Technical Service Bulletin

SUBJECT:	No:	TSB-23-11-003
ADDITION OF SERVICE PROCEDURE DESCRIPTION FOR HEADLIGHT AIMING AND EXHAUST GAS TEMPERATURE SENSOR – SERVICE MANUAL REVISION	DATE:	**May 2023**
	MODEL:	**2022 Outlander**

CIRCULATE TO:	[ ] GENERAL MANAGER	[**X**] PARTS MANAGER	[**X**] TECHNICIAN
[**X**] SERVICE ADVISOR	[**X**] SERVICE MANAGER	[**X**] WARRANTY PROCESSOR	[ ] SALES MANAGER

PURPOSE

This TSB provides description information for the service procedure in the applicable Service Manual sections.

AFFECTED VEHICLES

2022 Outlander

AFFECTED SERVICE MANUAL

- 2022 Outlander Service Manual, Groups 11, 13 and 54

PROCEDURE

Please use the following chart as a guide to replace the indicated pages in the affected Service Manual, Group 11, Engine > Engine Mechanical, Group 13 Engine > Engine Control System and Group 54 Chassis Electrical > Headlight.

<OUTLANDER>

Applicable manual	Pub. No.	Applicable title	Content
2022 OUTLANDER Service manual	MSCD-330B-2022 (Volume 1)	CHASSIS ELECTRICAL └ 54A CHASSIS ELECTRICAL └ HEADLIGHT └SERVICE SPECIFICATIONS	Attached sheet 2
		CHASSIS ELECTRICAL └ 54A CHASSIS ELECTRICAL └ HEADLIGHT └ ON-VEHICLE SERVICE └ HEADLIGHT AIMING	Attached sheet 3
	MSCD-330B-2022 (Volume 2)	ENGINE └ ENGINE MECHANICAL └ REMOVAL AND INSTALLATION └ EXHAUST MANIFOLD AND THREE WAY CATALYST └ Exploded View	Attached sheet 4
		ENGINE └ ENGINE MECHANICAL └ REMOVAL AND INSTALLATION └ EXHAUST MANIFOLD AND THREE WAY CATALYST └ Removal and Installation	Attached sheet 5
		Added below "ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ SYSTEM DESCRIPTION └ COMPONENT PARTS └ Engine Oil Pressure Control Solenoid Valve"	Attached sheet 6
		ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ SYSTEM DESCRIPTION └ SYSTEM └ ENGINE CONTROL SYSTEM └ System Description	Attached sheet 7
		ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ SYSTEM DESCRIPTION └ SYSTEM └ ENGINE CONTROL SYSTEM └ System Description	Attached sheet 8
		ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ ECU DIAGNOSIS INFORMATION └ ECM └ DTC Inspection Priority Chart	Attached sheet 9
		ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ ECU DIAGNOSIS INFORMATION └ ECM └ DTC Index	Attached sheet 10
		Added below "ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ DTC/CIRCUIT DIAGNOSIS └ P0533 A/C REFRIGERANT PRESSURE SENSOR"	Attached sheet 11

Attached sheet 1 (2/2)

<OUTLANDER>

Applicable manual	Pub. No.	Applicable title	Content
2022 OUTLANDER Service manual	MSCD-330B-2022 (Volume 2)	Added below "ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ ~~ECU DIAGNOSIS INFORMATION~~ └ ~~ECM~~ └ P2018 INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR"	Attached sheet 12
		Added above "ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ ~~ECU DIAGNOSIS INFORMATION~~ └ ~~ECM~~ └ P2096 A/F SENSOR 1"	Attached sheet 13
		ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ SYMPTOM DIAGNOSIS └ ENGINE CONTROL SYSTEM └ Symptom Table	Attached sheet 14
2023 OUTLANDER Service manual	MSCD-030B-2023	ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ ECU DIAGNOSIS INFORMATION └ ECM └ DTC Inspection Priority Chart	Attached sheet 15
		ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ ECU DIAGNOSIS INFORMATION └ ECM └ DTC Index	Attached sheet 16
		Added below "ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ ~~ECU DIAGNOSIS INFORMATION~~ └ ~~ECM~~ └ P2018 INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR"	Attached sheet 12
		ENGINE └ ENGINE CONTROL SYSTEM └ PR25DD └ SYMPTOM DIAGNOSIS └ ENGINE CONTROL SYSTEM └ Symptom Table	Attached sheet 17
		DRIVER CONTROLS └ EXTERIOR LIGHTING SYSTEM └ LED HEADLAMP └ PERIODIC MAINTENANCE └ HEADLAMP AIMING ADJUSTMENT └ Specifications	Attached sheet 18
		DRIVER CONTROLS └ EXTERIOR LIGHTING SYSTEM └ LED HEADLAMP └ PERIODIC MAINTENANCE └ HEADLAMP AIMING ADJUSTMENT └ Headlight Aiming	Attached sheet 19

DTC/CIRCUIT DIAGNOSIS

A

Attached sheet 2

HEADLIGHT

SERVICE SPECIFICATIONS

M15401002A0576

Item <Incorrect>			Standard value	Limit
~~Headlight aiming [at 7.62 m (25.0 ft)]~~	~~Low-beam~~	~~Vertical direction~~	~~Horizontal line (H) ± 50.5 mm (± 2.0 in) (± 0.38 degrees angle)~~	~~-~~
		~~Horizontal direction~~	~~± 133.3 mm (± 5.2 in) (± 1 degrees angle) from the axis, which is 266.1 mm (10.5 in) (2 degrees angle) rightward from the vertical line (V)~~	~~-~~
Headlight intensity cd (at high-beam)			-	40,000 or more {when a screen is set 18.3 m (60 ft) ahead of the vehicle}

PRECAUTIONS ON HOW TO USE THE HEADLIGHT ASSEMBLY

Be careful with the following items as resin lenses are used in the headlight assembly.

- Don't illuminate the headlight for three minutes or more when the headlight is covered with scratch protector.
- Don't tape the outer lens.
- Don't scratch the outer lens surface with a sharp edged special tool.

ON-VEHICLE SERVICE

HEADLIGHT AIMING

M15401005A0168

PRE-AIMING INSTRUCTION (LOW-BEAM)

Inspect for badly rusted or faulty headlight assemblies.

1. These conditions must be corrected before a satisfactory adjustment can be made.
2. Inspect tire inflation, and adjust if it is necessary.
3. If the fuel tank is not full, place a weight in the trunk of the vehicle to simulate weight of a full tank [3 kg (6.6 pounds) per gallon].
4. There should be no other load in the vehicle other than driver or substituted weight of approximately 68 kg (150 pounds) placed in driver's position.
5. Change the vehicle posture, and then operate the actuator of headlight levelling unit once.
6. Thoroughly clean the headlight lenses.

<Correct>

Headlight aiming [at 7.62 m (25.0 ft)]	Low-beam	Vertical direction	Entry type	Horizontal line (H) ± 50.5 mm (± 2.0 in) (± 0.38 degrees angle)	-
			Premium type	(Vertical direction) Horizontal line (H) + 50.5 mm, - 0 mm (+2.0 in, - 0 in) (+ 0.38 degrees angle, - 0 degrees angle)	-
		~~Horizontal direction~~ <Incorrect>		~~± 133.3~~ mm (± 5.2 in) (± 1 degrees angle) from the axis, which is 266.1 mm (10.5 in) (2 degrees angle) rightward from the vertical line (V)	-

- 0 mm <Correct> A

Horizontal direction <Correct> A

(<Added> A

± 133.0 mm <Correct> A

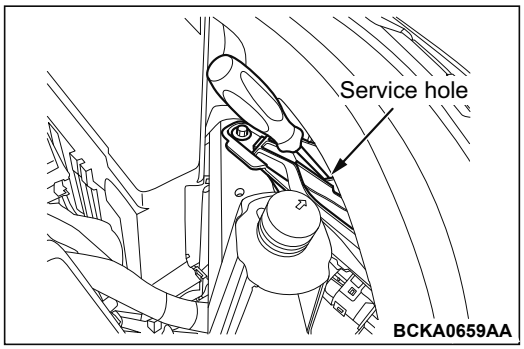
TSB Revision

HEADLIGHT ADJUSTMENT (LOW-BEAM)

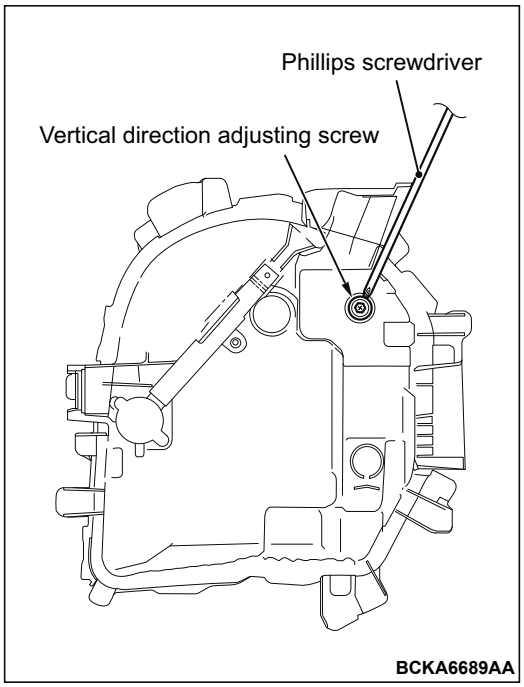
⚠ CAUTION

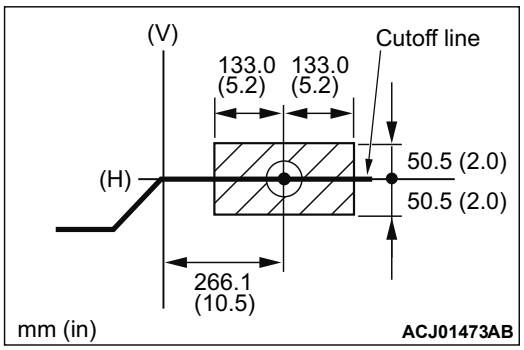
- **Do not cover a headlight for more than three minutes to prevent the plastic headlight lens deformation.**
- **Be sure to adjust the aiming adjustment screw in the tightening direction.**

1. The low-beam headlight should project on the screen upper edge of the beam (cut-off).
2. When adjusting the vertical direction side, insert the screwdriver from the service hole near the headlight assembly mounting bolts.



3. Turn the adjusting screws to achieve the specified low-beam cut-off location on the aiming screen.





<Added>

<Entry type>

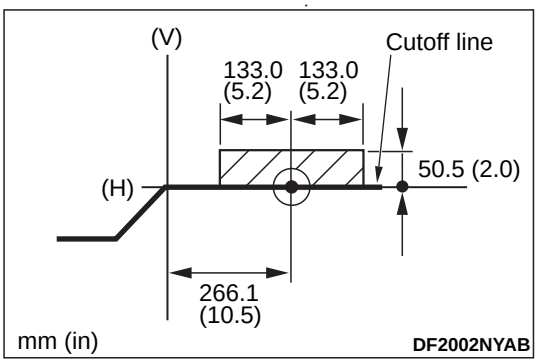
Standard value:

(Vertical direction) Horizontal line (H) ± 50.5 mm (± 2.0 in) (± 0.38 degrees angle)

(Horizontal direction): ± 133.0 mm (± 5.2 in) (± 1 degrees angle) from the axis, which is 266.1 mm (10.5 in) (2 degrees angle) rightward from the vertical line (V)

NOTE: High-beam pattern should be correct when the low-beams are adjusted properly.

