GR	>		>		۳	1	1	Υ	BR	LG	_	ı	
Terminal No.	59	09	61	62	63	64	65	99	29	89	69	70	71	72	73	74	75	9/	77	78	62	

AVCC1-CURSEN, INTPRES1 GNDA-TW, T01

51

AF+2

5

GNDA-PSPRES

AF-1

Q 0

TA1

AVCC1-TPS-B1

× R

45 46 48 49 50

AVCC1-PSPRES

GR LG

52 53 54 55 55 56 57 58

QA1, GNDA-TA1

AF-2 QA1+

LG BR

Signal Name	AF (+)	AF (-)	HEATER (-)	HEATER (+)
Color of Wire	٦	ŋ	^	0
Terminal No.	1	2	3	4

Connector No.	F12
Connector Name	Connector Name AIR FUEL RATIO (A/F) SENSOR 1 (BANK 1)
Connector Color GRAY	GRAY





	78
73	34 38 42 46 50 54 58 62 66 70 74
	2
	99
F13 E ECM BROWN 1415 49 53 57 66 69	62
	88
1 \$ 5 5	54
	23
F13 ECM BRO 45 49	46
4	42
	88
	路
Connector No. F13 Connector Name ECM Connector Color BROWN	Š.

Signal Name

Ferminal No.

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	12	78	79	80	
	73	74	75	76	
	69	2	71	72	
الے ا	99	99	29	68	
ΙП	19	62	63	64	ı
	24	28	29	9	
41	23	54	55	99	ı
	64	20	51	52	
	45	46	47	48	
ł II	14	42	43	44	
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GNDA-CURSEN, INTPRES1

AF+1

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SB

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Signal Name	O2SR1	O2SR2	GNDA-02SR1, 02SR2	GNDA-TPS-B1	TPS1-B1	TPS2-B1	PDPRES	GNDA-PDPRES
Color of Wire	Υ	>	В	5	В	В	0	SB
Terminal No.	33	34	35	36	37	38	36	40

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	_	_	_	_		_	_	_	_	_	_	_	_	_
Signal Name	IGN #5	1	IGN #4	I	ı	SSOFF	EVAP	VIAS2	VIAS1	EMMNV	INJ #4	E# CNI	INJ #2	INJ #1
Color of Wire	Я	-	GR	-	-	SB	Μ	В	B/W	BR	ГG	0	SB	^
Terminal No.	19	20	21	22	23	24	25	26	27	28	59	30	31	32

Signal Name	MOTOR1-B1	MOTOR2-B1	I	AFH2	IGN #3	IGN #2	IGN #1	GND	O2HR1	FPR	MOTRLY-B1	GND	O2HR2	1GN #6
Color of Wire	æ	BR	ı	SB	۵	g	>	В	0	B/R	ш	В	Q	٦
Terminal No.	5	9	7	8	6	10	1	12	13	14	15	16	17	18

	>	AY	9 13 17 21 25 29 10 14 18 22 26 30 11 15 19 22 27 31 12 16 20 24 28 32	Signal Name	9# CNI	VMOT-B1	INJ #5	AFH1
. F14	me ECM	lor GRAY	1 2 8 4 8 V V 8	Color of Wire	Ь	GR	>	^
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	-	2	3	4

o. F18	ame FUEL INJECTOR NO. 2	olor GRAY		Color of
Connector No.	Connector Name	Connector Color	原 H.S.	

