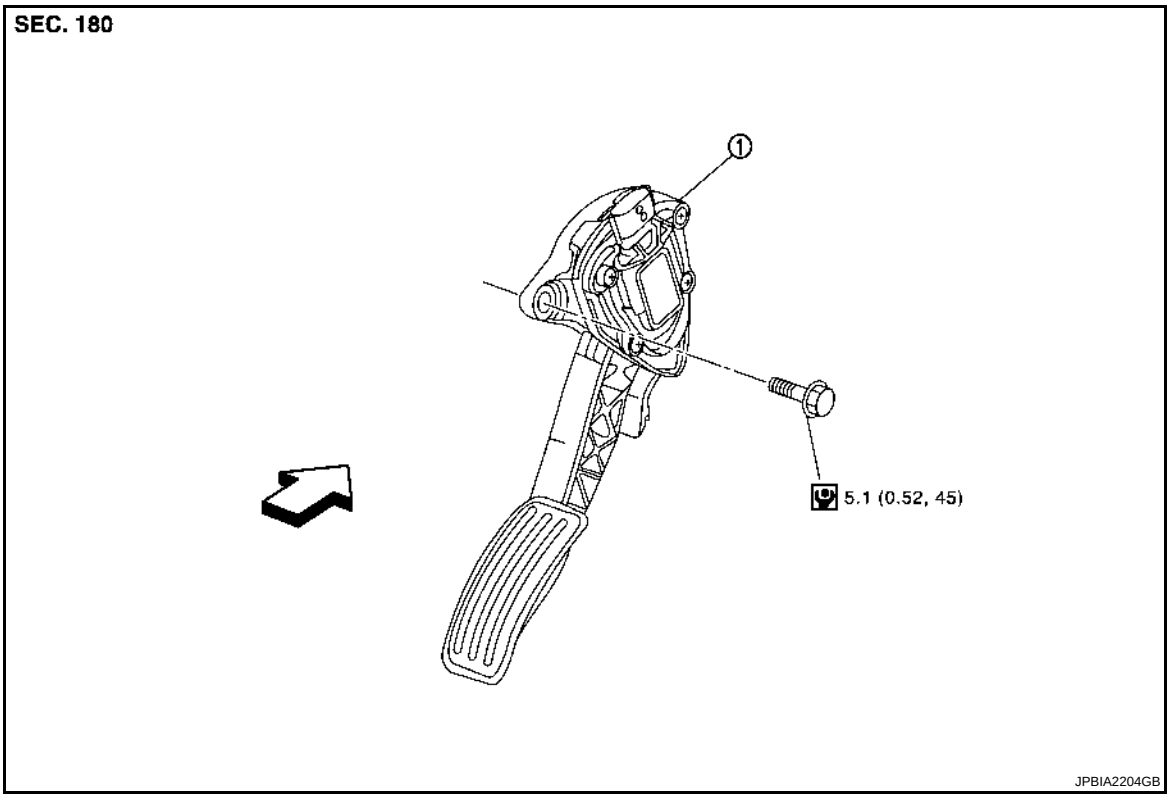
ON-VEHICLE REPAIR

ACCELERATOR CONTROL SYSTEM

Exploded View

INFOID:0000000003793272



1. Accelerator pedal assembly

⇦ : Vehicle front

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000003793273

REMOVAL

1. Disconnect accelerator pedal position sensor harness connector.
2. Loosen mounting bolts, and remove accelerator pedal assembly.

CAUTION:

- **Never disassemble accelerator lever. Never remove accelerator pedal position sensor from accelerator lever.**
- **Avoid impact from dropping etc. during handling.**
- **Be careful to keep accelerator lever away from water.**

INSTALLATION

Note the following, and installation is the reverse order of removal.