Attached sheet 3(2/2)
<Added>



<Premium type>

Standard value:

(Vertical direction) Horizontal line (H) + 50.5 mm, - 0 mm(+ 2.0 in, - 0 in) (+ 0.38 degrees angle, - 0 degrees angle)

(Horizontal direction): ± 133.0 mm (± 5.2 in) (± 1 degrees angle) from the axis, which is 266.1 mm (10.5 in) (2 degrees angle) rightward from the vertical line (V)

NOTE: High-beam pattern should be correct when the low-beams are adjusted properly.

EXHAUST MANIFOLD AND THREE WAY CATALYST

Exploded View

<Incorrect>

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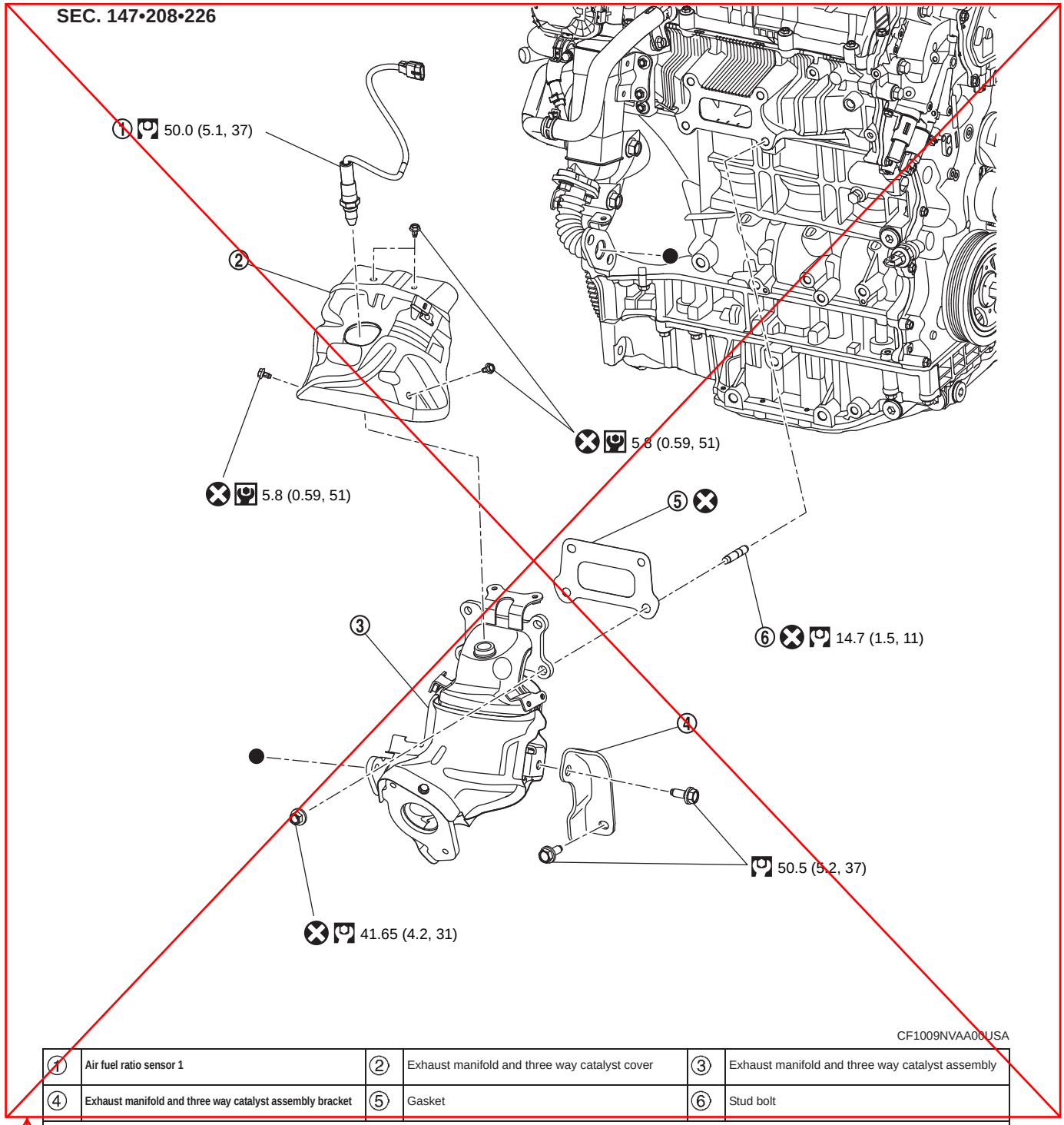

CF1009NVAA00USA

①	Air fuel ratio sensor 1	②	Exhaust manifold and three way catalyst cover	③	Exhaust manifold and three way catalyst assembly
④	Exhaust manifold and three way catalyst assembly bracket	⑤	Gasket	⑥	Stud bolt

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

: Always replace after every disassembly.

● : Indicates that the part is connected at points with same symbol in actual vehicle.

<Correct>

Attached sheet 4(2/2)

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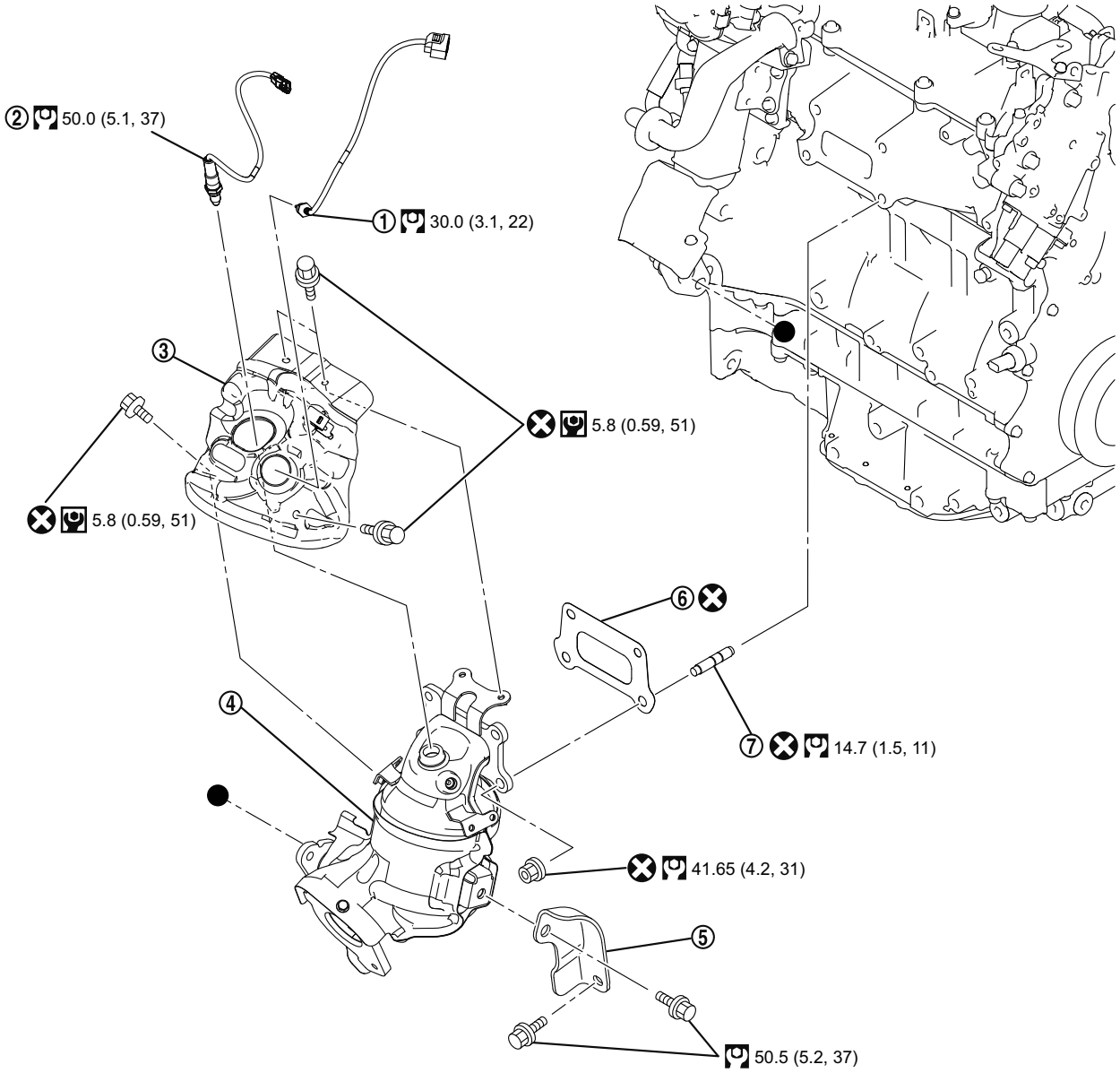


DF3000Y5AA00USA

①	**Exhaust gas temperature sensor<AWD>**	②	Air fuel ratio sensor 1	③	Exhaust manifold and three way catalyst cover
④	**Exhaust manifold and three way catalyst assembly**	⑤	Exhaust manifold and three way catalyst assembly bracket	⑥	Gasket
⑦	**Stud bolt**				

Removal and Installation

REMOVAL

2WD models

1.Remove the engine cover.(With engine cover models) Refer to Removal and Installation.ENGINE COVER

2.Disconnect the air fuel ratio sensor 1 harness connector.

3.Remove the air fuel ratio sensor 1 using heated oxygen sensor wrench [SST: KV10117100] if necessary.

4.Remove the engine under cover. Refer to ENGINE UNDER COVER.

5.Remove the exhaust front tube. Refer to EXHAUST SYSTEM.

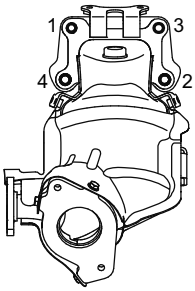
6.Remove the exhaust manifold and three way catalyst bracket.

7.Remove the EGR inlet tube heat insulator. Refer to EGR SYSTEM.

8.Remove the EGR inlet tube mounting bolt, exhaust manifold and three way catalyst side. Refer to EGR SYSTEM.

9.Remove the exhaust manifold and three way catalyst cover.

10.Loosen the exhaust manifold and three way catalyst nuts in the reverse order as shown.



CF1009NWAA00USA

11.Remove the exhaust manifold and three way catalyst assembly and gasket.

AWD models

1.Remove the engine cover (with engine cover models). Refer to Removal and Installation.ENGINE COVER

2.Disconnect the air fuel ratio sensor 1 harness connector.

3.Remove the air fuel ratio sensor 1 using heated oxygen sensor wrench [SST: KV10117100] if necessary.

4.Remove the engine under cover. Refer to ENGINE UNDER COVER.

5.Remove the exhaust front tube. Refer to EXHAUST SYSTEM.

6.Remove rear propeller shaft. Refer to REAR PROPELLER SHAFT.

7.Remove the exhaust manifold and three way catalyst bracket.

8.Remove the EGR inlet tube heat insulator. Refer to EGR SYSTEM.

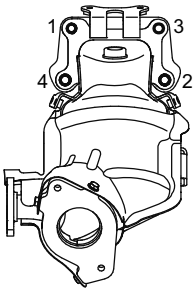
9.Remove the EGR inlet tube mounting bolt, exhaust manifold and three way catalyst side. Refer to EGR SYSTEM.

10.Remove the exhaust manifold and three way catalyst cover.

11.Loosen the exhaust manifold and three way catalyst nuts in the reverse order as shown.

2-1. Disconnect the exhaust gas temperature harness connector.
2-2. Remove the exhaust gas temperature sensor.

<Added>



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12.Remove the exhaust manifold and three way catalyst assembly and gasket.