C/C

≻ SB

	FUEL INJECTOR NO. 1	47		Signal Name	IGN	UNE
F17		lor GRAY		Color of Wire	SB	۸
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	-	2

		1							
			[8	94	44	42			
NO (ii			47	45	43	14		e e	
SSI			9	8	20	유		lan	ST_RLY
l≌B			l g		19	6	14	=	۳,
≅≥		lΙΓ	8	28	18	8	П) iii	ST
ĮŽΗ			33		17	7	Ш	Š	
	~	_	8		16	9	Γ		
N F	ΙŻ		%	22	15	2			
[DD	1		8	24	14	4		o of	
			8	ន	13	-		<u>ē</u>	≥
ਵ	ō			82		7		8 2	_
Sa	ပြ		\ [<u>~</u>	72	Ξ	-]]	<u>.</u>	
Connector	Connector	9		2			9	Terminal N	20
	Connector Name TCM (TRANSMISSION CONTROL MODULE)	1 1		TCM (TRANSMISSION CONTROL MODULE) BLACK	TCM (TRANSMISSION CONTROL MODULE) BLACK Sign S	TCM (TRANSMISSION CONTROL MODULE) BLACK State	TCM (TRANSMISSION CONTROL MODULE) BLACK State	TCM (TRANSMISSION CONTROL MODULE) BLACK S	DLACK CONTROL MODULE) BLACK BLACK State

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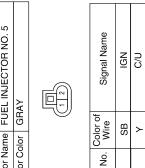
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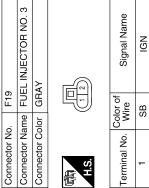
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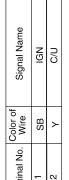
Connector No. F21 Connector Name FUEL INJECTOR NO. 5 Connector Color GRAY		
Connector Name FUEL INJECTOR NO. 5 Connector Color GRAY	Connector No.	F21
Connector Color GRAY	Connector Name	FUEL INJECTOR NO. 5
	Connector Color	GRAY











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Terminal No.	1	2	

Signal Name	NĐI	C/N	
Color of Wire	\	97	
inal No.	-	2	

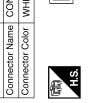
ij			
Color of Wire	>	ГG	
Terminal No.	Į.	2	

Signal Nam	IGN	C/n	
Color of Wire	SB	0	
Terminal No.	-	2	

Connector No.). F29	
Connector Name		EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE
Connector Color	olor BLUE	Æ
南 H.S.		<u> 1</u>
Terminal No.	Color of Wire	Signal Name
-	>	VBR
2	×	GND

				ame
	CONDENSER-2	ITE		Signal Name
. F26		lor WHITE		Color of Wire
Connector No.	Connector Name	Connector Color	际 H.S.	Terminal No.

VBR



Connector Nam Connector Colo

	FUEL INJECTOR NO. 6	AY	12	Signal Name	IGN	GND
. F22		lor GRAY		Color of Wire	>	Д
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	-	2

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Signal Name

Terminal No.

SIGNAL GND VBR

GR a >

	IGNITION COIL NO. 1 (WITH POWER TRANSISTOR)	GRAY	22	Signal Name	SIGNAL	GNĐ	ABV
. F34		-		Color of Wire	>	В	>
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	-	2	3

Signal Name	SIGNAL	GND	VBR	
Color of Wire	>	В	>	
Terminal No.	-	2	3	

	Signal Name	SIGNAL	GND	VBR	F37 IGNITION COIL NO. 4 (WITH	GRAY
Color of	Wire	>	В	>		
	l erminal No.	1	2	3	Connector No.	Connector Color
VB	GND	QA+	TA+	TA-	COIL NO. 3 (WITH	(10,000)

Connector No.	F36		
Connector Name		IGNITION COIL NO. 3 (WITH POWER TRANSISTOR)	
Connector Color	lor GRAY	47	
雨 H.S.	0		
Terminal No.	Color of Wire	Signal Name	
-	Ь	SIGNAL	
2	В	GND	
3	^	VBR	

Signal Name	VB	GND	QA+	TA+	TA-	
Color of Wire	Μ	Ь	BB	0	٦	
Terminal No.	2	8	4	5	9	

	MASS AIR FLOW SENSOR	BLACK		4 3 2 1	Signal Name	٩٨	GND	QA+	TA+	-YL	
. F31		_		9	Color of Wire	Μ	٨	BB	0		
Connector No.	Connector Name	Connector Color	僵	H.S.	Terminal No.	7	8	4	5	9	
	7				Г						

