SECTION EC
ENGINE CONTROL SYSTEM

CONTENTS

VR38

BASIC INSPECTION

HOW TO SET SRT CODE

Description

INFOID:0000000009160554

OUTLINE

In order to set all SRTs, the self-diagnoses as in the “SRT ITEM” table must have been performed at least once. Each diagnosis may require actual driving for a long period of time under various conditions.

SRT ITEM

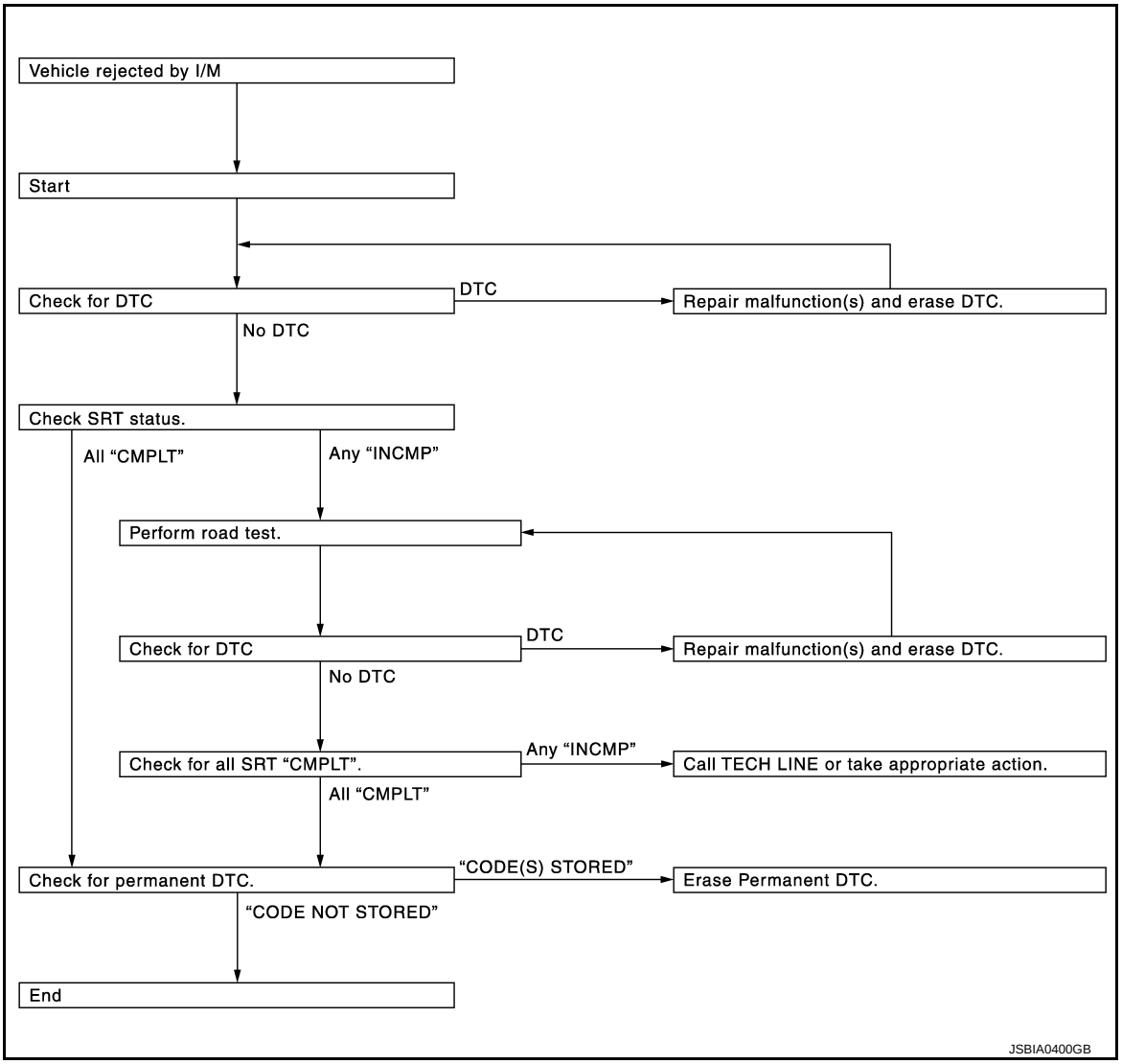
The table below shows required self-diagnostic items to set the SRT to “CMPLT”.

SRT item*1 (CONSULT indication)	Performance Priority*2	Required self-diagnostic items to set the SRT to “CMPLT”	Corresponding DTC No.
CATALYST	2	Three way catalyst function	P0420, P0430
S-AIR SYSTEM	2	Secondary air injection system	P0411
	2	Secondary air injection system	P0491, P0492
	2	Air cut solenoid valve	P2440, P2442
EVAP SYSTEM	2	EVAP control system purge flow monitoring	P0441
	1	EVAP control system	P0442
	2	EVAP control system	P0456
HO2S	2	Air fuel ratio (A/F) sensor 1	P0133, P0153
		Heated oxygen sensor 2	P0137, P0157
		Heated oxygen sensor 2	P0138, P0158
		Heated oxygen sensor 2	P0139, P0159
EGR/VVT SYSTEM	3	Intake valve timing control function	P0011, P0021

- *1: Though displayed on the CONSULT screen, “HO2S HTR” is not SRT item.
- *2: If completion of several SRTs is required, perform driving patterns (DTC confirmation procedure), one by one based on the priority for models with CONSULT.

SRT SERVICE PROCEDURE

If a vehicle has failed the state emissions inspection due to one or more SRT items indicating “INCMP”, review the flowchart diagnostic sequence, referring to the following flowchart.