INSTALLATION

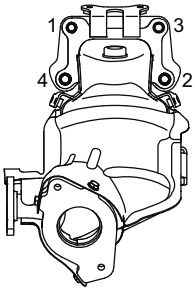
Exhaust Manifold and Three Way Catalyst

1.Install studs in cylinder head and exhaust manifold and three way catalyst if removed. Then tighten to specification.

CAUTION:

Do not reuse stud bolts.

2.Install the exhaust manifold and three way catalyst and gasket. Then tighten the nuts to specification in the numerical order shown.



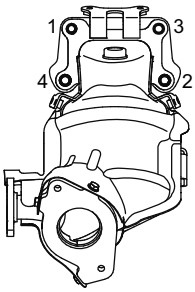
CF1009NWAA00USA

: 41.65 N·m (4.2 kg-m, 31 ft-lb)

CAUTION:

- **Do not reuse gasket.**
- **Do not reuse nuts.**

3.Then tighten the nuts to specification in the numerical order shown again.



CF1009NWAA00USA

: 41.65 N·m (4.2 kg-m, 31 ft-lb)

4.Install exhaust manifold and three way catalyst cover and bolts.

CAUTION:

Do not reuse bolts.

5.Install the air fuel ratio sensor 1 using heated oxygen sensor wrench [SST: KV10117100] if removed and tighten to specification.

CAUTION:

- **Be careful not to damage air fuel ratio sensor 1.**
- **Discard any air fuel ratio 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; replace with a new one.**
- **Do not over-tighten the air fuel ratio sensor 1. Doing so may cause damage to the air fuel ratio sensor 1, resulting in a malfunction and the MIL coming on.**

<Added>

6.Install the exhaust gas temperature sensor to the specified torque.

CAUTION:

・ Be careful not to damage exhaust gas temperature sensor.

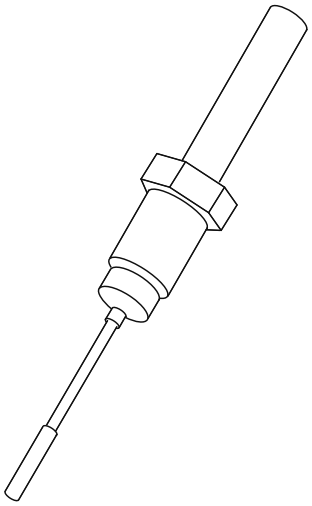
・Discard any exhaust gas temperature sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; replace with a new one.

・Do not over-tighten the exhaust gas temperature sensor. Doing so may cause damage to the exhaust gas temperature sensor, resulting in a malfunction and the MIL coming on.

<Added>

Exhaust Gas Temperature Sensor

Exhaust gas temperature sensor (EGT sensor) is installed exhaust manifold. Exhaustgas temperature sensor uses a thermistor which is sensitive to the change intemperature. Electrical resistance of the thermistor decreases in response to thetemperature rises.



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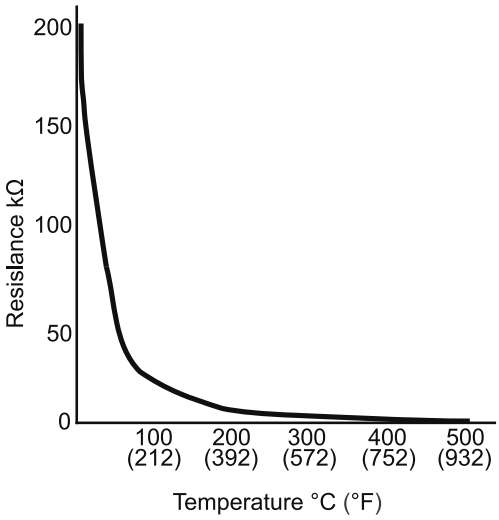

DF3000YWAA00US

Fluid temperature [°C (°F)]	Voltage (V)	Resistance (kΩ)
100 (212)	4.74	18.25
200 (392)	4.00	4.00
400 (752)	1.96	0.64
600 (1112)	0.85	0.20

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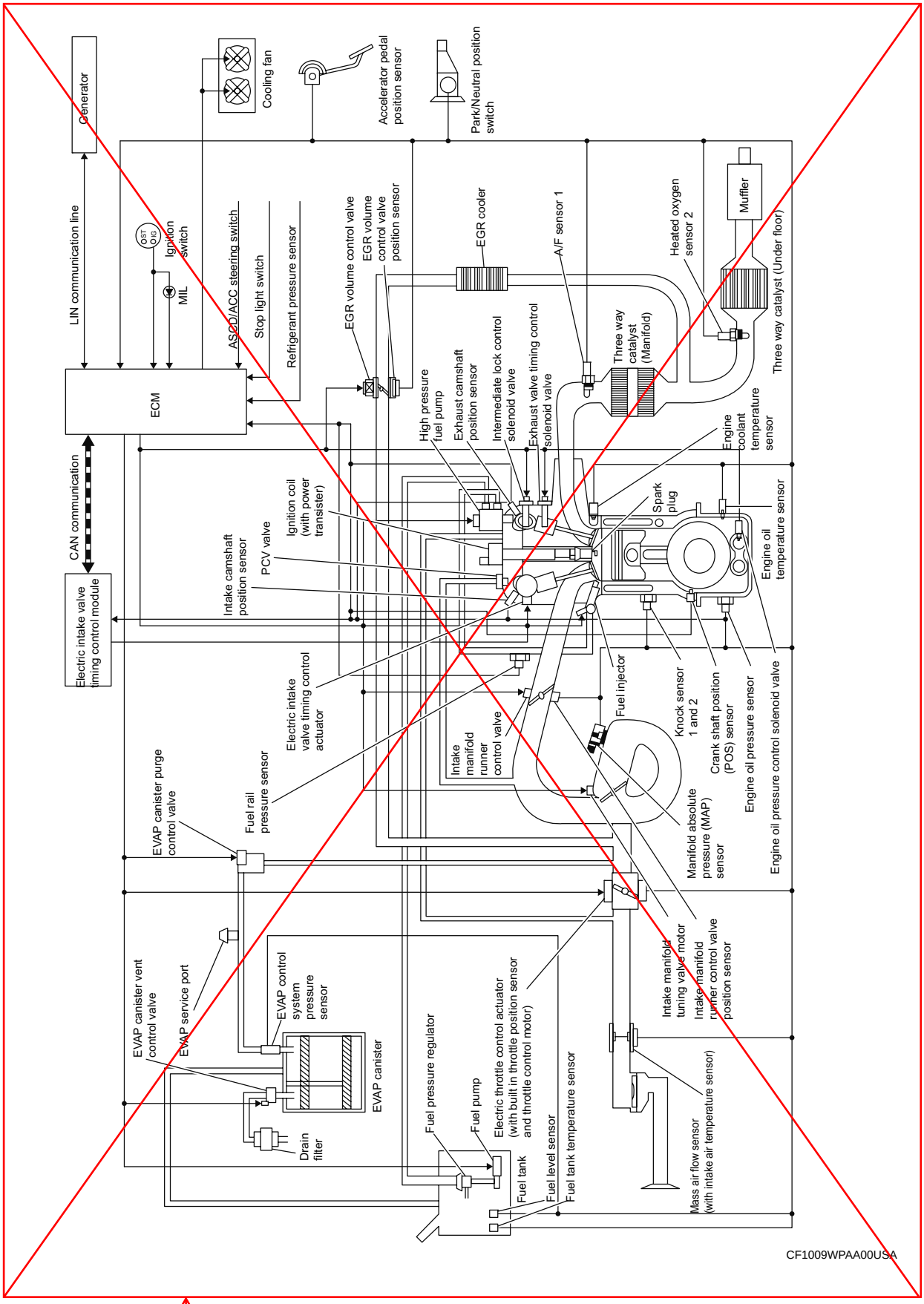

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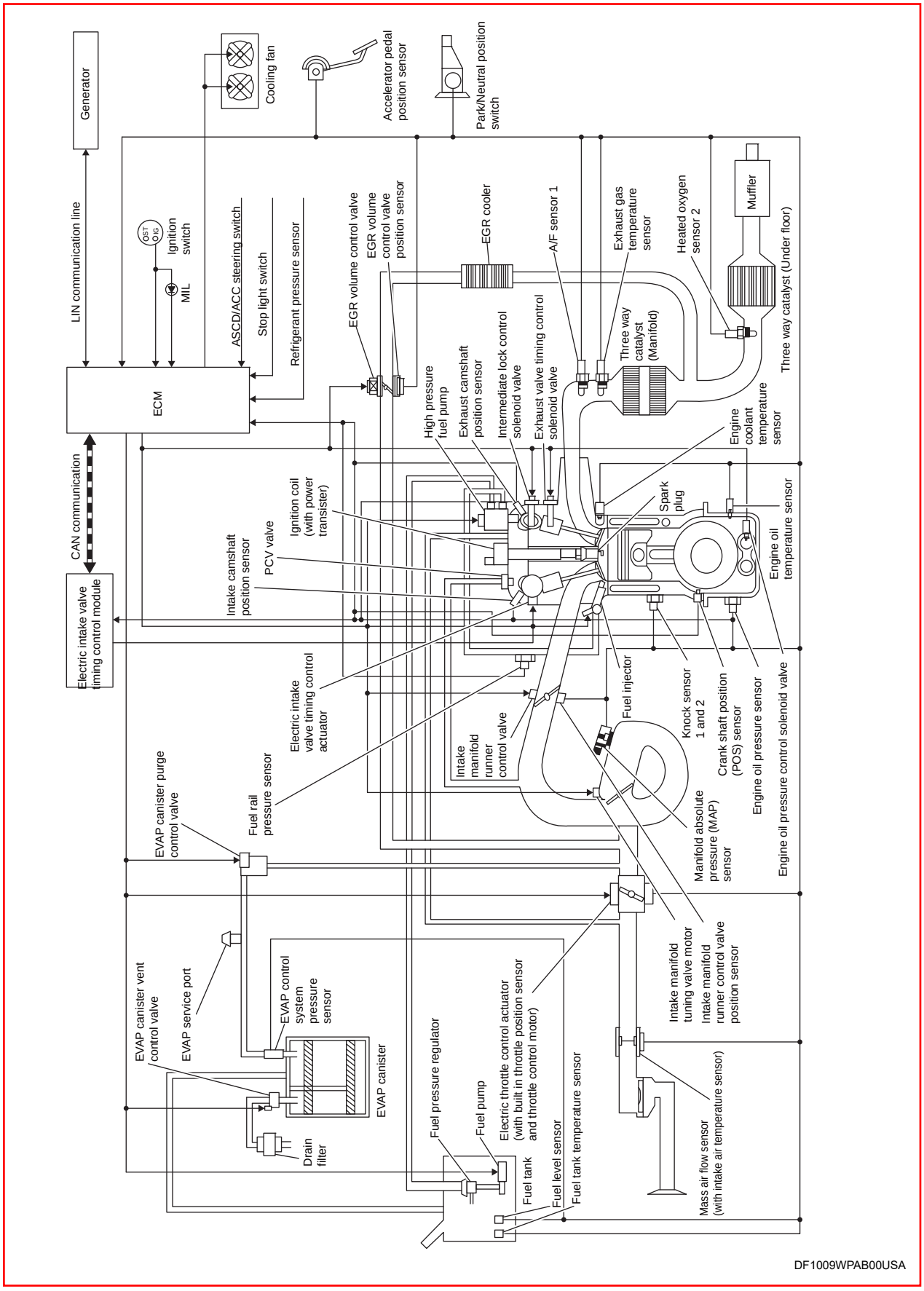
Attached sheet 7(2/2)