	CRANKSHAFT POSITION SENSOR (POS)	BLACK	(S Z	Signal Name	AVCC2	GND	SOA	
). F30				Color of Wire	BR	M	В	
Connector No.	Connector Name	Connector Color	部.	Terminal No.	-	2	3	

Color of Wire G G G	IGNITION COIL NO. 2 (WITH POWER TRANSISTOR)
Color of Wire G	GRAY
Color of Wire	(1 Z 3)
	or of Signal Name
	SIGNAL
	B GND
3	V VBR

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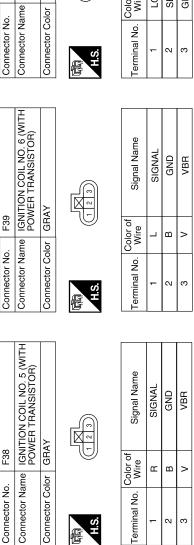
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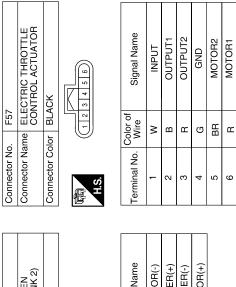
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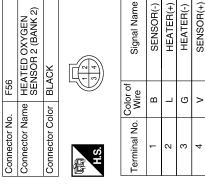
F56

	Connector No.	F40
V COIL NO. 6 (WITH TRANSISTOR)	Connector Name	Connector Name POWER STEERING PRESSURE SENSOR
	Connector Color BLACK	BLACK

PRESSURE SENSOR	OK	2		Signal Name	AVCC1	OUTPUT	GND
표 -	lor BLACK		⊣ ।	Color of Wire	LG	SB	GR
	Connector Color		H.S.	Terminal No.	-	2	3







Connector No.		F55	
Connector Name		AMSH/ ENSOF	CAMSHAFT POSITION SENSOR (PHASE) (BANK 1)
Connector Color		BLACK	
原动 H.S.			
Terminal No.	Color of Wire	JC .	Signal Name
-	_		AVCC1
2	BR		GND
3	>		PHASE

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Connector Name VIAS CONTROL SOLENOID VALVE 2

Connector No.

F64

Connector Color BLACK

ELECTRONIC CONTROLLED ENGINE MOUNT CONTROL SOLENOID VALVE

BROWN

Signal Name

Color of Wire

Terminal No.

Signal Name

Color of Wire

Terminal No.

Signal Name

Terminal No.

VBR GND

B∕W Q

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В BR

VBR GND

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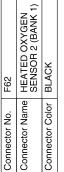
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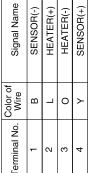


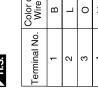
F61

Connector No.

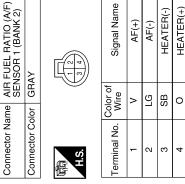
NK 2)







Signal Nar	AF(+)	AF(-)	неатев(HEATER(
Color of Wire	>	97	as	0
inal No.	_	2	3	4

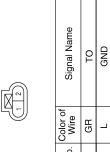


	CAMSHAFT POSITION SENSOR (PHASE) (BA	BLACK	2 3	Signal Name	AVCC1	GND	PHASE
F60	a e	-		Color of Wire	0	>	Д
Connector No	Connector Name	Connector Color	所.S.H.S.	Terminal No.	F	2	8

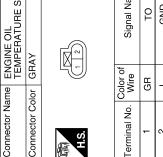
AVC	GNI	PHA!	
0	۸	Ь	
ŀ	2	3	

EC-685 Revision: June 2012 2011 Altima GCC

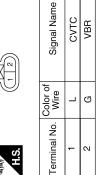
Connector No.	F68
Connector Name ENGINE OIL TEMPERATU	ENGINE OIL TEMPERATURE SENSOR
Connector Color GRAY	GRAY