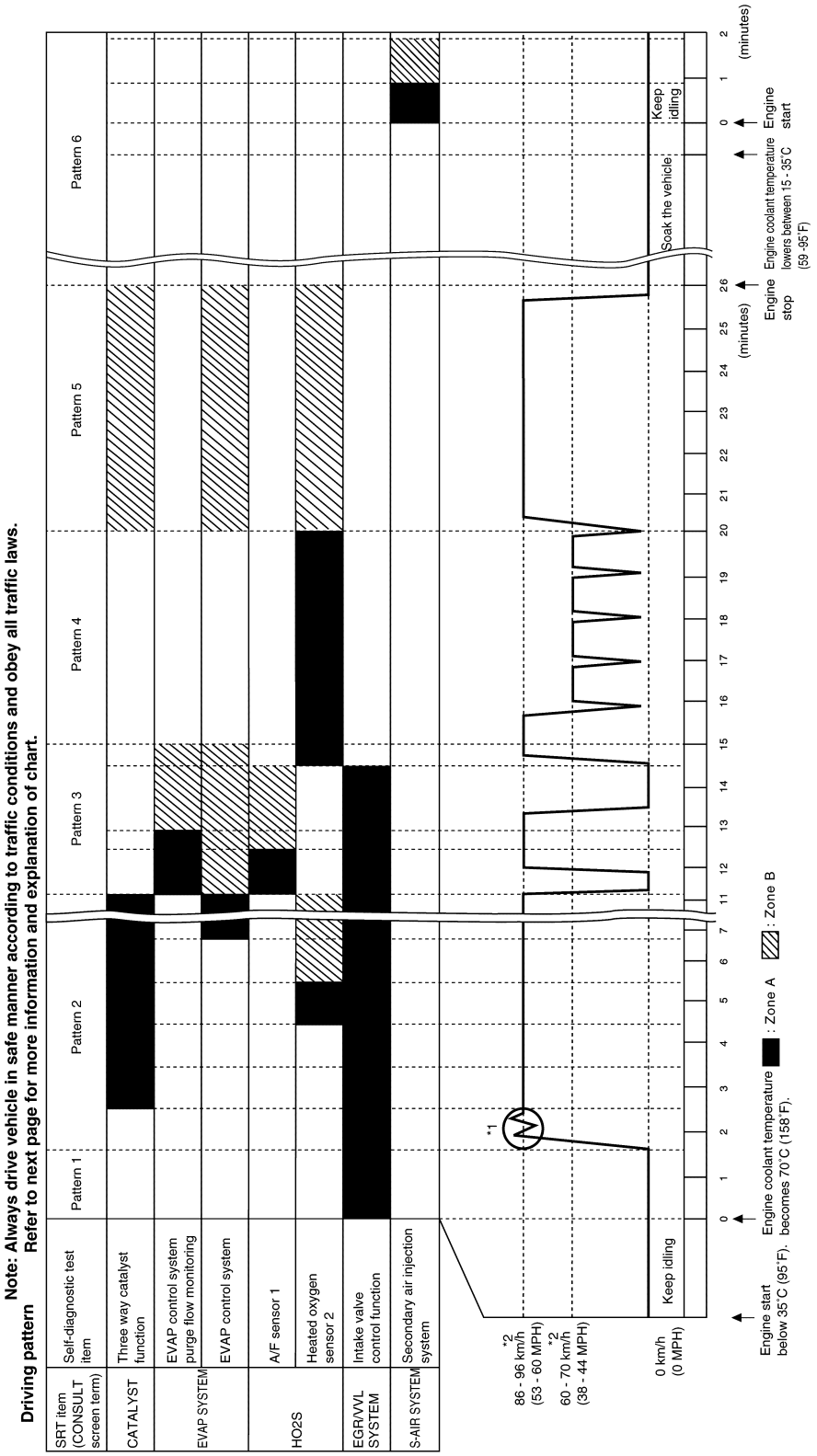


SRT Set Driving Pattern

INFOID:0000000009160555

CAUTION:

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



*1: Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH), then release the accelerator pedal and keep it released for more than 10 seconds. Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH) again.

*2: Checking the vehicle speed with GST is advised.

- The time required for each diagnosis varies with road surface conditions, weather, altitude, individual driving habits, etc.
- “Zone A” is the fastest time where required for the diagnosis under normal conditions*. If the diagnosis is not completed within “Zone A”, the diagnosis can still be performed within “Zone B”.

*: Normal conditions
- Sea level
- Flat road
- Ambient air temperature: 20 – 30°C (68 – 86°F)

NOTE:
Diagnosis is performed as quickly as possible under normal conditions. However, under other conditions, diagnosis may also be performed. [For example: ambient air temperature other than 20 – 30°C (68 – 86°F)]

Work Procedure

INFOID:0000000009160556

1.CHECK DTC

Check DTC.

Is any DTC detected?

YES >> Repair malfunction(s) and erase DTC.
NO >> GO TO 2.

2.CHECK SRT STATUS

With CONSULT
Select “SRT STATUS” mode with CONSULT.

Without CONSULT
Perform “SRT status” mode.

With GST
Select Service $01 with GST.

Is SRT code(s) set?

YES >> GO TO 11.
NO-1 >> With CONSULT: GO TO 3.
NO-2 >> Without CONSULT: GO TO 4.

3.DTC CONFIRMATION PROCEDURE

1. Select “DTC WORK SUPPORT” mode with CONSULT.
2. For SRT(s) that is not set, perform the corresponding “DTC CONFIRMATION PROCEDURE” according to the “Performance Priority” in the “SRT ITEM” table. Refer to EC-2, "Description".
3. Check DTC.

Is any DTC detected?

YES >> Repair malfunction(s) and erase DTC.
NO >> GO TO 10.

4.PERFORM ROAD TEST

- Check the “Performance Priority” in the “SRT ITEM” table. Refer to EC-2, "Description".
- Perform the most efficient SRT set driving pattern to set the SRT properly. Refer to EC-3, "SRT Set Driving Pattern".
  In order to set all SRTs, the SRT set driving pattern must be performed at least once.

>> GO TO 5.

5.PATTERN 1

1. Check the vehicle condition;
- Engine coolant temperature is –10 to 35°C (14 to 95°F).
- Fuel tank temperature is more than 0°C (32°F).
2. Start the engine.
3. Keep engine idling until the engine coolant temperature is greater than 70°C (158°F)

NOTE:
ECM terminal voltage is follows;
- Engine coolant temperature
  - –10 to 35°C (14 to 95°F): 3.0 – 4.3 V
  - 70°(158°F): Less than 4.1 V
- Fuel tank temperature: Less than 1.4 V

>> GO TO 6.

6. PATTERN 2

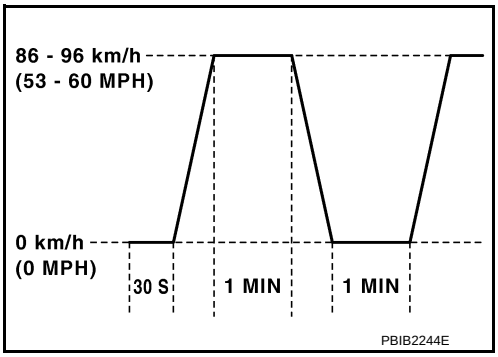
1. Drive the vehicle. And depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH), then release the accelerator pedal and keep it released for more than 10 seconds.
2. Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH) again

NOTE:
- Checking the vehicle speed with GST is advised.
- When steady-state driving is performed again even after it is interrupted, each diagnosis can be conducted. In this case, the time required for diagnosis may be extended.

>> GO TO 7.

7. PATTERN 3

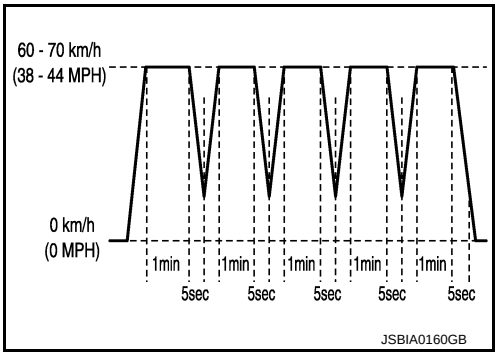
- Operate vehicle following the driving pattern shown in the figure.
- Release the accelerator pedal during deceleration of vehicle speed from 90 km/h (56 MPH) to 0 km/h (0 MPH).



>> GO TO 8.

8. PATTERN 4

- Operate vehicle following the driving pattern shown in the figure.
- Drive the vehicle in a proper gear at 60 km/h (38 MPH) and maintain the speed.
- Release the accelerator pedal fully at least 5 seconds.
- Repeat the above two steps at least 5 times.



>> GO TO 9.

9. PATTERN 5

- The accelerator pedal must be held very steady during steady-state driving.
- If the accelerator pedal is moved, the test must be conducted again.

>> GO TO 10.

10. PATTERN 6

- Cool down the engine so that the engine coolant temperature lowers between 15 – 35°C (59 – 95°F).
  CAUTION:
  Never turn the ignition switch ON while cooling down the engine.
- Engine coolant temperature at engine start is between 15 – 35°C (59 – 95°F) and has lowered 45°C (113°F) or more since the latest engine stop.

>> GO TO 11.

11. CHECK SRT STATUS

With CONSULT
Select “SRT STATUS” mode with CONSULT.
Without CONSULT
Perform “SRT status” mode.

With GST
Select Service $01 with GST.

Is SRT(s) set?

YES >> GO TO 12.
NO >> Call TECH LINE or take appropriate action.

12.CHECK PERMANENT DTC

NOTE:
Permanent DTC cannot be checked with a tool other than CONSULT or GST.

With CONSULT
Select “SRT STATUS” mode with CONSULT.

With GST
Select Service $0A with GST.

Is permanent DTC(s) detected?