Generator
Cooling fan
Accelerator pedal position sensor
Park/Neutral position switch
LIN communication line
Ignition switch
MIL
ASCD/ACC steering switch
Stop light switch
Refrigerant pressure sensor
EGR volume control valve
EGR volume control valve position sensor
EGR cooler
A/F sensor 1
Exhaust gas temperature sensor
Heated oxygen sensor 2
Muffler
ECM
Three way catalyst (Manifold)
Three way catalyst (Under floor)
High pressure fuel pump
Exhaust camshaft position sensor
Intermediate lock control solenoid valve
Exhaust valve timing control solenoid valve
Engine coolant temperature sensor
CAN communication
Ignition coil (with power transister)
Spark plug
Intake camshaft position sensor
PCV valve
Engine oil temperature sensor
Electric intake valve timing control module
Electric intake valve timing control actuator
Fuel injector
Knock sensor 1 and 2
Intake manifold runner control valve
Crank shaft position (POS) sensor
Engine oil pressure sensor
Fuel rail pressure sensor
Manifold absolute pressure (MAP) sensor
Engine oil pressure control solenoid valve
EVAP canister purge control valve
Intake manifold tuning valve motor
Intake manifold runner control valve position sensor
EVAP canister vent control valve
EVAP service port
EVAP control system pressure sensor
Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
EVAP canister
Fuel pressure regulator
Fuel pump
Drain filter
Fuel tank
Fuel level sensor
Fuel tank temperature sensor
Mass air flow sensor (with intake air temperature sensor)
DF1009WPAB00USA

Attached sheet 8

Component parts	Function
Accelerator pedal position sensor	COMPONENT PARTS
Air fuel ratio (A/F) sensor 1	COMPONENT PARTS
ASCD steering switch	COMPONENT PARTS
ACC steering switch	
Cooling fan	COMPONENT PARTS
Crankshaft position sensor	COMPONENT PARTS
ECM	COMPONENT PARTS
EGR system	EGR SYSTEM.
EGR volume control valve	COMPONENT PARTS
Electric intake valve timing control actuator	COMPONENT PARTS
Electric intake valve timing control module	COMPONENT PARTS
Electric throttle control actuator	COMPONENT PARTS
Engine coolant temperature sensor	COMPONENT PARTS
Engine oil pressure sensor	COMPONENT PARTS
Engine oil pressure control solenoid valve	COMPONENT PARTS
Engine oil pressure control system	Warning Light/Indicator LightWARNING/INDICATOR/CHIME LIST
Engine oil temperature sensor	COMPONENT PARTS
EVAP canister	COMPONENT PARTS
EVAP canister purge volume control solenoid valve	COMPONENT PARTS
EVAP canister vent control valve	COMPONENT PARTS.
EVAP control system pressure sensor	COMPONENT PARTS
Exhaust camshaft position sensor	COMPONENT PARTS.
Exhaust valve timing control solenoid valve	COMPONENT PARTS
Exhaust valve timing intermediate lock control solenoid valve	COMPONENT PARTS
Fuel injector	COMPONENT PARTS
Fuel level sensor unit and fuel pump	Fuel Level Sensor Unit And Fuel PumpCOMPONENT PARTS.
Fuel pressure control	FUEL PRESSURE CONTROL
Fuel rail pressure sensor	COMPONENT PARTS
Fuel tank temperature sensor	COMPONENT PARTS
Heated oxygen sensor 2	COMPONENT PARTS
High pressure fuel pump	COMPONENT PARTS
Ignition coil with power transistor	COMPONENT PARTS
Intake camshaft position sensor	COMPONENT PARTS
Intake manifold runner control valve	COMPONENT PARTS
Intake manifold tuning valve	COMPONENT PARTS
Knock sensor	COMPONENT PARTS
Malfunction indicator light (MIL)	Malfunction Indicator Light (MIL)WARNING LAMPS/INDICATOR LAMPS(Full TFT meter) Malfunction Indicator Light (MIL)WARNING LAMPS/INDICATOR LAMPS(7 inch information display)
Manifold absolute pressure sensor	COMPONENT PARTS
Mass air flow sensor (With intake air temperature sensor)	COMPONENT PARTS
Power generation voltage variable control system	POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM
Refrigerant pressure sensor	COMPONENT PARTS
Stop light switch	Stop Light SwitchCOMPONENT PARTS

<Added>

Exhaust gas temperature sensor	Attached sheet 6

Fail Safe

Refer to Fail-safeENGINE CONTROL SYSTEM.

DTC Inspection Priority Chart

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	DTC	Detected items
	C053C	Wheel speed sensor
	P0101, P0102, P0103	Mass air flow sensor
	P0106	Manifold absolute pressure sensor
	P0107, P0108, P2227	Atmospheric pressure sensor
	P0111, P0112, P0113, P0127	Intake air temperature sensor
	P0116, P0117, P0118, P0125	Engine coolant temperature sensor
	P0122, P0123, P0222, P0223, P1225, P1226, P2135	Throttle position sensor
	P0128	Thermostat function
	P0181, P0182, P0183	Fuel tank temperature sensor
	P0191, P0192, P0193, P119A, P119B, P119C, P119D, P119E	Fuel rail pressure sensor
	P0196, P0197, P0198	Engine oil temperature sensor
	P025A, P025C, P025D	Fuel pump relay
	P026B, P2B96	Injection system
	P0326, P0327, P0328, P032B, P032C, P032D	Knock sensor
	P0315, P0335, P2617, P2618, P2619	Crankshaft position sensor
	P0340, P0365, P2614, P2615, P2616	Camshaft position sensor
	P044A, P044B, P044C, P044D, P044E	EGR volume control valve position sensor
	P0460, P0461, P0462, P0463	Fuel level sensor
1	P0500, P0501, P2159	Vehicle speed sensor
	P0520, P0522, P0523, P0524	Engine oil pressure sensor
	P0531, P0532, P0533	Refrigerant pressure sensor
	P0604, P0605, P0606, P0607, P060A, P060B, P060C, P061B, P062B, P062D, P062F, P1603, P2610	ECM
	P0641, P34C8	Electric intake valve timing control module
	P06B0, P06B3, P06E6	Sensor power supply
	P06DA, P06DB, P06DC	Engine oil pressure control solenoid valve
	P0850	Transmission range switch
	P1197	Out of gas*
	P155B	Energy management control
	P155D, P155E, P155F	Generator
	P161D, P161E, P161F	Immobilizer
	P2014, P2015, P2016, P2017, P2018	Intake manifold runner control valve position sensor
	P2121, P2122, P2123, P2126, P2127, P2128, P2138	Accelerator pedal position sensor
	U0101, U0122, U012E, U0146, U0155, U042F	CAN communication line
	U0284, U1040	Engine communication line
	U1050, U1051	LIN communication line
	U1327, U2118, U2148, U214A, U214E, U214F, U2150, U2152, U215B, U2165, U2176, U2241, U2248, U2252, U2259, U226B, U2276, U2384	MAC key

<Added>

P0544, P0545, P0546, P2080, P2081	Exhaust gas tempereture sensor

DTC *1			Items (M.U.T.-III SE screen terms)	SRT code	Trip	MIL	Permanent DTC group *3	Reference page
M.U.T.-III SE		GST *2						
P0531	00	P0531	REFRIGERANT PRESS SENSOR A	—	2	×	A + B	P0531 A/C REFRIGERANT PRESSURE SENSOR
P0532	00	P0532	REFRIGERANT PRESS SENSOR A	—	2	×	A + B	P0532 A/C REFRIGERANT PRESSURE SENSOR
P0533	00	P0533	REFRIGERANT PRESS SENSOR A	—	2	×	A + B	P0533 A/C REFRIGERANT PRESSURE SENSOR
P054A	00	P054A	Cold start B camshaft position bank 1	×	2	×	A	P054A CAMSHAFT POSITION BANK 1
P054B	00	P054B	Cold start B camshaft position bank 1	×	2	×	A	P054B CAMSHAFT POSITION BANK 1
P059F	00	P059F	ACTIVE GRILLE AIR SHUTTER A	—	2	×	A + B	P059F ACTIVE GRILLE SHUTTER
P05EC	00	P05EC	COLD START CONTROL	—	2	×	A + B	P05EC COLD START CONTROL
P0604	00	P0604	ECM	—	1	×	A + B	P0604 ECM
P0605	00	P0605	ECM	—	1	×	A + B	P0605 ECM
P0606	00	P0606	CONTROL MODULE	—	1 or 2	× or —	A + B or —	P0606 ECM
P0607	00	P0607	ECM	—	1 or 2	×	A + B	P0607 ECM
P060A	00	P060A	CONTROL MODULE	—	1	×	A + B	P060A ECM
P060B	00	P060B	CONTROL MODULE	—	1	×	A + B	P060B ECM
P060C	00	P060C	Control module	—	1	×	A + B	P060C ECM
P061B	00	P061B	Internal control module	—	1	×	A + B	P061B ECM
P062B	00	P062B	ECM	—	2	×	A + B	P062B ECM
P062D	00	P062D	Fuel injector driver bank 1	—	2	×	A + B	P062D FUEL INJECTOR DRIVER BANK 1
P062F	00	P062F	CONTROL MODULE	—	1 or 2	×	A + B	P062F ECM
P0641	00	P0641	Sensor reference voltage A	—	2	×	A + B	P0641 SENSOR POWER SUPPLY
P064D	00	P064D	Internal Control Module O2 Sensor Processor Performance (bank 1)	—	2	×	A + B	P064D ECM
P0660	00	P0660	INT Manifold Tuning Valve Control B1	—	2	—	—	P0660 INTAKE MANIFOLD TUNING VALVE
P0661	00	P0661	INT Manifold Tuning Valve Control B1	—	2	—	—	P0661 INTAKE MANIFOLD TUNING VALVE
P0662	00	P0662	INT Manifold Tuning Valve Control B1	—	2	—	—	P0662 INTAKE MANIFOLD TUNING VALVE
P06B0	11	P06B1	Sensor Power Supply A	—	1	×	A + B	P06B0 SENSOR POWER SUPPLY A
	12	P06B2	Sensor Power Supply A	—	1	×	A + B	
P06B3	11	P06B4	Sensor Power Supply B	—	1	×	A + B	P06B3 SENSOR POWER SUPPLY B
	12	P06B5	Sensor Power Supply B	—	1	×	A + B	
P06DA	00	P06DA	ENGINE OIL PRESSURE CONTROL	—	2	—	—	P06DA ENGINE OIL PRESSURE CONTROL SOLENOID VALVE
P06DB	00	P06DB	ENGINE OIL PRESSURE CONTROL	—	2	—	—	P06DB ENGINE OIL PRESSURE CONTROL SOLENOID VALVE
P06DC	00	P06DC	Engine oil pressure control	—	2	—	—	P06DC ENGINE OIL PRESSURE CONTROL SOLENOID VALVE
P06E6	11	P06E7	Internal control module	—	1	×	A + B	P06E6 INTERNAL CONTROL MODULE
	12	P06E8	Internal control module	—	1	×	A + B	
P0850	00	P0850	P-N POS SW/CIRCUIT	—	2	×	A + B	P0850 PNP SWITCH

<Added>

P0544	00	P0544	EXHAUST GAS TEMP SENSOR 1 B1	-	2	X	B	Attached sheet 11(1/10)
P0545	00	P0545	EXHAUST GAS TEMP SENSOR 1 B1	-	2	X	B	Attached sheet 11(4/10)
P0546	00	P0546	EXHAUST GAS TEMP SENSOR 1 B1	-	2	X	B	Attached sheet 11(7/10)