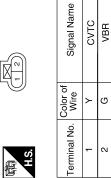


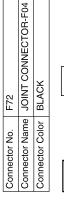


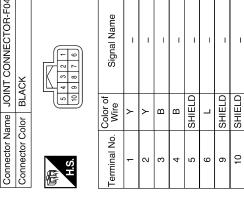
F67	INTAKE VALVE TIMING CONTROL SOLENOID VALVE (BANK 1)	aREEN	
Connector No.	Connector Name	Connector Color GREEN	



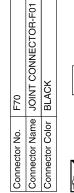
F66	INTAKE VALVE TIMING CONTROL SOLENOID VALVE (BANK 2)	GREEN	
Connector No.	Connector Name	Connector Color GREEN	

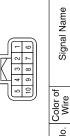






	JOINT CONNECTOR-F03	GREEN	2 3		Signal Name	ı	I	-	I	_	I
			(6))	Color of Wire	0	0	0	7	L	В
Connector No.	Connector Name	Connector Color	所 H.S.		Terminal No.	-	2	3	4	5	9





Signal Name	ı	ı	1	ı	-	-	1	1	1
Color of Wire	GR	SHIELD	В	В	В	SHIELD	Γ	٦	Т
Terminal No.	-	2	ဗ	4	5	9	8	6	10

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Connector Name KNOCK SENSOR (BANK 2)

Connector Name KNOCK SENSOR (BANK 1)

Connector No. F202

Connector Color GRAY

Connector No. F203

Connector Color GRAY

Signal Name KNK

Color of Wire GR SHIELD

Terminal No.

Signal Name KNK

Color of Wire

SHIELD ≥

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Connector No.	No. F74		Connector No.	F75		Connector No.	No. F76	
Connector N	Vame JC	Connector Name JOINT CONNECTOR-F08	Connector Name	OINT C	Connector Name JOINT CONNECTOR-F07	Connector	Name WII	Connector Name WIRE TO WIRE
Connector Color WHITE	Solor W	HTE	Connector Color WHITE	WHITE		Connector Color	Color BLUE	ار ا
H.S.	4	3 2 1	用.S.	1 4 3 2		H.S.		2 4
Terminal No. Wire	Color of Wire	Signal Name	Terminal No. Wire	olor of Nire	Signal Name	Terminal No. Wire	Color of Wire	Signal Name
-	>	1	-	SB	ı	-	SHIELD	ı
2	>	1	2	SB	ı	2	GR	ı
က	>		က	SB	ı	က	SHIELD	ı
4	>		4	SB	1	4	8	ı

Connector Name Connector Color Connect	Terminal No. Wire Signal Name Terminal No. C	1 SHIELD 1	2 GR 2 S	3 SHIELD –	4 W –
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ABBIA0895GB

Connector No. B10 Connector Name WIRE TO WIRE	
Signal Name	B42 FUEL LEVEL SENSOR GRAY GRAY 1 2 3 4 5 1 3 4 5 1 3 4 5 1 4 5 1 5 5 5 5 5 5 1 5 5 5 5 5 1 5 5 5 5
Terminal No. Wire 30J B	Connector No. B42 Connector Name FUE Connector Color GRA H.S. H.S. 1 W 1 W 3 B 4 Y 4 Y 7
Connector No. B1	Connector No. B39