YES >> Go to EC-8, "Description".
NO >> END

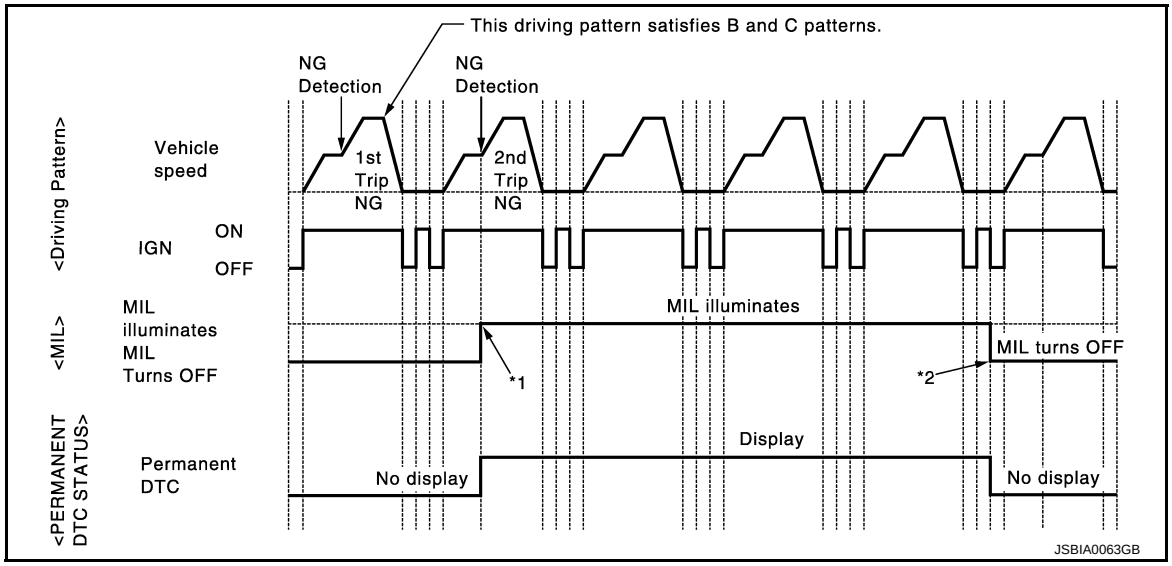
HOW TO ERASE PERMANENT DTC

Description

INFOID:0000000009160557

OUTLINE

When a DTC is stored in control module
When a DTC is stored in control module and MIL is ON, a permanent DTC is erased with MIL shutoff if the same malfunction is not detected after performing the driving pattern for MIL shutoff three times in a raw.



*1: When the same malfunction is detected in two consecutive trips, MIL will illuminate.

*2: MIL will turn off after vehicle is driven 3 times (driving pattern B) without any malfunctions.

When a DTC is not stored in control module
The erasing method depends on a permanent DTC stored in control module. Refer to the following table.

×: Applicable —: Not applicable

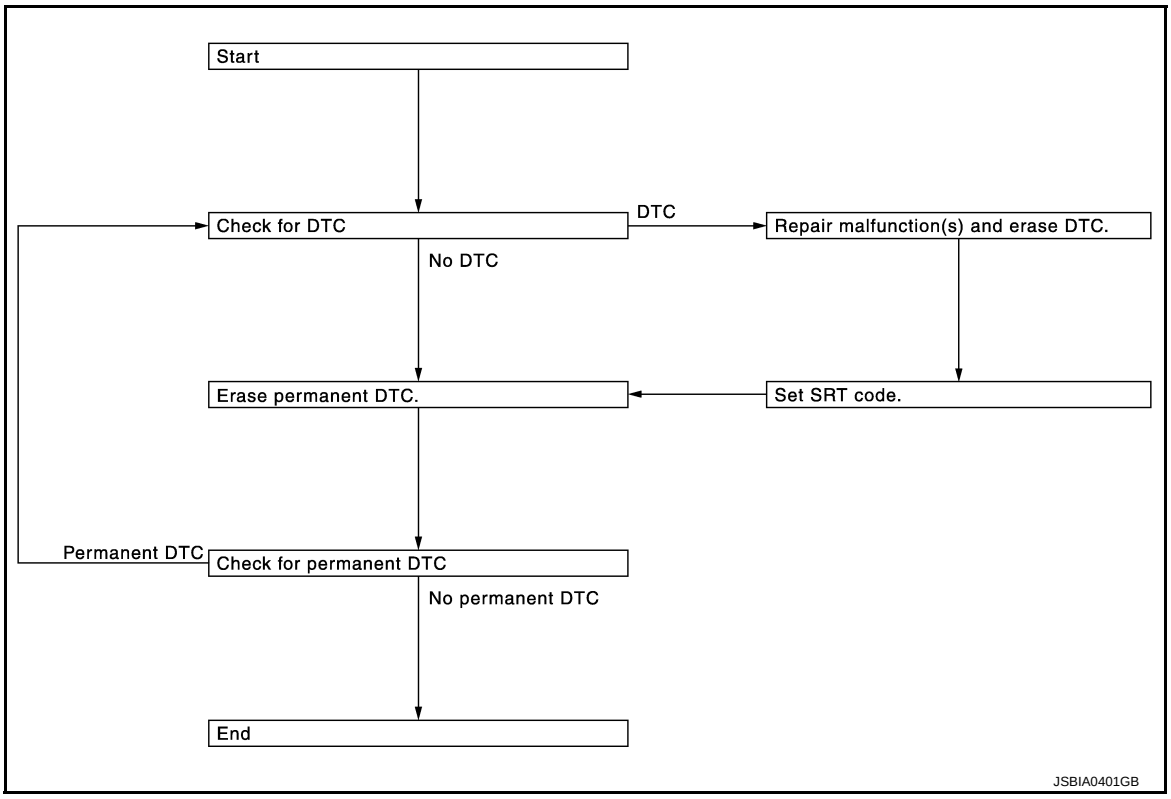
Group*	Perform “DTC CONFIRMATION PROCEDURE” for applicable DTCs.	Driving pattern		Reference
		B	D	
A	×	—	—	EC-9
B	—	×	×	EC-11

*: For group, refer to “DTC Index” of each control module.