DTC *1			Items (M.U.T.-III SE screen terms)	SRT code	Trip	MIL	Permanent DTC group *3	Reference page
M.U.T.-III SE		GST *2						
P1805	00	P1805	BRAKE SW/CIRCUIT	—	1	—	—	P1805 BRAKE SWITCH
P1A10	00	P1A10	ECM initial learning Incomplete	—	2	—	—	P1A10 ECM INITIAL LEARNING INCOMPLETE
P2004	00	P2004	SWIRL CONT/V (B1)	—	2	×	A + B	P2004 INTAKE MANIFOLD RUNNER CONTROL VALVE
P2008	00	P2008	SWIRL CONT/V (B1)	—	2	×	A + B	P2008 INTAKE MANIFOLD RUNNER CONTROL VALVE
P2009	00	P2009	Intake manifold runner control	—	2	×	A + B	P2009 INTAKE MANIFOLD RUNNER CONTROL VALVE
P2010	00	P2010	Intake manifold runner control	—	2	×	A + B	P2010 INTAKE MANIFOLD RUNNER CONTROL VALVE
P2014	00	P2014	SWIRL CONT SEN/SW	—	2	×	A + B	P2014 INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR
P2015	00	P2015	Intake manifold runner posi sen/sw B1	—	2	×	A + B	P2015 INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR
P2016	00	P2016	IN/MANIFOLD RUNNER POS SEN B1	—	2	×	A + B	P2016 INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR
P2017	00	P2017	IN/MANIFOLD RUNNER POS SEN B1	—	2	×	A + B	P2017 INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR
P2018	00	P2018	IN/MANIFOLD RUNNER POS SEN B1	—	2	×	A + B	P2018 INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR
P2096	00	P2096	POST CATALYST FUEL TRIM SYS B1	×	2	×	A	P2096 A/F SENSOR 1
P2097	00	P2097	POST CATALYST FUEL TRIM SYS B1	×	2	×	A	P2097 A/F SENSOR 1
P2100	00	P2100	ETC MOT PWR-B1	—	1	×	A + B	P2100 THROTTLE CONTROL MOTOR
P2101	00	P2101	ETC FNCTN/CIRC-B1	—	1	×	A + B	P2101 ELECTRIC THROTTLE CONTROL FUNCTION
P2103	00	P2103	ETC MOT PWR-B1	—	1	×	A + B	P2103 THROTTLE CONTROL MOTOR
P2119	00	P2119	ETC ACTR-B1	—	1	× or —	A + B or —	P2119 ELECTRIC THROTTLE CONTROL ACTUATOR
P2121	00	P2121	Throttle/pedal position sen/sw D	—	1	×	A + B	P2121 APP SENSOR
P2122	00	P2122	APP SEN 1/CIRC	—	1	×	A + B	P2122 APP SENSOR
P2123	00	P2123	APP SEN 1/CIRC	—	1	×	A + B	P2123 APP SENSOR
P2126	00	P2126	Throttle/pedal position sen/sw E	—	1	×	A + B	P2126 APP SENSOR
P2127	00	P2127	APP SEN 2/CIRC	—	1	×	A + B	P2127 APP SENSOR
P2128	00	P2128	APP SEN 2/CIRC	—	1	×	A + B	P2128 APP SENSOR
P2135	00	P2135	TP SENSOR-B1	—	1	×	A + B	P2135 TP SENSOR
P2138	00	P2138	APP SENSOR	—	1	×	A + B	P2138 APP SENSOR
P2159	00	P2159	VEHICLE SPEED SEN B	—	2	×	A + B	P2159 VEHICLE SPEED SENSOR
P219A	00	P219A	AIR FUEL RATIO IMBALANCE B1	×	2	×	A	P219A AIR FUEL RATIO
P2227	00	P2227	Barometric pressure sensor A	—	2	×	A + B	P2227 BAROMETRIC PRESSURE SENSOR
P2237	00	P2237	O2 sensor bank 1 sensor 1	—	2	×	A + B	P2237 A/F SENSOR
P2238	00	P2238	O2 sensor bank 1 sensor 1	—	2	×	A + B	P2238 AIR FUEL RATIO SENSOR

<Added>

P2080	00	P2080	EXHAUST GAS TEMP SENSOR 1 B1	-	2	X	B	Attached sheet 12(1/4)
P2081	00	P2081	EXHAUST GAS TEMP SENSOR 1 B1	-	2	X	B	Attached sheet 13(1/4)

<Added>

DTC/CIRCUIT DIAGNOSIS

P0544 EXHAUST GAS TEMPERETURE SENSOR

DTC Description

DTC DETECTION LOGIC

DTC		M.U.T.-III SE screen terms (Trouble diagnosis content)	DTC detection condition	
P0544	00	EXHAUST GAS TEMPSENSOR 1 B1 (Exhaust gas temperature sensor circuit bank 1sensor 1)	Diagnosis condition	Ignition switch ON
			Signal (terminal)	Exhaust gas temperature sensor signal
			Threshold	ECM detects that a voltage signal from exhaust gas temperature sensor is less than 0.025 V.
			Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE

- Harness or connectors

(Exhaust gas temperature sensor circuit is open.)

- Exhaust gas temperature sensor

FAIL-SAFE

Not applicable

DTC Confirmation Procedure

1. PRECONDITIONING

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

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.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than11 V.

>>

GO TO 2

.

<Added>

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON and wait at least 5 seconds.
2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >>

Proceed to .

NO >>

To check malfunction symptom before repair: Refer to Intermittent Incident.

NO >>

Confirmation after repair: INSPECTION END

DTC Diagnosis Procedure

1. CHECK EXHAUST GAS TEMPERATURE SENSOR

With M.U.T.-III SE

1. Turn ignition switch ON.
2. Select “EXHAUST GAS TEMP SEN 1 B1” in “DATA MONITOR” mode of “ENGINE” using M.U.T.-III SE.
3. Start engine and warm it up to normal operating temperature.
4. Check that “EXHAUST GAS TEMP SEN 1 B1” indication as follows.

Monitor item	Condition	Value
EXHAUST GAS TEMP SEN 1 B1	• Warm-up condition • Idle speed	1,290 – 2,940 mV

Without M.U.T.-III SE

1. Start engine and warm it up to normal operating temperature.
2. Check that voltage between ECM harness connector terminals as follows.

ECM			Condition	Voltage
Connector	+	–		
	Terminal			
B-11	12	34	• Warm-up condition • Idle speed	1.29 – 2.94 V

Is the inspection result normal?

YES >>

GO TO 2

.

NO >>

Replace exhaust gas temperature sensor. Refer to Exploded View. .

<Added>

2. CHECK EXHAUST GAS TEMPERATURE SENSOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect exhaust gas temperature sensor harness connector.
3. Turn ignition switch ON.
4. Check the voltage between exhaust gas temperature sensor harness connector terminal and ground.

+		−	Voltage (Approx.)
Exhaust gas temperature sensor			
Connector	Terminal		
B-46	1	Ground	5 V

Is the inspection result normal?

YES >>

GO TO 3

.

NO >>

GO TO 4

.

3. CHECK EXHAUST GAS TEMPERATURE SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check the continuity between exhaust gas temperature sensor harness connector and ECM harness connector.

+		−		Continuity
Exhaust gas temperature sensor		ECM		
Connector	Terminal	Connector	Terminal	
B-46	2	B-11	34	Existed

4. Also check harness for short to power.

Is the inspection result normal?

YES >>

Check intermittent incident. Refer to Intermittent Incident.

NO >>

Repair or replace error-detected parts.

4. CHECK EXHAUST GAS TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check the continuity between exhaust gas temperature sensor harness connector and ECM harness connector.

+		−		Continuity
Exhaust gas temperature sensor		ECM		
Connector	Terminal	Connector	Terminal	
B-46	1	B-11	12	Existed

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

Is the inspection result normal?

YES >>

Perform the trouble diagnosis for ECM power supply circuit. Refer to Diagnosis Procedure.

NO >>

Repair or replace error-detected parts.

<Added>

P0545 EXHAUST GAS TEMPERETURE SENSOR

DTC Description

DTC DETECTION LOGIC

DTC		M.U.T.-III SE screen terms (Trouble diagnosis content)	DTC detection condition	
P0545	00	EXHAUST GAS TEMPSENSOR 1 B1 (Exhaust gas temperature sensor circuit low bank 1sensor 1)	Diagnosis condition	Ignition switch ON
			Signal (terminal)	Exhaust gas temperature sensor signal
			Threshold	ECM detects that a voltage signal from exhaust gas temperature sensor is less than 0.209 V.
			Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE

- Harness or connectors

(Exhaust gas temperature sensor circuit is shorted.)

- Exhaust gas temperature sensor

FAIL-SAFE

Not applicable

DTC Confirmation Procedure

1. PRECONDITIONING

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

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.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than11 V.

>>

GO TO 2

<Added>

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON and wait at least 5 seconds.
2. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >>

Proceed to .

NO >>

To check malfunction symptom before repair: Refer to Intermittent Incident.

NO >>

Confirmation after repair: INSPECTION END

DTC Diagnosis Procedure

1. CHECK EXHAUST GAS TEMPERATURE SENSOR

With M.U.T.-III SE

1. Turn ignition switch ON.
2. Select “EXHAUST GAS TEMP SEN 1 B1” in “DATA MONITOR” mode of “ENGINE” using M.U.T.-III SE.
3. Start engine and warm it up to normal operating temperature.
4. Check that “EXHAUST GAS TEMP SEN 1 B1” indication as follows.

Monitor item	Condition	Value
EXHAUST GAS TEMP SEN 1 B1	• Warm-up condition • Idle speed	1,290 – 2,940 mV

Without M.U.T.-III SE

1. Start engine and warm it up to normal operating temperature.
2. Check that voltage between ECM harness connector terminals as follows.

ECM			Condition	Voltage
Connector	+	–		
	Terminal			
B-11	12	34	• Warm-up condition • Idle speed	1.29 – 2.94 V

Is the inspection result normal?

YES >>

GO TO 2

.

NO >>

Replace exhaust gas temperature sensor. Refer to Exploded View. .

<Added>

2. CHECK EXHAUST GAS TEMPERATURE SENSOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect exhaust gas temperature sensor harness connector.
3. Turn ignition switch ON.
4. Check the voltage between exhaust gas temperature sensor harness connector terminal and ground.

+		−	Voltage (Approx.)
Exhaust gas temperature sensor			
Connector	Terminal		
B-46	1	Ground	5 V

Is the inspection result normal?

YES >>

GO TO 3

.

NO >>

GO TO 4

.

3. CHECK EXHAUST GAS TEMPERATURE SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check the continuity between exhaust gas temperature sensor harness connector and ECM harness connector.

+		−		Continuity
Exhaust gas temperature sensor		ECM		
Connector	Terminal	Connector	Terminal	
B-46	2	B-11	34	Existed

4. Also check harness for short to power.

Is the inspection result normal?

YES >>

Check intermittent incident. Refer to Intermittent Incident.

NO >>

Repair or replace error-detected parts.

4. CHECK EXHAUST GAS TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check the continuity between exhaust gas temperature sensor harness connector and ECM harness connector.

+		−		Continuity
Exhaust gas temperature sensor		ECM		
Connector	Terminal	Connector	Terminal	
B-46	1	B-11	12	Existed

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

Is the inspection result normal?

YES >>

Perform the trouble diagnosis for ECM power supply circuit. Refer to Diagnosis Procedure.

NO >>

Repair or replace error-detected parts.