ENGINE CONTROL SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

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SYMPTOM DIAGNOSIS

ENGINE CONTROL SYSTEM SYMPTOMS

Symptom Table EC

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	АН	AJ	AK	AL	AM	НА		
Fuel	Fuel pump circuit	1	1	2	3	2		2	2			3		2	EC-619	
	Fuel pressure regulator system	3	3	4	4	4	4	4	4	4		4			EC-701	
	Fuel injector circuit	1	1	2	3	2		2	2			2			EC-616	
	Evaporative emission system	3	3	4	4	4	4	4	4	4		4			EC-394	
Air	Positive crankcase ventilation system	3	3	4	4	4	4	4	4	4		4	1		EC-635	
	Incorrect idle speed adjustment						1	1	1	1		1			EC-331	
	Electric throttle control actuator	1	1	2	3	3	2	2	2	2		2		2	EC-576, EC-583	
Ignition	Incorrect ignition timing adjustment	3	3	1	1	1		1	1			1			EC-331	
	Ignition circuit	1	1	2	2	2		2	2			2			EC-629	
Power s	supply and ground circuit	2	2	3	3	3		3	3		2	3			EC-438	
Mass ai	r flow sensor circuit	1			2										EC-456	
Engine	coolant temperature sensor circuit	'					3			3					EC-465	
Air fuel	ratio (A/F) sensor 1 circuit		1	2	3	2		2	2			2			EC-471, EC-475, EC-479	
Throttle position sensor circuit							2			2					EC-468, EC-494, EC-532, EC-534, EC-592	
Accelera	ator pedal position sensor circuit			3	2	1									EC-521, EC-585, EC-588, EC-595	
Knock s	ensor circuit			2								3			EC-497	
Cranksh	naft position sensor (POS) circuit	2	2												EC-500	
Camsha	aft position sensor (PHASE) circuit	3	2												EC-504	

[VQ35DE]

						S١	/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	
Vehicle speed signal circuit		2	3		3						3			EC-511
Power steering pressure sensor circuit		2					3	3						EC-513
ECM	2	2	3	3	3	3	3	3	3	3	3			EC-516, EC-518
Intake valve timing control solenoid valve circuit		3	2		1	3	2	2	3		3			EC-453
PNP signal circuit			3		3		3	3			3			EC-524
VIAS control solenoid valve 1 circuit					1									EC-565
VIAS control solenoid valve 2 circuit					1									EC-567
Refrigerant pressure sensor circuit		2				3			3		4			EC-636
Electrical load signal circuit							3							EC-608
Air conditioner circuit	2	2	3	3	3	3	3	3	3		3		2	<u>HAC-4,</u> <u>HAC-107</u>
ABS actuator and electric unit (control unit)			4											BRC-7, BRC-69, BRC-141

^{1 - 6:} The numbers refer to the order of inspection. (continued on next page)

SYSTEM — ENGINE MECHANICAL & OTHER

ENGINE CONTROL SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

[VQ35DE]

							S	MPT	ОМ							Α
		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	C D
Warranty s	ymptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	НА		F
Fuel	Fuel tank	-													<u>FL-14</u>	
	Fuel piping	5		5	5	5		5	5			5			<u>FL-5</u>	
	Vapor lock		5												_	G
	Valve deposit														_	
	Poor fuel (Heavy weight gasoline, Low octane)	5		5	5	5		5	5			5			_	Н
Air	Air duct														EM-131	
	Air cleaner														<u>EM-125</u>	- 1
	Air leakage from air duct (Mass air flow sensor — electric throttle control actuator) Electric throttle control actuator	5	5	5	5	5	5	5	5	5		5			EM-131 EM-132	. J
	Air leakage from intake manifold/ Collector/Gasket														<u>EM-132</u> , <u>EM-135</u>	K
Cranking	Battery Generator circuit	1	1	1		1		1	1					1	PG-3, PG- 71 STR-32, STR-35	L
	Starter circuit	3			_							1			STR-32, STR-35	
	Signal plate	6													EM-218	M
	PNP signal circuit	4													TM-22, TM-136	N
Engine	Cylinder head		_	_	_	_		_	_			_			EM 400	
	Cylinder head gasket	5	5	5	5	5		5	5		4	5	3		<u>EM-193</u>	
	Cylinder block															0
	Piston												4			
	Piston ring Connecting rod	6	6	6	6	6		6	6			6		-	EM-218	Р
	Bearing															
	Crankshaft															

[VQ35DE]