PERMANENT DTC ITEM

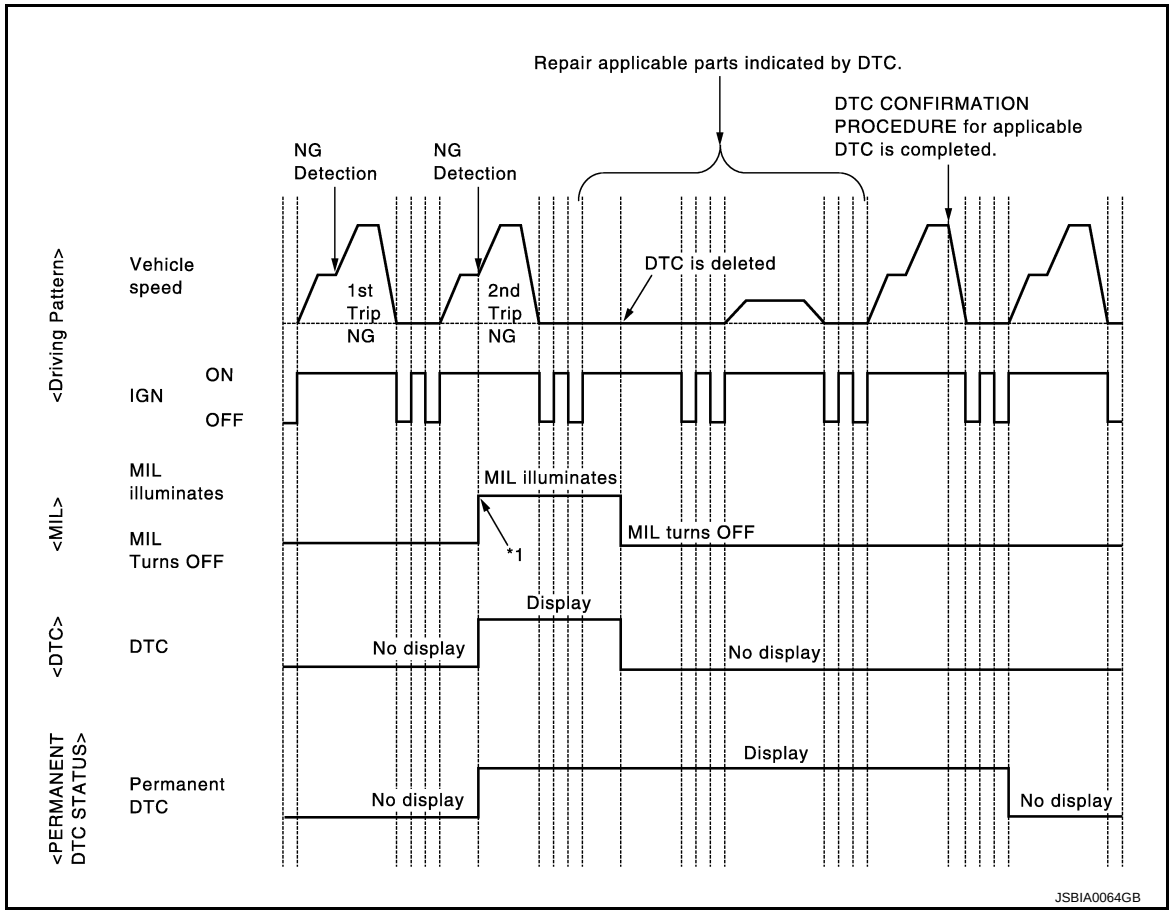
For permanent DTC items, MIL turns ON. Refer to “DTC Index” of each control module.

PERMANENT DTC SERVICE PROCEDURE



Work Procedure (Group A)

INFOID:0000000009160558



*1: When the same malfunction is detected in two consecutive trips, MIL will illuminate.

1.CHECK DTC

Check DTC.

Is any DTC detected?

YES >> Repair malfunction(s) and erase DTC.
NO >> GO TO 2.

2.CHECK PERMANENT DTC

With CONSULT
1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Turn ignition switch ON.
5. Select “PERMANENT DTC STATUS” mode with CONSULT.

With GST
1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Turn ignition switch ON.
5. Select Service $0A with GST.

Is any permanent DTC detected?

YES >> GO TO 3.
NO >> END

3.PERFORM DTC CONFIRMATION PROCEDURE

Perform “DTC CONFIRMATION PROCEDURE” for DTCs which are the same as permanent DTCs stored in control module.

>> GO TO 4.

4.CHECK PERMANENT DTC

With CONSULT
1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Turn ignition switch ON.
5. Select “PERMANENT DTC STATUS” mode with CONSULT.

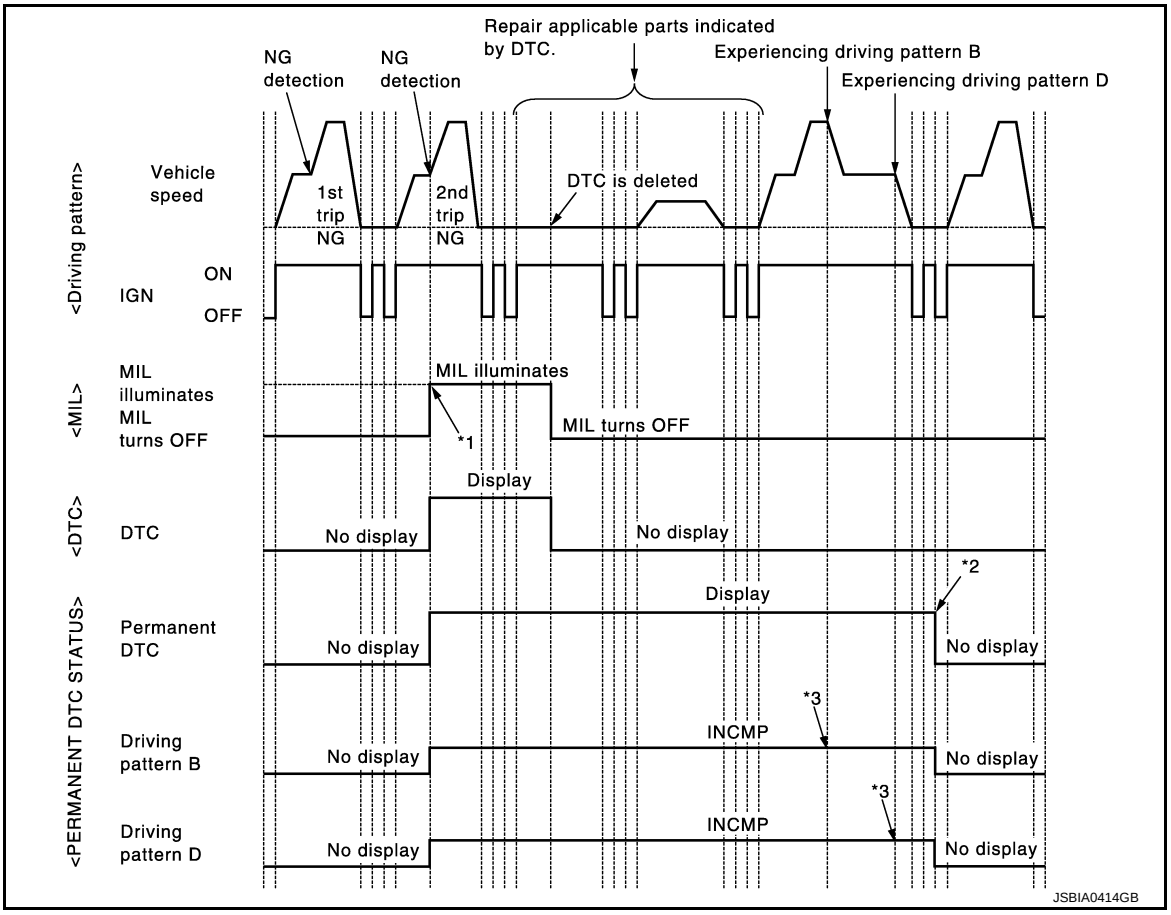
With GST
1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Turn ignition switch ON.
5. Select Service $0A with GST.

Is any permanent DTC detected?

YES >> GO TO 1.
NO >> END

Work Procedure (Group B)

INFOID:0000000009160559



*1: When the same malfunction is detected in two consecutive trips, MIL will illuminate.

*2: After experiencing driving pattern B and D, permanent DTC is erased.

*3: Indication does not change unless the ignition switch is turned from ON to OFF twice even after experiencing driving pattern B or D.

NOTE:
Drive the vehicle according to only driving patterns indicating “INCMP” in driving patterns B and D on the “PERMANENT DTC STATUS” screen.

1.CHECK DTC

Check DTC.

Is any DTC detected?

YES >> Repair malfunction(s) and erase DTC.
NO >> GO TO 2.

2.CHECK PERMANENT DTC

With CONSULT
1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Turn ignition switch ON.
5. Select “PERMANENT DTC STATUS” mode with CONSULT.

With GST
1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Turn ignition switch ON.

5. Select Service $0A with GST.

Is any permanent DTC detected?

YES >> GO TO 3.
NO >> END

3. DRIVE DRIVING PATTERN B

CAUTION:
- **Always drive at a safe speed.**
- **Never erase self-diagnosis results.**
- **If self-diagnosis results are erased during the trip of driving pattern B or D, the counter of driving pattern B and D is reset.**

With CONSULT
1. Start engine and warm it up to normal operating temperature.
2. Use “PERMANENT DTC WORK SUPPORT” mode with CONSULT to drive the vehicle according to driving pattern B.