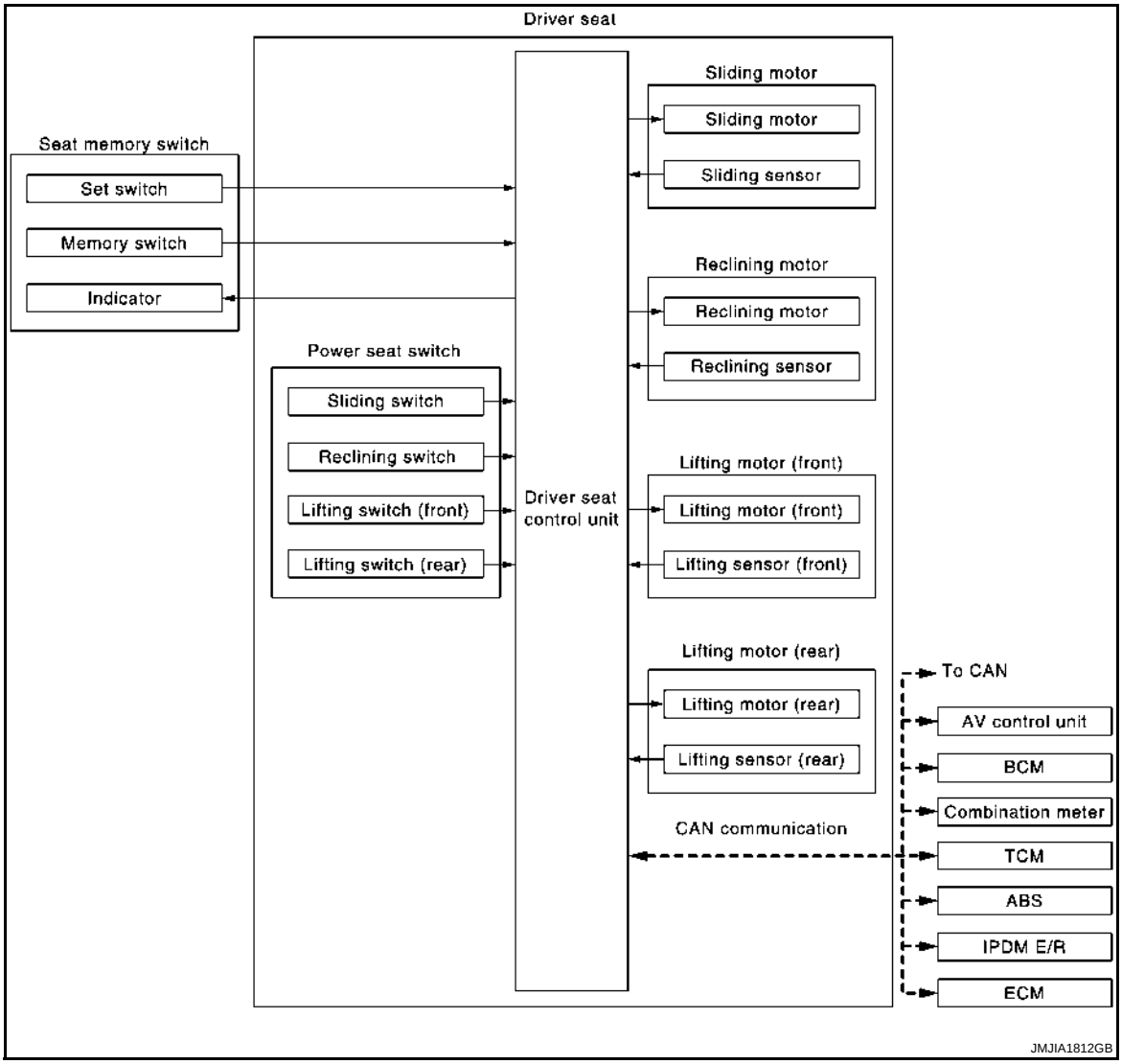
FUNCTION DIAGNOSIS

AUTOMATIC DRIVE POSITIONER SYSTEM

AUTOMATIC DRIVE POSITIONER SYSTEM

AUTOMATIC DRIVE POSITIONER SYSTEM : System Diagram

INFOID:0000000003759068



AUTOMATIC DRIVE POSITIONER SYSTEM : System Description

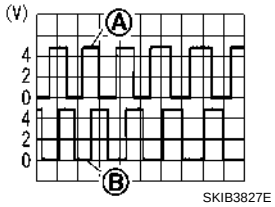
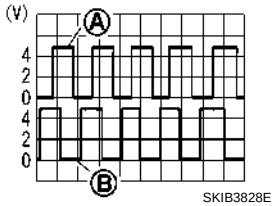
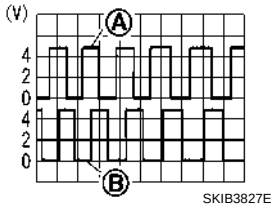
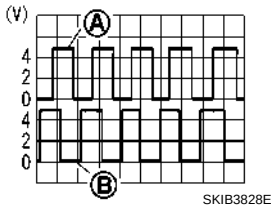
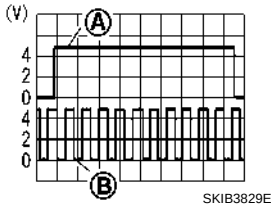
INFOID:0000000003759069

OUTLINE

The system automatically moves the driver seat position by the driver seat control unit.