							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	АН	AJ	AK	AL	AM	НА					
Valve	Timing chain														<u>EM-170</u>				
mecha- nism	Camshaft														<u>EM-180</u>				
	Intake valve timing control	5	5	5	5	5	5	5	5	5		5	5			5			<u>EM-170</u>
	Intake valve												3		EM-193				
	Exhaust valve												3		<u>LIVI-193</u>				
Exhaust	Exhaust manifold/Tube/Muffler/ Gasket	5	5	5	5	5		5	5			5			EM-138, EX-12				
	Three way catalyst														<u>LX 12</u>				
Lubrica- tion	Oil pan/Oil strainer/Oil pump/Oil filter/Oil gallery/Oil cooler	5	5	5	5	5		5	5			5			LU-25, LU- 27, LU-29, LU-32				
	Oil level (Low)/Filthy oil														LU-25				
Cooling	Radiator/Hose/Radiator filler cap														<u>CO-38</u>				
	Thermostat	-								5	-				<u>CO-47</u>				
	Water pump	-									-				<u>CO-42</u>				
	Water gallery	5	5	5	5	5		5	5		4	5			<u>CO-49</u>				
	Cooling fan														<u>CO-40</u>				
	Coolant level (Low)/Contaminated coolant									5					<u>CO-34</u>				
NATS (Nis	san Anti-theft System)	1	1												<u>SEC-20</u> , <u>SEC-234</u>				

^{1 - 6:} The numbers refer to the order of inspection.

NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS > [VQ35DE]

NORMAL OPERATING CONDITION

Description INFOID:0000000006392185

FUEL CUT CONTROL (AT NO LOAD AND HIGH ENGINE SPEED)

If the engine speed is above 2,000 rpm under no load [for example, the selector lever position is P or N and engine speed is over 2,000 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 1,000 rpm, then fuel cut will be cancelled.

This function is different from deceleration control listed under Multiport Fuel Injection (MFI) System, <u>EC-346</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 AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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 "SRS AIR BAG".
- Never 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.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the
 ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with
 a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing
 serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000008680967

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

Connect both battery cables.

NOTF:

Supply power using jumper cables if battery is discharged.

- 2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
- 3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
- 4. Perform the necessary repair operation.

< PRECAUTION > [VQ35DE]

5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)

6. Perform self-diagnosis check of all control units using CONSULT.

Precautions For Xenon Headlamp Service

INFOID:0000000006904084

INFOID:0000000006904316

INFOID:0000000006392189

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.

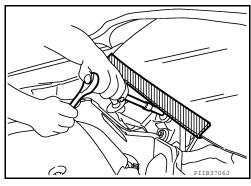
CAUTION:

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.).

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 to prevent damage to windshield.



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.

CAUTION:

- Always 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.
- Always 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. (Always 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-57, "Description" (COUPE models) or PG-129, "Description" (SEDAN models).
- Always 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.
- Always to erase the unnecessary malfunction information (repairs completed) from the ECM before returning the vehicle to the customer.

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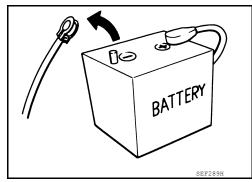
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General Precautions

Always use a 12 volt battery as power source.

- Never 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.



INFOID:0000000006392190

· Never disassemble ECM (2).

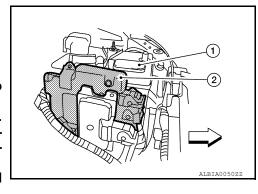
1 : Battery<□ : Vehicle front

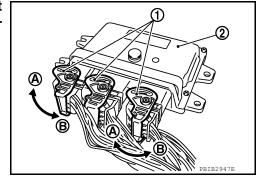
 If a battery cable is disconnected, the memory will return to the ECM value.

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. Never 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
- When connecting ECM harness connector, fasten (B) it securely with a lever (1) as far as it will go as shown in the figure.

2 : ECM A : Loosen

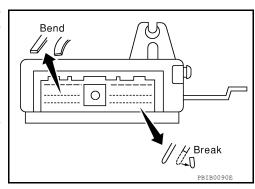




 When connecting or disconnecting pin connectors into or from ECM, take care not to damage pin terminals (bend or break).