With GST
1. Start engine and warm it up to normal operating temperature.
2. Drive the vehicle according to driving pattern B.

>> GO TO 4.

4. CHECK PERMANENT DTC

With CONSULT
1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Turn ignition switch ON.
5. Select “PERMANENT DTC STATUS” mode with CONSULT.

With GST
1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Turn ignition switch ON.
5. Select Service $0A with GST.

Is any permanent DTC detected?

YES >> GO TO 5.
NO >> END

5. DRIVE DRIVING PATTERN D

CAUTION:
- **Always drive at a safe speed.**
- **Never erase self-diagnosis results.**
- **If self-diagnosis results are erased during the trip of driving pattern B or D, the counter of driving pattern B and D is reset.**

1. Drive the vehicle according to driving pattern D.

>> GO TO 6.

6. CHECK PERMANENT DTC

With CONSULT
1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON.
3. Turn ignition switch OFF and wait at least 10 seconds.
4. Turn ignition switch ON.
5. Select “PERMANENT DTC STATUS” mode with CONSULT.

With GST
1. Turn ignition switch OFF and wait at least 10 seconds.
2. Turn ignition switch ON.

3. Turn ignition switch OFF and wait at least 10 seconds.
4. Turn ignition switch ON.
5. Select Service $0A with GST.

Is any permanent DTC detected?

YES >> GO TO 1.
NO >> END

ECU DIAGNOSIS INFORMATION

ECM

DTC Index

INFOID:0000000009161031

×:Applicable —: Not applicable

DTC*1		Items (CONSULT screen terms)	SRT code	Trip	MIL	Permanent DTC group*4
CONSULT GST*2	ECM*3					
U0101	0101	LOST COMM (TCM)	—	1	×	B
U1001	1001*5	CAN COMM CIRCUIT	—	2	—	—
P0000	**0000**	**NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.**	—	—	**Flash-ing*6**	—
P0011	0011	INT/V TIM CONT-B1	×	2	×	B
P0021	0021	INT/V TIM CONT-B2	×	2	×	B
P0031	0031	A/F SEN1 HTR (B1)	—	2	×	B
P0032	0032	A/F SEN1 HTR (B1)	—	2	×	B
P0037	0037	HO2S2 HTR (B1)	—	2	×	B
P0038	0038	HO2S2 HTR (B1)	—	2	×	B
P004A	004A	TC BOOST SOL/CIRC-B2	—	2	×	B
P004C	004C	TC BOOST SOL/CIRC-B2	—	1	×	B
P004D	004D	TC BOOST SOL/CIRC-B2	—	1	×	B
P0051	0051	A/F SEN1 HTR (B2)	—	2	×	B
P0052	0052	A/F SEN1 HTR (B2)	—	2	×	B
P0057	0057	HO2S2 HTR (B2)	—	2	×	B
P0058	0058	HO2S2 HTR (B2)	—	2	×	B
P0075	0075	INT/V TIM V/CIR-B1	—	2	×	B
P0081	0081	INT/V TIM V/CIR-B2	—	2	×	B
P0101	0101	MAF SEN/CIRCUIT-B1	—	2	×	B
P0102	0102	MAF SEN/CIRCUIT-B1	—	1	×	B
P0103	0103	MAF SEN/CIRCUIT-B1	—	1	×	B
P010B	010B	MAF SEN/CIRCUIT-B2	—	2	×	B
P010C	010C	MAF SEN/CIRCUIT-B2	—	1	×	B
P010D	010D	MAF SEN/CIRCUIT-B2	—	1	×	B
P0111	0111	IAT SENSOR 1 B1	—	2	×	A
P0112	0112	IAT SEN/CIRCUIT-B1	—	2	×	B
P0113	0113	IAT SEN/CIRCUIT-B1	—	2	×	B
P0116	0116	ECT SEN/CIRC	—	2	×	A
P0117	0117	ECT SEN/CIRC	—	1	×	B
P0118	0118	ECT SEN/CIRC	—	1	×	B
P0122	0122	TP SEN 2/CIRC-B1	—	1	×	B
P0123	0123	TP SEN 2/CIRC-B1	—	1	×	B
P0125	0125	ECT SENSOR	—	2	×	B
P0127	0127	IAT SENSOR-B1	—	2	×	B
P0128	0128	THERMSTAT FNCTN	—	2	×	A

DTC*1		Items (CONSULT screen terms)	SRT code	Trip	MIL	Permanent DTC group*4
CONSULT GST*2	ECM*3					
P0130	0130	A/F SENSOR1 (B1)	—	2	×	A
P0131	0131	A/F SENSOR1 (B1)	—	2	×	B
P0132	0132	A/F SENSOR1 (B1)	—	2	×	B
P0133	0133	A/F SENSOR1 (B1)	×	2	×	A
P0137	0137	HO2S2 (B1)	×	2	×	A
P0138	0138	HO2S2 (B1)	×	2	×	A
P0139	0139	HO2S2 (B1)	×	2	×	A
P0150	0150	A/F SENSOR1 (B2)	—	2	×	A
P0151	0151	A/F SENSOR1 (B2)	—	2	×	B
P0152	0152	A/F SENSOR1 (B2)	—	2	×	B
P0153	0153	A/F SENSOR1 (B2)	×	2	×	A
P0157	0157	HO2S2 (B2)	×	2	×	A
P0158	0158	HO2S2 (B2)	×	2	×	A
P0159	0159	HO2S2 (B2)	×	2	×	A
P0171	0171	FUEL SYS-LEAN-B1	—	2	×	B
P0172	0172	FUEL SYS-RICH-B1	—	2	×	B
P0174	0174	FUEL SYS-LEAN-B2	—	2	×	B
P0175	0175	FUEL SYS-RICH-B2	—	2	×	B
P0181	0181	FTT SENSOR	—	2	×	A and B
P0182	0182	FTT SEN/CIRCUIT	—	2	×	B
P0183	0183	FTT SEN/CIRCUIT	—	2	×	B
P0196	0196	EOT SENSOR	—	2	×	B
P0197	0197	EOT SEN/CIRC	—	2	×	B
P0198	0198	EOT SEN/CIRC	—	2	×	B
P0222	0222	TP SEN 1/CIRC-B1	—	1	×	B
P0223	0223	TP SEN 1/CIRC-B1	—	1	×	B
P0227	0227	TP SEN 2/CIRC-B2	—	1	×	B
P0228	0228	TP SEN 2/CIRC-B2	—	1	×	B
P0234	0234	TC SYSTEM-B1	—	1	×	B
P0236	0236	TC BOOST SEN/CIRC-B1	—	2	×	B
P0237	0237	TC BOOST SEN/CIRC-B1	—	2	×	B
P0238	0238	TC BOOST SEN/CIRC-B1	—	2	×	B
P0240	0240	TC BOOST SEN/CIRC-B2	—	2	×	B
P0241	0241	TC BOOST SEN/CIRC-B2	—	2	×	B
P0242	0242	TC BOOST SEN/CIRC-B2	—	2	×	B
P0300	0300	MULTI CYL MISFIRE	—	1 or 2	×	B
P0301	0301	CYL 1 MISFIRE	—	1 or 2	×	B
P0302	0302	CYL 2 MISFIRE	—	1 or 2	×	B
P0303	0303	CYL 3 MISFIRE	—	1 or 2	×	B
P0304	0304	CYL 4 MISFIRE	—	1 or 2	×	B
P0305	0305	CYL 5 MISFIRE	—	1 or 2	×	B
P0306	0306	CYL 6 MISFIRE	—	1 or 2	×	B