<Added>

P0546 EXHAUST GAS TEMPERETURE SENSOR

DTC Description

DTC DETECTION LOGIC

DTC		M.U.T.-III SE screen terms (Trouble diagnosis content)	DTC detection condition	
P0546	00	EXHAUST GAS TEMPSENSOR 1 B1 (Exhaust gas temperature sensor circuit high bank 1sensor 1)	Diagnosis condition	–
			Signal (terminal)	Exhaust gas temperature sensor signal
			Threshold	ECM detects that a voltage signal from exhaust gas temperature sensor is more than 4.84 V.
			Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE

- Harness or connectors

(Exhaust gas temperature sensor circuit is open.)

- Exhaust gas temperature sensor

FAIL-SAFE

Not applicable

DTC Confirmation Procedure

1. PRECONDITIONING-1

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

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.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than11 V at idle.

>>

GO TO 2

.

2. PRECONDITIONING-2

With M.U.T.-III SE

1. Turn ignition switch ON.
2. Select “COOLANT TEMP/S” in “DATA MONITOR” mode of “ENGINE” using M.U.T.-III.
3. Check the following conditions:

COOLANT TEMP/S	More than –30°C (–22°F)

With GST

Follow the procedure “With M.U.T.-III SE” above.

<Added>

Is the condition satisfied?

YES >>

GO TO 4

.

NO >>

GO TO 3

.

3. PRECONDITIONING-3

With M.U.T.-III SE

1. Start the engine until the following condition is satisfied.

COOLANT TEMP/S	More than –30°C (–22°F)

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

With GST

Follow the procedure “With M.U.T.-III SE” above.

>>

GO TO 4

.

<Added>

4. PERFORM DTC CONFIRMATION PROCEDURE

1. Shift the selector lever to P range.
2. Start engine and let it idle for at least 20 seconds.
3. Depress the accelerator pedal for 5 seconds or more.

NOTE:
Do not release the accelerator pedal during DTC confirmationprocedure.

4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >>

Proceed to .

NO >>

To check malfunction symptom before repair: Refer to Intermittent Incident.

NO >>

Confirmation after repair: INSPECTION END

DTC Diagnosis Procedure

1. CHECK FUNCTION OF FUEL INJECTOR

With M.U.T.-III SE

1. Turn ignition switch ON.
2. Select “EXHAUST GAS TEMP SEN 1 B1” in “DATA MONITOR” mode of “ENGINE”using M.U.T.-III SE.
3. Start engine and warm it up to normal operating temperature.
4. Check that “EXHAUST GAS TEMP SEN 1 B1” indication as follows.

Monitor item	Condition	Value
EXHAUST GAS TEMP SEN 1 B1	• Warm-up condition • Idle speed	1,290 – 2,940 mV

Without M.U.T.-III SE

1. Start engine and warm it up to normal operating temperature.
2. Check that voltage between ECM harness connector terminals as follows.

ECM			Condition	Voltage
Connector	+	–		
	Terminal			
B-11	12	34	• Warm-up condition • Idle speed	1.29 – 2.94 V

Is the inspection result normal?

YES >>

GO TO 2

.

NO >>

Replace exhaust gas temperature sensor. Refer to Exploded View. .

<Added>

2. CHECK EXHAUST GAS TEMPERATURE SENSOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect exhaust gas temperature sensor harness connector.
3. Turn ignition switch ON.
4. Check the voltage between exhaust gas temperature sensor harness connector terminal and ground.

+		−	Voltage (Approx.)
Exhaust gas temperature sensor			
Connector	Terminal		
B-46	1	Ground	5 V

Is the inspection result normal?

YES >>

GO TO 3

.

NO >>

GO TO 4

.

3. CHECK EXHAUST GAS TEMPERATURE SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check the continuity between exhaust gas temperature sensor harness connector and ECM harness connector.

+		−		Continuity
Exhaust gas temperature sensor		ECM		
Connector	Terminal	Connector	Terminal	
B-46	2	B-11	34	Existed

4. Also check harness for short to power.

Is the inspection result normal?

YES >>

Check intermittent incident. Refer to Intermittent Incident.

NO >>

Repair or replace error-detected parts.

4. CHECK EXHAUST GAS TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check the continuity between exhaust gas temperature sensor harness connector and ECM harness connector.

+		−		Continuity
Exhaust gas temperature sensor		ECM		
Connector	Terminal	Connector	Terminal	
B-46	1	B-11	12	Existed

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

Is the inspection result normal?

YES >>

Perform the trouble diagnosis for ECM power supply circuit. Refer to Diagnosis Procedure.

NO >>

Repair or replace error-detected parts.

<Added>

P2080 EXHAUST GAS TEMPERETURE SENSOR

DTC Description

DTC DETECTION LOGIC

DTC		M.U.T.-III SE screen terms (Trouble diagnosis content)	DTC detection condition	
P2080	00	EXHAUST GAS TEMPSENSOR 1 B1 (Exhaust gas temperature sensor 1 circuit range/performance)	Diagnosis condition	–
			Signal (terminal)	Exhaust gas temperature sensor signal
			Threshold	• The difference between estimated exhaust gas temperature calculated by ECM and temperature sent from exhaust gas temperature sensor is approx. 100°C (212°F) or more • The difference between exhaust gas temperature sent from exhaU1st gas temperature calculated by ECM is approx. 100°C (212°F) or more
			Diagnosis delay time	20 seconds or more

POSSIBLE CAUSE

- Exhaust gas leaks
- Exhaust gas temperature sensor

FAIL-SAFE

Not applicable

<Added>

DTC Confirmation Procedure

1. CHECK DTC PRIORITY

- DTC P2080 is displayed with DTCs related to following items, first perform the trouble diagnosis of DTCs.
  - Crankshaft position sensor
  - Misfire
  - Fuel system
  - A/F sensor 1
  - A/F sensor 1 heater
  - Mass air flower sensor
  - Engine coolant temperature sensor
  - Intake air temperature sensor
  - Vehicle speed sensor
- DTC P2080 is displayed DTC P0544, P0545, P0546 or P2081, first perform the trouble diagnosis for DTC P0544, P0545, P0546 or P2081.

Is applicable DTC detected?

YES >>

Perform applicable DTC. Refer to .

NO >>

GO TO 2

.

2. PRECONDITIONING

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

TEST CONDITION:

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

>>

GO TO 3

.

3. PERFORM DTC CONFIRMATION PROCEDURE

With M.U.T.-III SE

1. Start the engine and warm it up to normal operating temperature.
2. Select "DATA MONITOR" mode of "ENGINE" using M.U.T.-III SE.
3. Maintain the following conditions for at least 120 consecutive seconds.

NOTE:

Keep the accelerator pedal as steady as possible during cruising.

CAUTION:

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

Items	Conditions
COOLANT TEMP/S	More than 65°C (149°F)
INT/A TEMP SE	• More than 0°C (32°F) • More than 50°C (122°F)
VHCL SPEED SE	90 - 100 km/h (56 - 62 MPH)

4. Check 1st trip DTC.

With GST

Follow the procedure "With M.U.T.-III SE" above.

<Added>

Is 1st trip DTC detected?

YES >>

Proceed to .

NO >>

The malfunction symptom before repair: Refer to

NO >>

Confirmation after repair: INSPECTION END

DTC Diagnosis Procedure

1. CHECK DTC PRIORITY

- DTC P2080 is displayed with DTCs related to following items, first perform the trouble diagnosis of DTCs.
  - Crankshaft position sensor
  - Misfire
  - Fuel system
  - A/F sensor 1
  - A/F sensor 1 heater
  - Mass air flower sensor
  - Engine coolant temperature sensor
  - Intake air temperature sensor
  - Vehicle speed sensor
- DTC P2080 is displayed DTC P0544, P0545, P0546 or P2081, first perform the trouble diagnosis for DTC P0544, P0545, P0546 or P2081.

Is applicable DTC detected?

YES >>

Perform applicable DTC. Refer to .

NO >>

GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

With M.U.T.-III SE

1. Start the engine and warm it up to normal operating temperature.
2. Select "DATA MONITOR" mode of "ENGINE" using M.U.T.-III SE.

Is the inspection result normal?

YES >>

GO TO 3.

NO >>

Repair or replace error-detected parts.

<Added>

3. CHECK EXHAUST GAS TEMPERATURE SENSOR

With M.U.T.-III SE

1. Turn ignition switch ON.
2. Select "EXHAUST GAS TEMP SEN 1 B1" in "DATA MONITOR" mode of "ENGINE" using M.U.T.-III SE.
3. Check that "EXHAUST GAS TEMP SEN 1 B1" indication as follows.

Monitor item	Condition	Value
EXHAUST GAS TEMP SEN 1 B1	• Warm-up condition • Idle speed	1.05 – 4.00 V

Without M.U.T.-III SE

1. Warm engine up to normal operating temperature.
2. Check that voltage between ECM harness connector terminals as follows.

ECM			Condition	Voltage
Connector	+	–		
	Terminal			
B-11	12	34	• Warm-up condition • Idle speed	1.05 – 4.00 V

Is the inspection result normal?

YES >>

INSPECTION END

NO >>

Replace exhaust gas temperature sensor. Refer to Exploded View. .

<Added>

P2081 EXHAUST GAS TEMPERETURE SENSOR

DTC Description

DTC DETECTION LOGIC

DTC		M.U.T.-III SE screen terms (Trouble diagnosis content)	DTC detection condition	
P2081	00	EXHAUST GAS TEMPSENSOR 1 B1 (Exhaust gas temperature sensor circuit intermittent bank 1 sensor 1)	Diagnosis condition	–
			Signal (terminal)	Exhaust gas temperature sensor signal
			Threshold	ECM detects that a voltage signal from exhaust gas temperature sensor is 4.84 V or more.
			Diagnosis delay time	5 seconds or more

POSSIBLE CAUSE

- Harness or connectors

(Exhaust gas temperature sensor circuit is open.)

- Exhaust gas temperature sensor

FAIL-SAFE

Not applicable

DTC Confirmation Procedure

1. PRECONDITIONING-1

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

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.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than11 V at idle.

>>

GO TO 2

.

2. PRECONDITIONING-2

With M.U.T.-III SE

1. Turn ignition switch ON.
2. Select “COOLANT TEMP/S” in “DATA MONITOR” mode of “ENGINE” using M.U.T.-III.
3. Check the following conditions:

COOLANT TEMP/S	More than –30°C (–22°F)

With GST

Follow the procedure “With M.U.T.-III SE” above.

<Added>

Is the condition satisfied?

YES >>

GO TO 4

.

NO >>

GO TO 3

.

3. PRECONDITIONING-3

With M.U.T.-III SE

1. Start the engine until the following condition is satisfied.

COOLANT TEMP/S	More than –30°C (–22°F)

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

With GST

Follow the procedure “With M.U.T.-III SE” above.

>>

GO TO 4

.

<Added>

4. PERFORM DTC CONFIRMATION PROCEDURE

1. Shift the selector lever to P range.
2. Start engine and let it idle for at least 20 seconds.
3. Depress the accelerator pedal for 5 seconds or more.

NOTE:
Do not release the accelerator pedal during DTC confirmationprocedure.

4. Check 1st trip DTC.

Is 1st trip DTC detected?

YES >>

Proceed to .

NO >>

To check malfunction symptom before repair: Refer to Intermittent Incident.