Function		Description
Manual function		The driving position (seat) can be adjusted by using the power seat switch
Memory function		The seat can be adjusted to the stored driving position by pressing seat memory switch (1 or 2)
Entry/Exit assist function	Exit	On exit, the seat moves backward
	Entry	On entry, the seat returns from the exiting position to the previous driving position
Intelligent Key interlock function		Perform memory operation, exiting operation and entry operation by Intelligent Key unlock operation or driver side door request switch unlock operation

SLEEP MODE

Terminal (Wire color)		Description		Condition		Reference value (Approx.)
+	–	Signal name	Input/ Output			
22 (W)	Ground	Reverse signal	Input	Ignition switch ON	Selector lever in R position.	12.0 V
					Other than selector lever in R position.	0 V
23 (G)	Ground	Sensor signal 1	Input	Ignition switch ON	Turn the steering to the right.	 SKIB3827E A: Sensor signal 1 B: Sensor signal 2
					Turn the steering to the left.	 SKIB3828E A: Sensor signal 1 B: Sensor signal 2
24 (SB)	Ground	Sensor signal 2	Input	Ignition switch ON	Turn the steering to the right.	 SKIB3827E A: Sensor signal 1 B: Sensor signal 2
					Turn the steering to the left.	 SKIB3828E A: Sensor signal 1 B: Sensor signal 2
25 (O)	Ground	Sensor signal 3	Input	Ignition switch ON	Turn the steering around the neutral position.	 SKIB3829E A: Sensor signal 3 B: Sensor signal 1

BOSE AUDIO WITH NAVIGATION SYSTEM

Connector No.	M153		
Connector Name	WIRE TO WIRE		
Connector Type	TH40FW-NH		

33	R		
34	W		
36	SHIELD		
37	O		
38	R		
39	G		
40	SHIELD		

Terminal No.	Color of Wire	Signal Name [Specification]
18	L	-
10	P	-[With BOSE system]
24	L	-
25	P	-
26	SHIELD	-
27	B	-
28	W	-
29	SHIELD	-
30	SHIELD	-
31	G	-
32	R	-

Connector No.	M154		
Connector Name	WIRE TO WIRE		
Connector Type	NS16MW-CS		

20	B		
22	G/R		

Terminal No.	Color of Wire	Signal Name [Specification]
1	G	[With BOSE system]
8	R	-[With BOSE system]

Connector No.	M155		
Connector Name	WIRE TO WIRE		
Connector Type	NS16MW-CS		

Terminal No.	Color of Wire	Signal Name [Specification]
1	O	[With BOSE system]
8	B/P	-[With BOSE system]

Connector No.	M166		
Connector Name	WIRE TO WIRE		
Connector Type	TH24FW-NH		

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	-
2	L/Y	-
9	G/R	-
10	O	-
13	Y	-
14	V	-
15	P/B	-
16	V/W	-
17	SHIELD	-
18	W	-
19	W	-

Connector No.	M253		
Connector Name	AUXILIARY INPUT JACKS		
Connector Type	A08FW		

Terminal No.	Color of Wire	Signal Name [Specification]
1	W	AUX SOUND SIGNAL RH (+)
2	R	GND
3	B	AUX SOUND SIGNAL LH (-)
7	G	AUX IMAGE SIGNAL (+)
8	V	AUX IMAGE SIGNAL (-)

JCNWM0914GB

TRUNK LID OPENER SWITCH

Exploded View

INFOID:0000000003846687

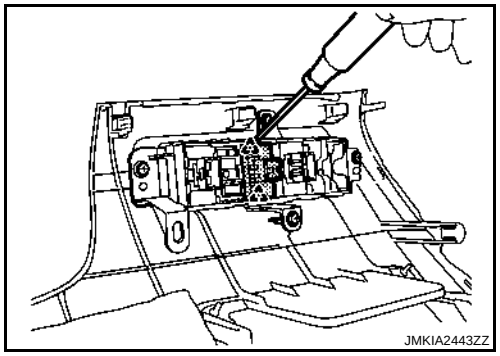
Refer to EXT-38, "Exploded View".

Removal and Installation

INFOID:0000000003846688

REMOVAL

1. Remove the instrument lower panel. Refer to IP-12, "Removal and Installation".
2. Remove the trunk lid opener switch from instrument driver lower panel, and then remove pawl. Press trunk lid opener switch front side to disengage from instrument driver lower panel.



Pawl

INSTALLATION

Install in the reverse order of removal.