DTC*1		Items (CONSULT screen terms)	SRT code	Trip	MIL	Permanent DTC group*4
CONSULT GST*2	ECM*3					
P0327	0327	KNOCK SEN/CIRC-B1	—	2	—	—
P0328	0328	KNOCK SEN/CIRC-B1	—	2	—	—
P0332	0332	KNOCK SEN/CIRC-B2	—	2	—	—
P0333	0333	KNOCK SEN/CIRC-B2	—	2	—	—
P0335	0335	CKP SEN/CIRCUIT	—	2	×	B
P0340	0340	CMP SEN/CIRC-B1	—	2	×	B
P0345	0345	CMP SEN/CIRC-B2	—	2	×	B
P0411	0411	SCNDRY AIR SYSEM	×	2	×	A
P0420	0420	TW CATALYST SYS-B1	×	2	×	A
P0430	0430	TW CATALYST SYS-B2	×	2	×	A
P0441	0441	EVAP PURG FLOW/MON	×	2	×	A
P0442	0442	EVAP SMALL LEAK	×	2	×	A
P0443	0443	PURG VOLUME CONT/V	—	2	×	A
P0444	0444	PURG VOLUME CONT/V	—	2	×	B
P0445	0445	PURG VOLUME CONT/V	—	2	×	B
P0447	0447	VENT CONTROL VALVE	—	2	×	B
P0448	0448	VENT CONTROL VALVE	—	2	×	B
P0451	0451	EVAP SYS PRES SEN	—	2	×	A
P0452	0452	EVAP SYS PRES SEN	—	2	×	B
P0453	0453	EVAP SYS PRES SEN	—	2	×	B
P0455	0455	EVAP GROSS LEAK	—	2	×	A
P0456	0456	EVAP VERY SML LEAK	×*7	2	×	A
P0460	0460	FUEL LEV SEN SLOSH	—	2	×	A
P0461	0461	FUEL LEVEL SENSOR	—	2	×	B
P0462	0462	FUEL LEVL SEN/CIRC	—	2	×	B
P0463	0463	FUEL LEVL SEN/CIRC	—	2	×	B
P0491	0491	SCNDY AIR SYS-B1	×	2	×	A
P0492	0492	SCNDY AIR SYS-B2	×	2	×	A
P0500	0500	VEH SPEED SEN/CIRC*8	—	2	×	B
P0506	0506	ISC SYSTEM	—	2	×	B
P0507	0507	ISC SYSTEM	—	2	×	B
P0550	0550	PW ST P SEN/CIRC	—	2	—	—
P050A	050A	COLD START CONTROL	—	2	×	A
P050B	050B	COLD START CONTROL	—	2	×	A
P050E	050E	COLD START CONTROL	—	2	×	A
P0603	0603	ECM BACK UP/CIRCUIT	—	2	×	B
P0605	0605	ECM	—	1 or 2	× or —	B
P0607	0607	ECM	—	1	×	B
P0627	0627	SUB FUEL PUMP CIRC	—	1	×	B
P0629	0629	SUB FUEL PUMP CIRC	—	2	×	B
P062A	062A	SUB FUEL PUMP CIRC	—	1	×	B
P0643	0643	SENSOR POWER/CIRC	—	1	×	B

DTC*1		Items (CONSULT screen terms)	SRT code	Trip	MIL	Permanent DTC group*4
CONSULT GST*2	ECM*3					
P0850	0850	P-N POS SW/CIRCUIT	—	2	×	B
P1148	1148	CLOSED LOOP-B1	—	1	×	A
P1168	1168	CLOSED LOOP-B2	—	1	×	A
P1211	1211	TCS C/U FUNCTN	—	2	—	—
P1212	1212	TCS/CIRC	—	2	—	—
P1217	1217	ENG OVER TEMP	—	1	×	B
P1220	1220	FPCM	—	1	—	—
P1225	1225	CTP LEARNING-B1	—	2	—	—
P1226	1226	CTP LEARNING-B1	—	2	—	—
P1233	1233	ETC FNCTN/CIRC-B2	—	1	×	B
P1234	1234	CTP LEARNING-B2	—	2	—	—
P1235	1235	CTP LEARNING-B2	—	2	—	—
P1236	1236	ETC MOT-B2	—	1	×	B
P1238	1238	ETC ACTR-B2	—	1	×	B
P1239	1239	TP SENSOR-B2	—	1	×	B
P1263	1263	TC SYSTEM-B2	—	2	—	—
P1290	1290	ETC MOT PWR-B2	—	1	×	B
P1334	1334	TC SYSTEM-B2	—	1	×	B
P1421	1421	COLD START CONTROL	—	2	×	A
P1550	1550	BAT CURRENT SENSOR	—	2	—	—
P1551	1551	BAT CURRENT SENSOR	—	2	—	—
P1552	1552	BAT CURRENT SENSOR	—	2	—	—
P1553	1553	BAT CURRENT SENSOR	—	2	—	—
P1554	1554	BAT CURRENT SENSOR	—	2	—	—
P1564	1564	ASCD SW	—	1	—	—
P1572	1572	ASCD BRAKE SW	—	1	—	—
P1574	1574	ASCD VHL SPD SEN	—	1	—	—
P1610	1610	LOCK MODE	—	2	—	—
P1611	1611	ID DISCORD,IMMU-ECM	—	2	—	—
P1612	1612	CHAIN OF ECM-IMMU	—	2	—	—
P1614	1614	CHAIN OF IMMU-KEY	—	2	—	—
P1615	1615	DIFFERENCE OF KEY	—	2	—	—
P1805	1805	BRAKE SW/CIRCUIT	—	2	—	—
P2096	2096	POST CAT FUEL TRIM SYS B1	—	2	×	A
P2097	2097	POST CAT FUEL TRIM SYS B1	—	2	×	A
P2098	2098	POST CAT FUEL TRIM SYS B2	—	2	×	A
P2099	2099	POST CAT FUEL TRIM SYS B2	—	2	×	A
P2100	2100	ETC MOT PWR-B1	—	1	×	B
P2101	2101	ETC FNCTN/CIRC-B1	—	1	×	B
P2103	2103	ETC MOT PWR	—	1	×	B
P2118	2118	ETC MOT-B1	—	1	×	B
P2119	2119	ETC ACTR-B1	—	1	×	B

DTC*1		Items (CONSULT screen terms)	SRT code	Trip	MIL	Permanent DTC group*4
CONSULT GST*2	ECM*3					
P2122	2122	APP SEN 1/CIRC	—	1	×	B
P2123	2123	APP SEN 1/CIRC	—	1	×	B
P2127	2127	APP SEN 2/CIRC	—	1	×	B
P2128	2128	APP SEN 2/CIRC	—	1	×	B
P2132	2132	TP SEN 1/CIRC-B2	—	1	×	B
P2133	2133	TP SEN 1/CIRC-B2	—	1	×	B
P2135	2135	TP SENSOR-B1	—	1	×	B
P2138	2138	APP SENSOR	—	1	×	B
P2263	2263	TC SYSTEM-B1	—	2	—	—
P2432	2432	SNDRY MAS A/F SE	—	2	×	B
P2433	2433	SNDRY MAS A/F SE	—	2	×	B
P2440	2440	AIR CUT S/V-B1	×	1 or 2	×	B
P2442	2442	AIR CUT S/V-B2	×	2	×	B

*1: 1st trip DTC No. is the same as DTC No.

*2: This number is prescribed by SAE J2012/ISO 15031-6.

*3: In Diagnostic Test Mode II (Self-diagnostic results), this number is controlled by NISSAN.

*4: Refer to EC-8, "Description", “HOW TO ERASE PERMANENT DTC”.

*5: The troubleshooting for this DTC needs CONSULT.

*6: When the ECM is in the mode that displays SRT status, MIL may blink. For the details, refer to “How to Display SRT Status”.