NO >>

Confirmation after repair: INSPECTION END

DTC Diagnosis Procedure

1. CHECK FUNCTION OF FUEL INJECTOR

With M.U.T.-III SE

1. Turn ignition switch ON.
2. Select “EXHAUST GAS TEMP SEN 1 B1” in “DATA MONITOR” mode of “ENGINE”using M.U.T.-III SE.
3. Start engine and warm it up to normal operating temperature.
4. Check that “EXHAUST GAS TEMP SEN 1 B1” indication as follows.

Monitor item	Condition	Value
EXHAUST GAS TEMP SEN 1 B1	• Warm-up condition • Idle speed	1,290 – 2,940 mV

Without M.U.T.-III SE

1. Start engine and warm it up to normal operating temperature.
2. Check that voltage between ECM harness connector terminals as follows.

ECM			Condition	Voltage
Connector	+	–		
	Terminal			
B-11	12	34	• Warm-up condition • Idle speed	1.29 – 2.94 V

Is the inspection result normal?

YES >>

GO TO 2

.

NO >>

Replace exhaust gas temperature sensor. Refer to Exploded View. .

<Added>

2. CHECK EXHAUST GAS TEMPERATURE SENSOR POWER SUPPLY

1. Turn ignition switch OFF.
2. Disconnect exhaust gas temperature sensor harness connector.
3. Turn ignition switch ON.
4. Check the voltage between exhaust gas temperature sensor harness connector terminal and ground.

+		−	Voltage (Approx.)
Exhaust gas temperature sensor			
Connector	Terminal		
B-46	1	Ground	5 V

Is the inspection result normal?

YES >>

GO TO 3

.

NO >>

GO TO 4

.

3. CHECK EXHAUST GAS TEMPERATURE SENSOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check the continuity between exhaust gas temperature sensor harness connector and ECM harness connector.

+		−		Continuity
Exhaust gas temperature sensor		ECM		
Connector	Terminal	Connector	Terminal	
B-46	2	B-11	34	Existed

4. Also check harness for short to power.

Is the inspection result normal?

YES >>

Check intermittent incident. Refer to Intermittent Incident.

NO >>

Repair or replace error-detected parts.

4. CHECK EXHAUST GAS TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check the continuity between exhaust gas temperature sensor harness connector and ECM harness connector.

+		−		Continuity
Exhaust gas temperature sensor		ECM		
Connector	Terminal	Connector	Terminal	
B-46	1	B-11	12	Existed

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

Is the inspection result normal?

YES >>

Perform the trouble diagnosis for ECM power supply circuit. Refer to Diagnosis Procedure.

NO >>

Repair or replace error-detected parts.

Attached sheet 14(1/2)

	SYMPTOM													Reference page
	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)	
Warranty symptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	HA	
Electric Intake valve timing control module circuit			3		3	3								Diagnosis Procedure POWER SUPPLY AND GROUND CIRCUIT, DTC Description U012E CAN COMMUNICATION, DTC Description U042F CAN COMMUNICATION, DTC Description P2614 INTAKE CAMSHAFT POSITION SENSOR, DTC Description P2615 INTAKE CAMSHAFT POSITION SENSOR, DTC Description P2616 INTAKE CAMSHAFT POSITION SENSOR, DTC Description P2616 INTAKE CAMSHAFT POSITION SENSOR, DTC Description P2618 CRANKSHAFT POSITION SENSOR, DTC Description P2619 CRANKSHAFT POSITION SENSOR, DTC Description P34C8 ELECTRIC INTAKE VALVE TIMING CONTROL MODULE
Electric intake valve timing control actuator circuit					3									DTC Description P34AC ELECTRIC INTAKE VALVE TIMING CONTROL ACTUATOR, DTC Description P34AD ELECTRIC INTAKE VALVE TIMING CONTROL ACTUATOR, DTC Description P34AE ELECTRIC INTAKE VALVE TIMING CONTROL POSITION SENSOR, DTC Description P34AF ELECTRIC INTAKE VALVE TIMING CONTROL POSITION SENSOR
Exhaust valve timing intermediate lock control solenoid valve circuit														DTC Description P052A INTAKE VALVE TIMING CONTROL, DTC Description P052B INTAKE VALVE TIMING CONTROL
Exhaust camshaft position sensor circuit	5	5	5	5	5		5	5			5			DTC Description P0365 EXHAUST CAMSHAFT POSITION SENSOR
PNP signal circuit			3		3		3	3			3			Inspection P0850 PNP SWITCH
Refrigerant pressure sensor circuit		2				3			3		4			Inspection REFRIGERANT PRESSURE SENSOR
Electrical load signal circuit							3							ELECTRICAL LOAD SIGNAL

Attached sheet 14(2/2)
<Added>

Exhaust gas temperature sensor										5			ENGINE CONTROL SYSTEM - PR25DD - DTC/CIRCUIT DIAGNOSIS - P0544 EXHAUST GAS TEMPERETURE SENSOR - DTC Description, P0545 EXHAUST GAS TEMPERETURE SENSOR - DTC Description, P0546 EXHAUST GAS TEMPERETURE SENSOR - DTC Description, P2080 EXHAUST GAS TEMPERETURE SENSOR - DTC Description, P2081 EXHAUST GAS TEMPERETURE SENSOR - DTC Description

DTC Inspection Priority Chart

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	DTC	Detected items
1	C053C	Wheel speed sensor
	P0101, P0102, P0103	Mass air flow sensor
	P0106	Manifold absolute pressure sensor
	P0107, P0108, P2227	Atmospheric pressure sensor
	P0111, P0112, P0113, P0127	Intake air temperature sensor
	P0116, P0117, P0118, P0125	Engine coolant temperature sensor
	P0122, P0123, P0222, P0223, P1225, P1226, P2135	Throttle position sensor
	P0128	Thermostat function
	P0181, P0182, P0183	Fuel tank temperature sensor
	P0191, P0192, P0193, P119A, P119B, P119C, P119D, P119E	Fuel rail pressure sensor
	P0196, P0197, P0198	Engine oil temperature sensor
	P025A, P025C, P025D	Fuel pump relay
	P026B, P2B96	Injection system
	P0326, P0327, P0328, P032B, P032C, P032D	Knock sensor
	P0315, P0335, P2617, P2618, P2619	Crankshaft position sensor
	P0340, P0365, P2614, P2615, P2616	Camshaft position sensor
	P044A, P044B, P044C, P044D, P044E	EGR volume control valve position sensor
	P0460, P0461, P0462, P0463	Fuel level sensor
	P0500, P0501, P2159	Vehicle speed sensor
	P0520, P0522, P0523, P0524	Engine oil pressure sensor
	P0531, P0532, P0533, P2080, <Added>	Refrigerant pressure sensor
	P0544, P0545, P0546, P2081	Exhaust gas temperature sensor
	P0604, P0605, P0606, P0607, P060A, P060B, P060C, P061B, P062B, P062D, P062F, P1603, P2610	ECM
	P0641, P34C8	Electric intake valve timing control module
	P06B0, P06B3, P06E6	Sensor power supply
	P06DA, P06DB, P06DC	Engine oil pressure control solenoid valve
	P0850	Transmission range switch
	P1197	Out of gas*
	P155B	Energy management control
	P155D, P155E, P155F	Generator
	P161D, P161E, P161F	Immobilizer
	P2014, P2015, P2016, P2017, P2018	Intake manifold runner control valve position sensor
	P2121, P2122, P2123, P2126, P2127, P2128, P2138	Accelerator pedal position sensor
	U0101, U0122, U012E, U0146, U0155, U042F	CAN communication line
	U0284, U1040	Engine communication line
	U1050, U1051	LIN communication line
	U1327, U2118, U2148, U214A, U214E, U214F, U2150, U2152, U215B, U2165, U2176, U2241, U2248, U2252, U2259, U226B, U2276, U2384	MAC key

DTC *1			Items (M.U.T.-III SE screen terms)	SRT code	Trip	MIL	Permanent DTC group *3	Reference page
M.U.T.-III SE		GST *2						
P1574	00	P1574	ASCD VHL SPD SEN	—	1	—	—	DTC Description
P1575	00	P1575	BRAKE SW	—	2	×	A + B	DTC Description
P159F	00	P159F	ACTIVE GRILLE AIR SHUTTER A	—	2	—	—	DTC Description
P1603	00	P1603	CONTROL MODULE	—	2	—	—	DTC Description
P161D	00	P161D	IMMOBILIZER	—	2	—	—	DTC Description
P161E	00	P161E	IMMOBILIZER	—	2	—	—	—
P161F	00	P161F	IMMOBILIZER	—	2	—	—	DTC Description
P1800	00	P1800	VIAS S/V CIRCB1	—	2	—	—	DTC Description
P1805	00	P1805	BRAKE SW/CIRCUIT	—	1	—	—	DTC Description
P1A10	00	P1A10	ECM initial learning Incomplete	—	2	—	—	DTC Description
P2004	00	P2004	SWIRL CONT/V (B1)	—	2	×	A + B	DTC Description
P2008	00	P2008	SWIRL CONT/V (B1)	—	2	×	A + B	DTC Description
P2009	00	P2009	Intake manifold runner control	—	2	×	A + B	DTC Description
P2010	00	P2010	Intake manifold runner control	—	2	×	A + B	DTC Description
P2014	00	P2014	SWIRL CONT SEN/SW	—	2	×	A + B	DTC Description
P2015	00	P2015	Intake manifold runner posi sen/sw B1	—	2	×	A + B	DTC Description
P2016	00	P2016	IN/MANIFOLD RUNNER POS SEN B1	—	2	×	A + B	DTC Description
P2017	00	P2017	IN/MANIFOLD RUNNER POS SEN B1	—	2	×	A + B	DTC Description
P2018	00	P2018	IN/MANIFOLD RUNNER POS SEN B1	—	2	×	A + B	DTC Description
P2081	00	P2081	EXHAUST GAS TEMP SENSOR 1 B1	—	2	×	B	DTC Description
P2096	00	P2096	POST CATALYST FUEL TRIM SYS B1	×	2	×	A	DTC Description
P2097	00	P2097	POST CATALYST FUEL TRIM SYS B1	×	2	×	A	DTC Description
P2100	00	P2100	ETC MOT PWR-B1	—	1	×	A + B	DTC Description
P2101	00	P2101	ETC FNCTN/CIRC-B1	—	1	×	A + B	DTC Description
P2103	00	P2103	ETC MOT PWR-B1	—	1	×	A + B	DTC Description
P2119	00	P2119	ETC ACTR-B1	—	1	× or —	A + B or —	DTC Description
P2121	00	P2121	Throttle/pedal position sen/sw D	—	1	×	A + B	DTC Description
P2122	00	P2122	APP SEN 1/CIRC	—	1	×	A + B	DTC Description
P2123	00	P2123	APP SEN 1/CIRC	—	1	×	A + B	DTC Description
P2126	00	P2126	Throttle/pedal position sen/sw E	—	1	×	A + B	DTC Description
P2127	00	P2127	APP SEN 2/CIRC	—	1	×	A + B	DTC Description
P2128	00	P2128	APP SEN 2/CIRC	—	1	×	A + B	DTC Description
P2135	00	P2135	TP SENSOR-B1	—	1	×	A + B	DTC Description
P2138	00	P2138	APP SENSOR	—	1	×	A + B	DTC Description
P2159	00	P2159	VEHICLE SPEED SEN B	—	2	×	A + B	DTC Description
P219A	00	P219A	AIR FUEL RATIO IMBALANCE B1	×	2	×	A	DTC Description
P2227	00	P2227	Barometric pressure sensor A	—	2	×	A + B	DTC Description
P2237	00	P2237	O2 sensor bank 1 sensor 1	—	2	×	A + B	DTC Description
P2238	00	P2238	O2 sensor bank 1 sensor 1	—	2	×	A + B	DTC Description
P2239	00	P2239	O2 sensor bank 1 sensor 1	—	2	×	A + B	DTC Description
P2251	00	P2251	O2 sensor bank 1 sensor 1	—	2	×	A + B	DTC Description
P2252	00	P2252	O2 sensor bank 1 sensor 1	—	2	×	A + B	DTC Description
P2253	00	P2253	O2 sensor bank 1 sensor 1	—	2	×	A + B	DTC Description
P2270	00	P2270	O2 sensor signal bank 1 sensor 2	×	2	×	A + B	DTC Description