DTC No.	Detected items	Engine operating condition in fail-safe mode
P2119	Electric throttle control actuator	(When electric throttle control actuator does not function properly due to the return spring malfunction:) ECM controls the electric throttle actuator by regulating the throttle opening around the idle position. The engine speed will not rise more than 2,000 rpm.
		(When throttle valve opening angle in fail-safe mode is not in specified range:) ECM controls the electric throttle control actuator because of regulating the throttle opening to 20 degrees or less.
		(When ECM detects the throttle valve is stuck open:) While the vehicle is being driver, it slows down gradually by fuel cut. After the vehicle stops, the engine stalls. The engine can restart in N or P position, and engine speed will not exceed 1,000 rpm or more.
P2122 P2123 P2127 P2128 P2138	Accelerator pedal position sensor	The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees. The ECM regulates the opening speed of the throttle valve to be slower than the normal condition. So, the acceleration will be poor.

DTC Inspection Priority Chart

INFOID:0000000003856871

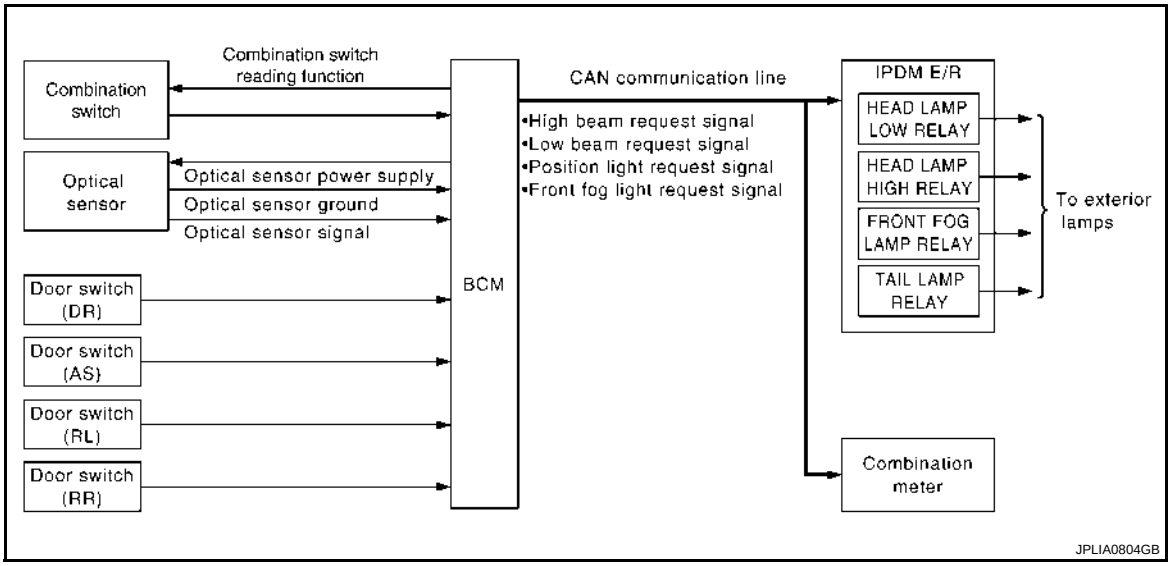
If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	Detected items (DTC)
1	• U1000 U1001 CAN communication line • P0102 P0103 Mass air flow sensor • P0112 P0113 Intake air temperature sensor • P0117 P0118 Engine coolant temperature sensor • P0122 P0123 P0222 P0223 P1225 P1226 P2135 Throttle position sensor • P0327 P0328 P0332 P0333 Knock sensor • P0335 Crankshaft position sensor (POS) • P0340 P0345 Camshaft position sensor (PHASE) • P0500 Vehicle speed sensor • P0605 P0607 ECM • P0643 Sensor power supply • P0705 P0850 Park/Neutral position (PNP) switch • P1550 P1551 P1552 P1553 P1554 Battery current sensor • P1610 - P1615 NATS • P1700 CVT control system • P2122 P2123 P2127 P2128 P2138 Accelerator pedal position sensor

AUTO LIGHT SYSTEM

System Diagram

INFOID:0000000003894281



System Description

INFOID:0000000003894282

OUTLINE

- Auto light system is controlled by each function of BCM and IPDM E/R.

Control by BCM

- Combination switch reading function
- Headlamp control function
- Auto light function
- Delay timer function

Control by IPDM E/R

- Relay control function

- Auto light system has the auto light function and the delay timer function.
- Auto light function turns the exterior lamps* and each illumination ON/OFF automatically according to the outside brightness.
- When auto light system turns the exterior lamps ON with the ignition switch OFF, delay timer function turns the exterior lamps OFF depending on the vehicle condition with the auto light function after a certain period of time.

*: Headlamp (LO/HI), parking lamp, tail lamp and front fog lamp (Headlamp HI and front fog lamp depend on the combination switch condition.)