*7: SRT code will not be set if the self-diagnostic result is NG.

*8: When the fail-safe operations for both self-diagnoses occur, the MIL illuminates.

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000009161036

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 for Battery Service

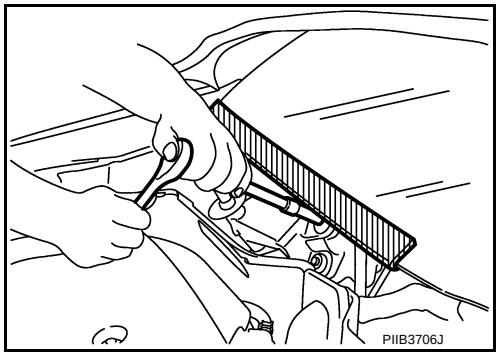
INFOID:0000000009161037

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

Precaution for Procedure without Cowl Top Cover

INFOID:0000000009161038

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

INFOID:0000000009161039

WARNING:

Comply with the following warnings to prevent any serious accident.

- **Disconnect the battery cable (negative terminal) or the power supply fuse before installing, removing, or touching the xenon headlamp (bulb included). The xenon headlamp contains high-voltage generated parts.**
- **Never work with wet hands.**
- **Check the xenon headlamp ON-OFF status after assembling it to the vehicle. Never turn the xenon headlamp ON in other conditions. Connect the power supply to the vehicle-side connector. (Turning it ON outside the lamp case may cause fire or visual impairments.)**
- **Never touch the bulb glass immediately after turning it OFF. It is extremely hot.**

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

- **Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)**
- **Never perform HID circuit inspection with a tester.**
- **Never touch the xenon bulb glass with hands. Never put oil and grease on it.**
- **Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.**
- **Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).**

On Board Diagnostic (OBD) System of Engine and Transmission

INFOID:0000000009161040

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.

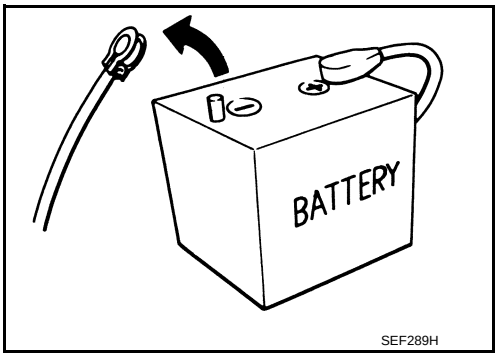
CAUTION:

- **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 illuminate.**
- **Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MIL to illuminate 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 GI-34, "Control Units and Electrical Parts".**
- **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 illuminate due to the short circuit.**
- **Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MIL to illuminate due to the malfunction of the EVAP system or fuel injection system, etc.**
- **Be sure to erase the unnecessary malfunction information (repairs completed) from the ECM and TCM (Transmission control module) before returning the vehicle to the customer.**

General Precautions

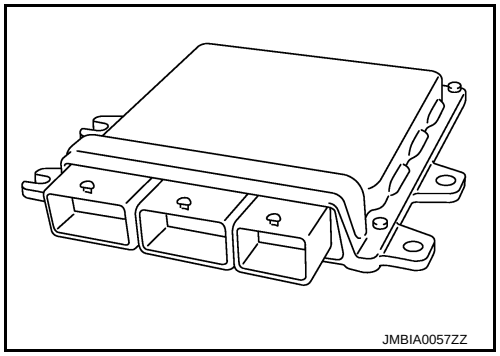
INFOID:0000000009161041

- **After finishing servicing, check that all the tools and waste are stored in a customary place.**
- **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.**



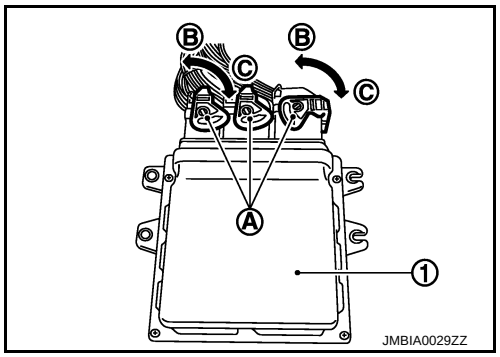
- **Never disassemble ECM.**
- **If a battery cable is disconnected, the memory will return to the ECM value.**
  The ECM will now start to self-control at its initial value. Engine operation can vary slightly when the terminal is disconnected. However, this is not an indication of a malfunction. Never 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**
- **System readiness test (SRT) codes**
- **Test values**


JMBIA0057ZZ

- **When connecting ECM harness connector (A), fasten (B) it securely with a lever as far as it will go as shown in the figure.**

1. ECM
C. Loosen



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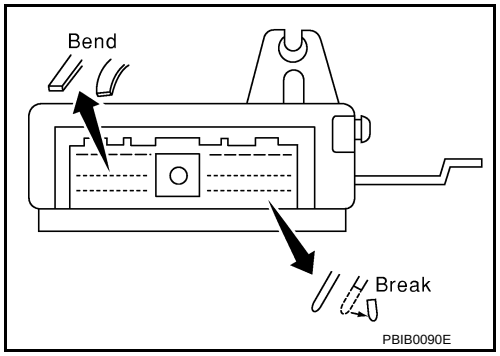
- **When connecting or disconnecting pin connectors into or from ECM, take care not to damage pin terminals (bend or break).**
  Make sure that there are not any bends or breaks on ECM pin terminal, when connecting pin connectors.
- **Securely connect ECM harness connectors.**
  A poor connection can 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 0.1 m (0.3 ft) away from adjacent harness, to prevent engine control system malfunctions due to receiving external noise, degraded operation of ICs, etc.**
- **Keep engine control system parts and harness dry.**
- **Before replacing ECM, perform ECM Terminals and Reference Value inspection and make sure ECM functions properly.**
- **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).**



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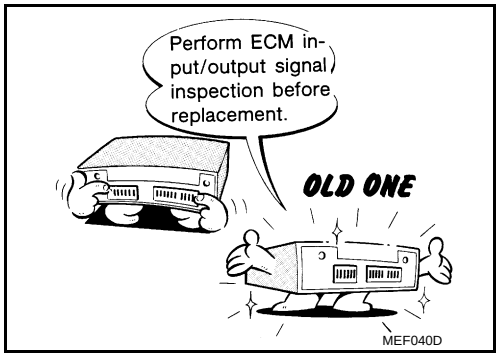
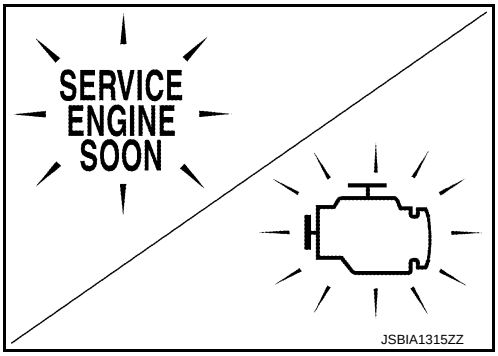
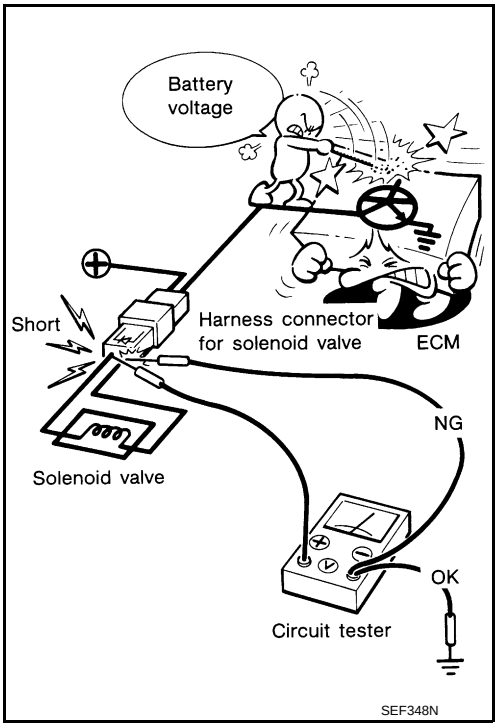