Make sure that there are not any bends or breaks on ECM pin terminal, when connecting pin connectors.

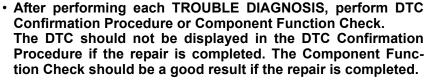
- Securely connect ECM harness connectors.
 A poor connection can cause an extremely high (surge) voltage to develop in coil and condenser, thus resulting in damage to ICs.
- Keep engine control system harness at least 10 cm (4 in) away from adjacent harness, to prevent engine control system malfunctions due to receiving external noise, degraded operation of ICs, etc.
- Keep engine control system parts and harness dry.

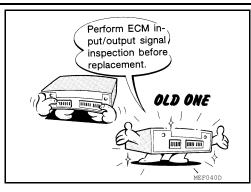


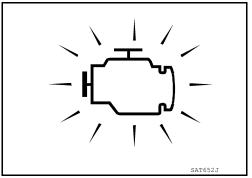
< PRECAUTION > [VQ35DE]

 Before replacing ECM, perform ECM Terminals and Reference Value inspection and make sure ECM functions properly.
 Refer to <u>EC-643</u>, "<u>Reference Value</u>".

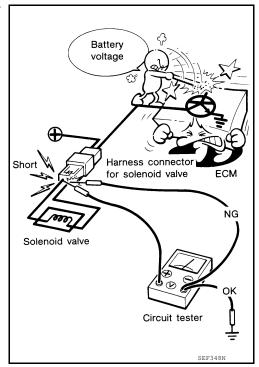
- Handle mass air flow sensor carefully to avoid damage.
- Never clean mass air flow sensor with any type of detergent.
- Never disassemble electric throttle control actuator.
- Even a slight leak in the air intake system can cause serious incidents.
- Never shock or jar the camshaft position sensor (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.



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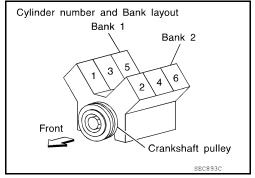
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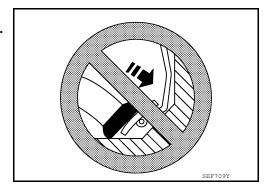
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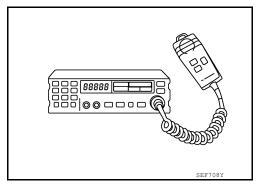
- B1 indicates the bank 1, B2 indicates the bank 2 as shown in the figure.
- · Never operate fuel pump when there is no fuel in lines.
- Tighten fuel hose clamps to the specified torque.



- Never depress accelerator pedal when starting.
- · Immediately after starting, never rev up engine unnecessarily.
- · Never 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.
 Never 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

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PREPARATION

Special Service Tools

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Tool number (SPX-North America No.) Tool name		Description
(J-44321) Fuel pressure gauge kit	LEC642	Checking fuel pressure
(J-44321-6) Fuel pressure adapter	LBIA0376E	Connecting fuel pressure to quick connector type fuel lines.

Commercial Service Tools

INFOID:0000000006392192

Tool name (SPX-North America No.)	Description	
Fuel filler cap adapter i.e.: (MLR-8382)	Checking fuel tank vacuum relief valve opening pressure	
Socket wrench	Removing and installing engine coolant temperature sensor	
19 mm (0.75 in)	More than	
	32 m. (1.26 in) s-NT705	

PREPARATION

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Tool name (SPX-North America No.)		Description
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
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.

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PERIODIC MAINTENANCE

FUEL PRESSURE

Inspection INFOID:0000000006392193

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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.
- Turn ignition switch OFF.