AUTO LIGHT FUNCTION

- BCM detects the combination switch condition with the combination switch reading function.
- BCM supplies voltage to optical sensor when the ignition switch is turned ON or ACC.
- Optical sensor converts outside brightness (lux) to voltage and transmits the optical sensor signal to BCM.
- BCM judges outside brightness from the optical sensor signal and judges ON/OFF condition of the exterior lamp and each illumination according to the outside brightness.
- BCM transmits each request signal to IPDM E/R with CAN communication according to ON/OFF condition by the auto light function.

NOTE:

ON/OFF timing differs based on the sensitivity from the setting. The setting can be set by CONSULT-III. Refer to EXL-215, "HEADLAMP : CONSULT-III Function (BCM - HEAD LAMP)".

DELAY TIMER FUNCTION

BCM turns the exterior lamp OFF depending on the vehicle condition with the auto light function when the ignition switch is turned OFF.

- Turns the exterior lamp OFF 5 minutes after detecting that any door opens (Door switch ON).
- Turns the exterior lamp OFF a certain period of time* after closing all doors (Door switch ON→OFF).

ECU DIAGNOSIS

A/C AUTO AMP.

Reference Value

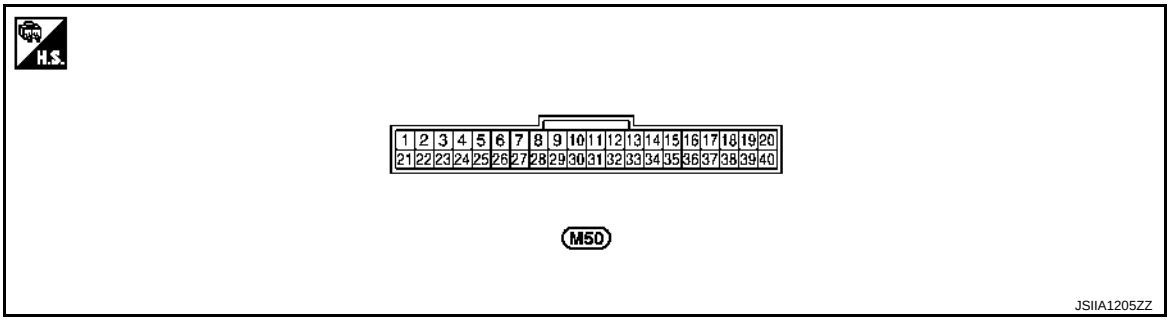
INFOID:0000000003846375

VALUES ON THE DIAGNOSIS TOOL

CONSULT-III MONITOR ITEM

Monitor item	Condition		Value/Status
COMP REQ SIG	Engine: Run at idle after warming up	A/C switch: ON (Compressor operation status)	On
		A/C switch: OFF	Off
FAN REQ SIG	Engine: Run at idle after warming up	Blower fan: ON	On
		Blower fan: OFF	Off
AMB TEMP SEN	Ignition switch ON	—	–30 - 55°C (–22 - 131°F)
IN-VEH TEMP	Ignition switch ON	—	–30 - 55°C (–22 - 131°F)
INT TEMP SEN	Ignition switch ON	—	–30 - 55°C (–22 - 131°F)
SUNLOAD SEN	Ignition switch ON	—	0 - 1045 W/m^2 (0 - 900 kcal/m^2·h)
AMB SEN CAL	Ignition switch ON	—	–30 - 55°C (–22 - 131°F)
IN-VEH CAL	Ignition switch ON	—	–30 - 55°C (–22 - 131°F)
INT TEMP CAL	Ignition switch ON	—	–30 - 55°C (–22 - 131°F)
SUNL SEN CAL	Ignition switch ON	—	0 - 1045 W/m^2 (0 - 900 kcal/m^2·h)
FAN DUTY	Engine: Run at idle after warming up	Blower fan: ON	21 - 91%
		Blower fan: OFF	0%
XM	Ignition switch ON	—	–100 - 150°
ENG COOL TEMP	Ignition switch ON	—	Values according to coolant temperature
VEHICLE SPEED	Driving	—	Equivalent to speedometer reading

TERMINAL LAYOUT



PHYSICAL VALUES

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000003841858

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).

- TCM
- Harness connector F123
- Harness connector E6

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of TCM.
2. Check the resistance between the TCM harness connector terminals.

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F23	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the TCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to the following.