MEF040D

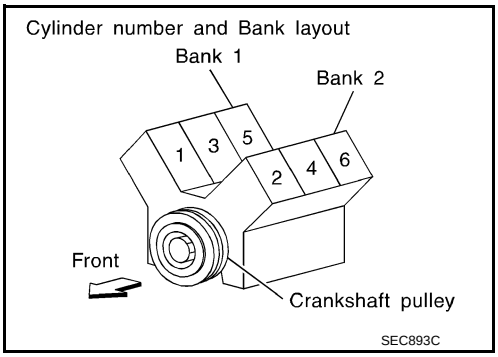
- **After performing each TROUBLE DIAGNOSIS, perform DTC Confirmation Procedure or Component Function Check.**
  The DTC should not be displayed in the DTC Confirmation Procedure if the repair is completed. The Component Function Check should be a good result if the repair is completed.



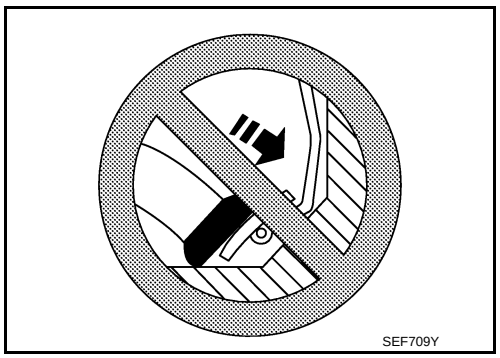
- **When measuring ECM signals with a circuit tester, never allow the two tester probes to contact.**
  Accidental contact of probes will cause a short circuit and damage the ECM power transistor.



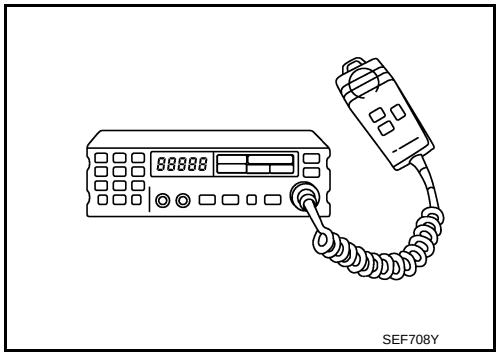
- **B1 indicates the bank 1, B2 indicates the bank 2 as shown in the figure.**
- **Never operate fuel pump when there is no fuel in lines.**
- **Tighten fuel hose clamps to the specified torque.**



- **Never depress accelerator pedal when starting.**
- **Immediately after starting, never rev up engine unnecessarily.**
- **Never rev up engine just prior to shutdown.**


SEF709Y

- **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 0.2 m (0.7 ft) 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.**



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PERIODIC MAINTENANCE

EVAP LEAK CHECK

Inspection

INFOID:0000000009161045

CAUTION:

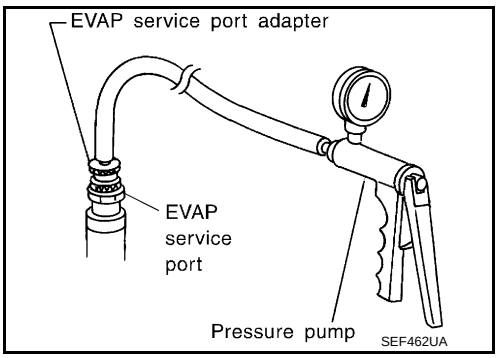
- **Do not use compressed air or a high pressure pump.**
- **Do not exceed 4.12 kPa (0.041 bar, 0.042 kg/cm^2, 0.6 psi) of pressure in EVAP system.**

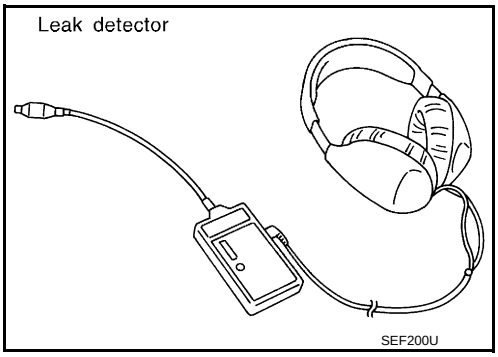
NOTE:

- Do not start engine.
- Improper installation of EVAP service port adapter (commercial service tool) to the EVAP service port may cause a leak.

WITH CONSULT

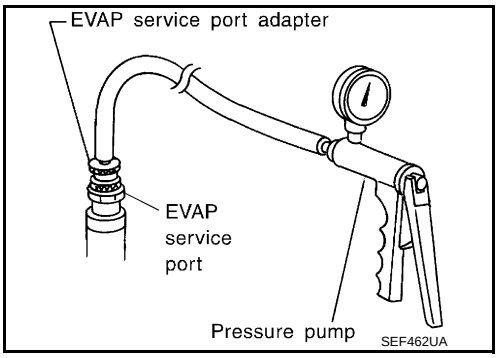
1. To locate the EVAP leak, install EVAP service port adapter (commercial service tool) and pressure pump to EVAP service port.
2. Turn ignition switch ON.
3. Select the “EVAP SYSTEM CLOSE” of “WORK SUPPORT” mode with CONSULT.
4. Touch “START”. A bar graph (Pressure indicating display) will appear on the screen.
5. Apply positive pressure to the EVAP system until the pressure indicator reaches the middle of the bar graph.
6. Remove EVAP service port adapter (commercial service tool) and hose with pressure pump.
7. Locate the leak using a leak detector (commercial service tool).



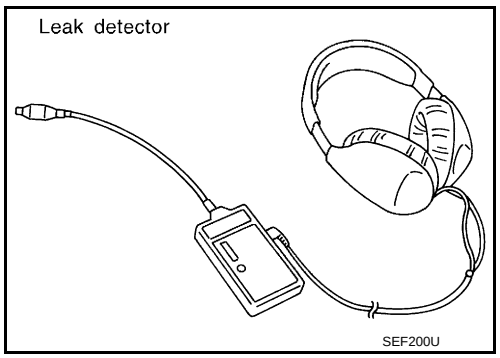


WITHOUT CONSULT

1. To locate the EVAP leak, install EVAP service port adapter (commercial service tool) and pressure pump to EVAP service port.
2. Apply battery voltage between the terminals of EVAP canister vent control valve to make a closed EVAP system.
3. To locate the leak, deliver positive pressure to the EVAP system until pressure gauge points reach 1.38 to 2.76 kPa (0.013 – 0.027 bar, 0.014 – 0.028 kg/cm^2, 0.2 – 0.4 psi).
4. Remove EVAP service port adapter (commercial service tool) and hose with pressure pump.



5. Locate the leak using a leak detector (commercial service tool).



SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Idle Speed

INFOID:0000000009161046

Condition	Specification
No load* (in P or N position)	825 ± 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:0000000009161047

Condition	Specification
No load* (in P or N position)	27 ± 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

Calculated Load Value

INFOID:0000000009161048

Condition	Specification (Using CONSULT or GST)
At idle	5 – 35%
At 2,500 rpm	5 – 35%

Mass Air Flow Sensor

INFOID:0000000009161049

Supply voltage	Battery voltage (11 – 14 V)
Output voltage at idle	0.9 – 1.2 V*
Mass air flow (Using CONSULT or GST)	2.0 – 6.0 g/s at idle* 7.0 – 20.0 g/s at 2,500 rpm*

*: Engine is warmed up to normal operating temperature and running under no load.