P2080	00	P2080	EXHAUST GAS TEMP SENSOR 1 B1	-	2	X	B	Attached sheet 12(1/4)

<Added>

	SYMPTOM													Reference page
	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)	
Warranty symptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	HA	
Electric Intake valve timing control module circuit			3		3	3								Diagnosis Procedure DTC Diagnosis Procedure, DTC Description DTC Description, DTC Description DTC Description, DTC Description DTC Description, DTC Description DTC Description, DTC Description DTC Description, DTC Description DTC Description, DTC Description DTC Description, DTC Description DTC Description
Electric intake valve timing control actuator circuit					3									DTC Description DTC Description, DTC Description DTC Description, DTC Description DTC Description, DTC Description DTC Description
Exhaust valve timing intermediate lock control solenoid valve circuit														DTC Description DTC Description, DTC Description DTC Description
Exhaust camshaft position sensor circuit	5	5	5	5	5		5	5			5			DTC Description DTC Description
Exhaust gas temperature sensor											5			~~DTC Description, DTC Description, DTC Description, DTC Description~~
PNP signal circuit			3		3		3	3			3			InspectionDTC Description
Refrigerant pressure sensor circuit		2				3			3		4			InspectionComponent Function Check
Electrical load signal circuit							3							Component Function Check
Intake manifold runner control valve motor circuit					4	4								Inspection
Intake manifold runner control valve position sensor circuit					4	4								DTC Description DTC Description
Intake manifold tuning valve circuit					1									InspectionDTC Description
Air conditioner circuit	2	2	3	3	3	3	3	3	3		3		2	Work Flow, Work Flow
ASCD steering switch circuit														DTC Diagnosis Procedure
ABS actuator and electric unit (control unit)			4											Work Flow

1 - 6: The numbers refer to the order of inspection.

(continued on next table)

<Incorrect>

ENGINE CONTROL SYSTEM - PR25DD - DTC/CIRCUIT DIAGNOSIS - P0544 EXHAUST GAS TEMPERETURE SENSOR - DTC Description, P0545 EXHAUST GAS TEMPERETURE SENSOR - DTC Description, P0546 EXHAUST GAS TEMPERETURE SENSOR - DTC Description, P2080 EXHAUST GAS TEMPERETURE SENSOR - DTC Description, P2081 EXHAUST GAS TEMPERETURE SENSOR - DTC Description

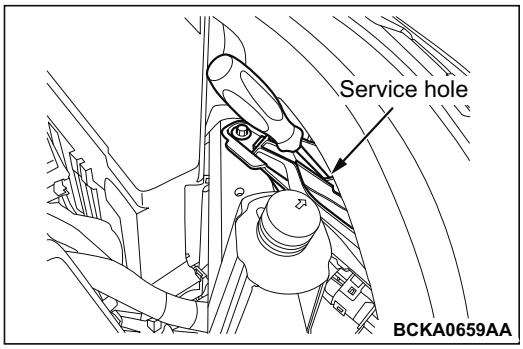
<Correct>

HEADLIGHT ADJUSTMENT (LOW-BEAM)

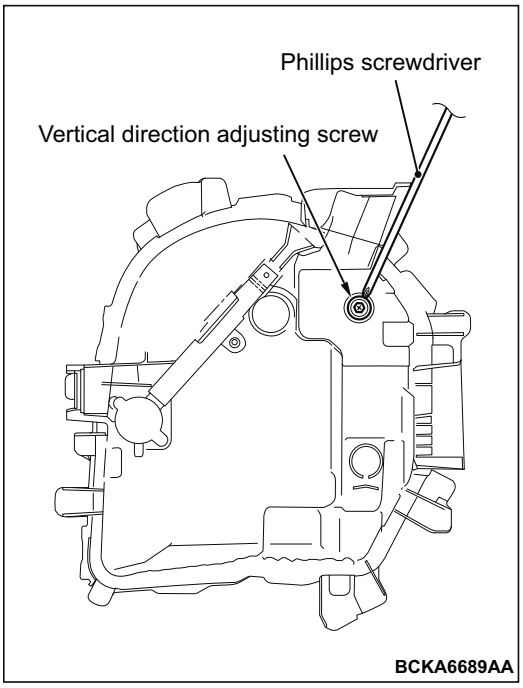
CAUTION:

- **Do not cover a headlight for more than three minutes to prevent the plastic headlight lens deformation.**
- **Be sure to adjust the aiming adjustment screw in the tightening direction.**

1.The low-beam headlight should project on the screen upper edge of the beam (cut-off).



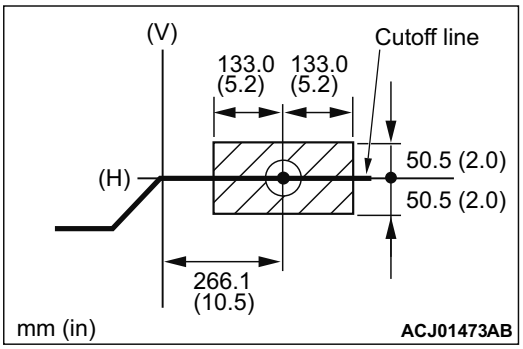
2.When adjusting the vertical direction side, insert the screwdriver from the service hole near the headlight assembly mounting bolts.



3.Turn the adjusting screws to achieve the specified low-beam cut-off location on the aiming screen.

<Entry type>

<Added>



Standard value:

(Vertical direction) Horizontal line (H) ± 50.5 mm (± 2.0 in) (± 0.38 degrees angle)

(Horizontal direction): ± 133.0 mm (± 5.2 in) (± 1 degrees angle) from the axis, which is 266.1 mm (10.5 in) (2 degrees angle) rightward from the vertical line (V)

NOTE:

High-beam pattern should be correct when the low-beams are adjusted properly.

Luminous Intensity Measurement

1.Set the headlights to high-beam.

2.Using a photometer, and following its manufacturer's instruction manual, measure the headlight center intensity and check to be sure that the limit value is satisfied.

Limit: 40,000 cd or more {When a screen is set 18.3m (60 ft) ahead of the vehicle}

NOTE:

When measuring the intensity, maintain an engine speed of 2,000 r/min, with the battery fully charged.

There may be special local regulations pertaining to headlight intensity. Be sure to make any adjustments necessary to satisfy such regulations.

If an illuminometer is used to make the measurements, convert its values to photometer values by using the following formula.

$I = E \times r^2$:

- I = intensity (cd)
- E = illumination (lux)
- r = distance (m) from headlights to illuminometer

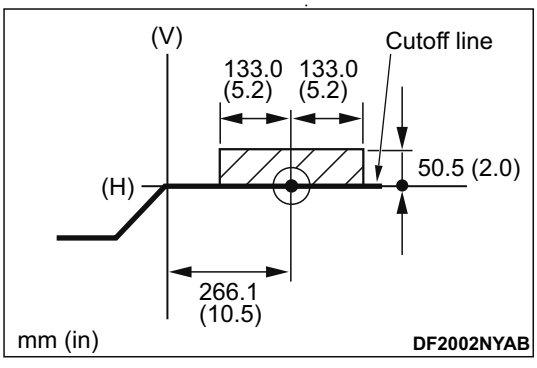
FRONT FOG LAMP AIMING ADJUSTMENT

service specifications

Item	Standard value	Limit
Fog light aiming (cutoff line direction) [at 7.62 m (25.0 ft)]	The horizontal line 277.0 mm (10.91 in) (2.08 degrees angle) below the horizontal line (H)	-
Fog light aiming (vertical direction) [at 7.62 m (25.0 ft)]	-	Area from 163.0 mm (6.42 in) (1.22 degrees angle) above the cutoff line to 163.0 mm (6.42 in) (1.22 degrees angle) below the cutoff line
Fog light aiming (horizontal direction) [at 7.62 m (25.0 ft)]	-	Vertical line (V) ± 599.7 mm (± 23.6 in) (± 4.5 degrees angle).

<Added>

<Premium type>



Standard value:

(Vertical direction) Horizontal line (H) + 50.5 mm, - 0 mm (+ 2.0 in, - 0 in) (+ 0.38 degrees angle, - 0 degrees angle)

(Horizontal direction): ± 133.0 mm (± 5.2 in) (± 1 degrees angle) from the axis, which is 266.1 mm (10.5 in) (2 degrees angle) rightward from the vertical line (V)

NOTE:

High-beam pattern should be correct when the low-beams are adjusted properly.

Attached sheet 19

BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON

Description

Both side front fog lamps are not turned ON in any condition.

Diagnosis Procedure

1. COMBINATION SWITCH INSPECTION

Check combination switch. Refer to Symptom Table.

Is the inspection result normal?

YES >>

GO TO 2

.

NO >>

Repair or replace the malfunctioning part.

2. CHECK FRONT FOG LIGHT REQUEST SIGNAL

With M.U.T.-III SE

1. Select “FRONT FOG LIGHT REQ” in “Data List” mode of “IPDM E/R” using M.U.T.-III SE.
2. With operating the front fog light switch, check the monitor status.

Monitor item	Condition		Monitor status
FRONT FOG LIGHT REQ	Front fog light switch (With lighting switch 2ND)	ON	On
		OFF	Off

Is the item status normal?

YES >>

Replace IPDM E/R. Refer to Removal and Installation.

NO >>

Replace BCM. Refer to Removal and Installation.

PERIODIC MAINTENANCE

HEADLAMP AIMING ADJUSTMENT

Service Specifications

Item			Standard value	Limit
Headlight aiming [at 7.62 m (25.0 ft)]	Low-beam	Vertical direction	Horizontal line (H) ± 50.5 mm (± 2.0 in) (± 0.38 degrees angle)	-
		Horizontal direction	± 133.3 mm (± 5.2 in) (± 1 degrees angle) from the axis, which is 266.1 mm (10.5 in) (2 degrees angle) rightward from the vertical line (V)	-
Headlight intensity cd (at high-beam)			-	40,000 or more {when a screen is set 18.3 m (60 ft) ahead of the vehicle}

<Incorrect>

PRECAUTIONS ON HOW TO USE THE HEADLIGHT ASSEMBLY

Be careful with the following items as resin lenses are used in the headlight assembly.

- Don't illuminate the headlight for three minutes or more when the headlight is covered with scratch protector.
- Don't tape the outer lens.
- Don't scratch the outer lens surface with a sharp edged special tool.

<Correct>

Headlight aiming [at 7.62 m (25.0 ft)]	Low-beam	Vertical direction	Entry type	Horizontal line (H) ± 50.5 mm (± 2.0 in) (± 0.38 degrees angle)	-
			Premium type	(Vertical direction) Horizontal line (H) ± 50.5 mm, - 0 mm (+2.0 in, - 0 in) (+ 0.38 degrees angle, - 0 degrees angle)	-
		Horizontal direction		± 133.3 mm (± 5.2 in) (± 1 degrees angle) from the axis, which is 266.1 mm (10.5 in) (2 degrees angle) rightward from the vertical line (V)	-

A <Added> (

, <Added> A

± 133.0 mm <Correct>

A