- VQ25DE: TM-249, "Diagnosis Procedure"
- VQ35DE: TM-85, "Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to the following.
- VQ25DE: TM-315, "Exploded View"
- VQ35DE: TM-153, "Exploded View"

YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

Display contents of CONSULT	Fail-safe	Cancellation
B2608: STARTER RELAY	Inhibit engine cranking	500 ms after the following signal communication status becomes consistent • Starter motor relay control signal • Starter relay status signal (CAN)
B2609: S/L STATUS	• Inhibit engine cranking • Inhibit steering lock	When the following steering lock conditions agree • BCM steering lock control status • Steering lock condition No. 1 signal status • Steering lock condition No. 2 signal status
B260A: IGNITION RELAY	Inhibit engine cranking	500 ms after the following conditions are fulfilled • IGN relay (IPDM E/R) control signal: OFF (Battery voltage) • Ignition ON signal (CAN to IPDM E/R): OFF (Request signal) • Ignition ON signal (CAN from IPDM E/R): OFF (Condition signal)
B260F: ENG STATE SIG LOST	Maintains the power supply position attained at the time of DTC detection	When any of the following conditions is fulfilled • Power position changes to ACC • Receives engine status signal (CAN)
B2612: S/L STATUS	• Inhibit engine cranking • Inhibit steering lock	When any of the following conditions is fulfilled • Steering lock unit status signal (CAN) is received normally • The BCM steering lock control status matches the steering lock status recognized by the steering lock unit status signal (CAN from IPDM E/R)
B2617: STARTER RELAY CIRC	Inhibit engine cranking	1 second after the starter motor relay control inside BCM becomes normal
B2618: BCM	Inhibit engine cranking	1 second after the ignition relay (IPDM E/R) control inside BCM becomes normal
B2619: BCM	Inhibit engine cranking	1 second after the steering lock unit power supply output control inside BCM becomes normal
B261E: VEHICLE TYPE	Inhibit engine cranking	BCM initialization
B26E1: ENG STATE NO RES	Inhibit engine cranking	When any of the following conditions is fulfilled • Power position changes to ACC • Receives engine status signal (CAN)
B26E9: S/L STATUS	• Inhibit engine cranking • Inhibit steering lock	When BCM transmits the LOCK request signal to steering lock unit, and receives LOCK response signal from steering lock unit, the following conditions is fulfilled • Steering condition No. 1 signal: LOCK (0 V) • Steering condition No. 2 signal: LOCK (Battery voltage)

HIGH FLASHER OPERATION

BCM detects the turn signal lamp circuit status by the current value.
BCM increases the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp operating.

NOTE:
The blinking speed is normal while activating the hazard warning lamp.

DTC Inspection Priority Chart

INFOID:0000000003880877

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

Priority	DTC
1	B2562: LOW VOLTAGE
2	• U1000: CAN COMM CIRCUIT • U1010: CONTROL UNIT (CAN)
3	• B2190: NATS ANTENNA AMP • B2191: DIFFERENCE OF KEY • B2192: ID DISCORD BCM-ECM • B2193: CHAIN OF BCM-ECM