Without CONSULT-III

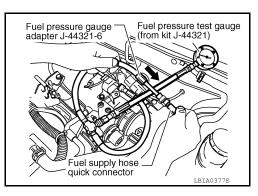
- 1. Remove fuel pump fuse located in IPDM E/R. Refer to PG-64, "Fuse, Connector and Terminal Arrangement" or PG-136, "Fuse, Connector and Terminal Arrangement".
- Start engine.
- 3. After engine stalls, crank it two or three times to release all fuel pressure.
- Turn ignition switch OFF.
- Reinstall 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 L32 models do not have fuel return system.
- Be careful not to scratch or get the fuel hose connection area dirty when servicing, so that the guick connector o-ring maintains seal ability.
- Use Fuel Pressure Gauge Kit [SST (J-44321)] and Fuel Pressure Adapter [SST (J-44321-6)] to check fuel pressure.
- 1. Release fuel pressure to zero.
- Remove fuel hose. Refer to EM-148, "Removal and Installation".
- 3. Install Fuel Pressure Adapter [SST (J-44321-6)] and Fuel Pressure Gauge [SST (J-44321)] as shown in figure.
 - Do not distort or bend fuel rail tube when installing fuel pressure gauge adapter.
 - When reconnecting fuel hose, check the original fuel hose for damage and abnormality.
- 4. Turn ignition switch ON (reactivate fuel pump) and check for fuel leakage.
- Start engine and check for fuel leakage.
- Read the indication of fuel pressure gauge.
 - During fuel pressure check, check for fuel leakage from fuel connection every 3 minutes.



At idling : Approximately 350 kPa (3.5 bar, 3.57 kg/cm², 51 psi)

- 7. If result is unsatisfactory, go to next step.
- 8. Check the following.
 - · Fuel hoses and fuel tubes for clogging
 - Fuel filter for clogging
 - Fuel pump
 - Fuel pressure regulator for clogging
- If OK, replace fuel pressure regulator.

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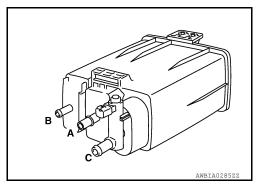
If NG, repair or replace.

EVAPORATIVE EMISSION SYSTEM

Inspection INFOID:0000000006392194

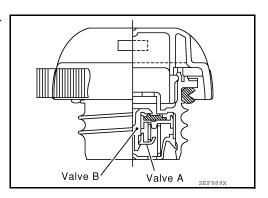
1. Visually inspect EVAP vapor lines for improper attachment and for cracks, damage, loose connections, chafing and deterioration.

- 2. Check EVAP canister as follows:
- a. Block port (B).
- b. Blow air into port (A) and check that it flows freely out of port (C).
- c. Release blocked port (B).
- d. Apply vacuum pressure to port (B) and check that vacuum pressure exists at the ports (A) and (C).
- e. Block port (A) and (B).
- f. Apply pressure to port (C) and check that there is no leakage.



3. Inspect fuel tank filler cap vacuum relief valve for clogging, sticking, etc.

a. Wipe clean valve housing.



b. Check valve opening pressure and vacuum.

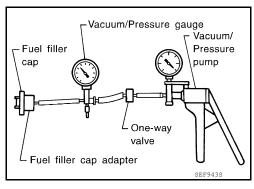
Pressure: 15.3 - 20.0 kPa (0.153 - 0.200 bar, 0.156 -

0.204 kg/cm², 2.22 - 2.90 psi)

Vacuum: -6.0 to -3.3 kPa (-0.060 to -0.033 bar, -

0.061 to -0.034 kg/cm², -0.87 to -0.48 psi)

If out of specification, replace fuel filler cap as an assembly.
 Refer to <u>FL-11</u>, "<u>Exploded View</u>".



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SERVICE DATA AND SPECIFICATIONS (SDS)

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INFOID:0000000006392196

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Idle Speed

Condition	Specification
No load* (in P or N position)	600 ± 50 rpm

^{*:} Under the following conditions

- Electric load: OFF (Lights, heater fan & rear window defogger)
- · Steering wheel: Kept in straight-ahead position

Ignition Timing

Condition	Specification
No load* (in P or N position)	18 ± 2°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