HARNESS CONNECTOR

Description

INFOID:0000000003792682

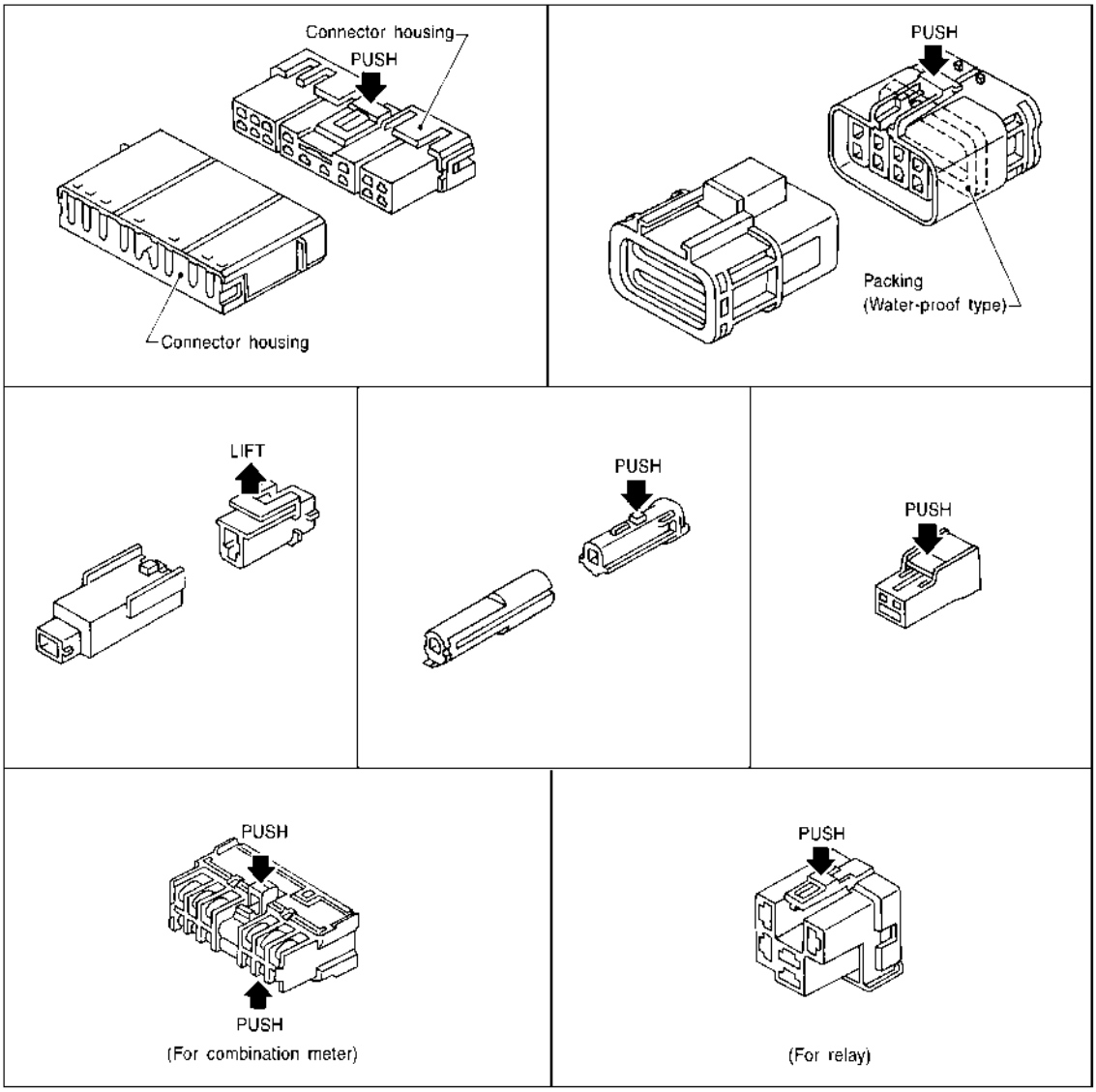
HARNESS CONNECTOR (TAB-LOCKING TYPE)

- The tab-locking type connectors help prevent accidental looseness or disconnection.
- The tab-locking type connectors are disconnected by pushing or lifting the locking tab(s). Refer to the figure below.

CAUTION:

Never pull the harness or wires when disconnecting the connector.

[Example]



SEL769DA

HARNESS CONNECTOR (SLIDE-LOCKING TYPE)

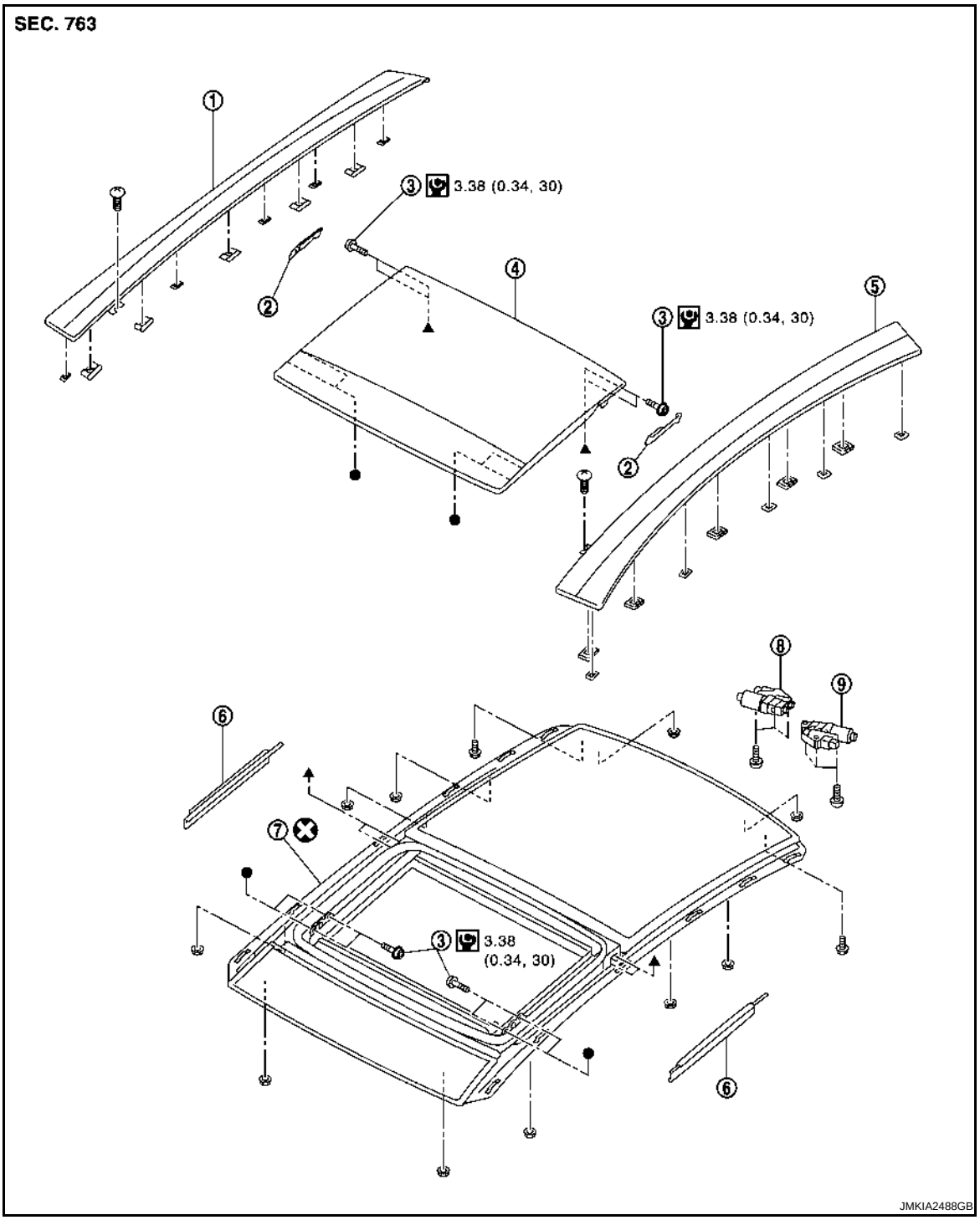
- A new style slide-locking type connector is used on certain systems and components, especially those related to OBD.
- The slide-locking type connectors help prevent incomplete locking and accidental looseness or disconnection.
- The slide-locking type connectors are disconnected by pushing or pulling the slider. Refer to the figure below.

ON-VEHICLE REPAIR

GLASS LID

Exploded View

INFOID:0000000003812884



1. Roof side finisher RH
2. Rear link cover
3. TORX bolt
4. Glass lid
5. Roof side finisher LH
6. Inner blind
7. Sunroof unit assembly
8. Sunroof motor assembly
9. Sunshade motor assembly

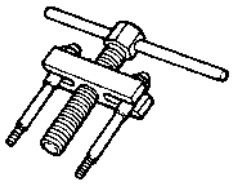
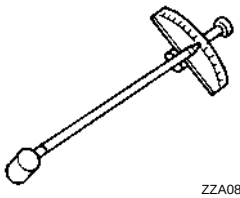
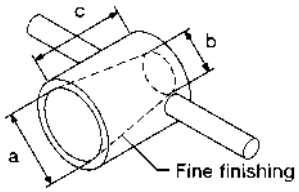
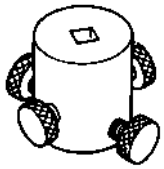
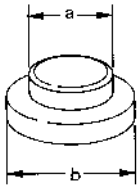
Refer to GI-4, "Components" for symbols in the figure.

PREPARATION

PREPARATION

Special Service Tools

INFOID:0000000003806309

Tool number Tool name	Description
ST27180001 Steering wheel puller  ZZA0819D	Removing steering wheel
ST3127S000 Preload gauge  ZZA0806D	Inspecting sliding torque, steering torque, and rotating torque for ball joint
KV48104400 Teflon ring correcting tool a: 50 mm (1.97 in) dia. b: 36 mm (1.42 in) dia. c: 100 mm (3.94 in)  S-NT550	Installing rack Teflon ring
KV48103400 Preload adapter  ZZA0824D	Inspecting rotating torque
ST35300000 Drift a: 45.1 mm (1.776 in) dia. b: 59.0 mm (2.323 in) dia.  ZZA0881D	Installing oil pump oil seal

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	38	F24	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3.CHECK HARNESS BETWEEN TCM AND CVT UNIT (TORQUE CONVERTER CLUTCH SOLENOID VALVE) (PART 2)

Check continuity between TCM vehicle side harness connector terminal and ground.

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	38		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to TM-63, "Component Inspection (Torque Converter Clutch Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-168, "Exploded View".

5.DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-153, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Torque Converter Clutch Solenoid Valve)

INFOID:0000000003848979

1.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	12		3.0 – 9.0 Ω

Is the inspection result normal?

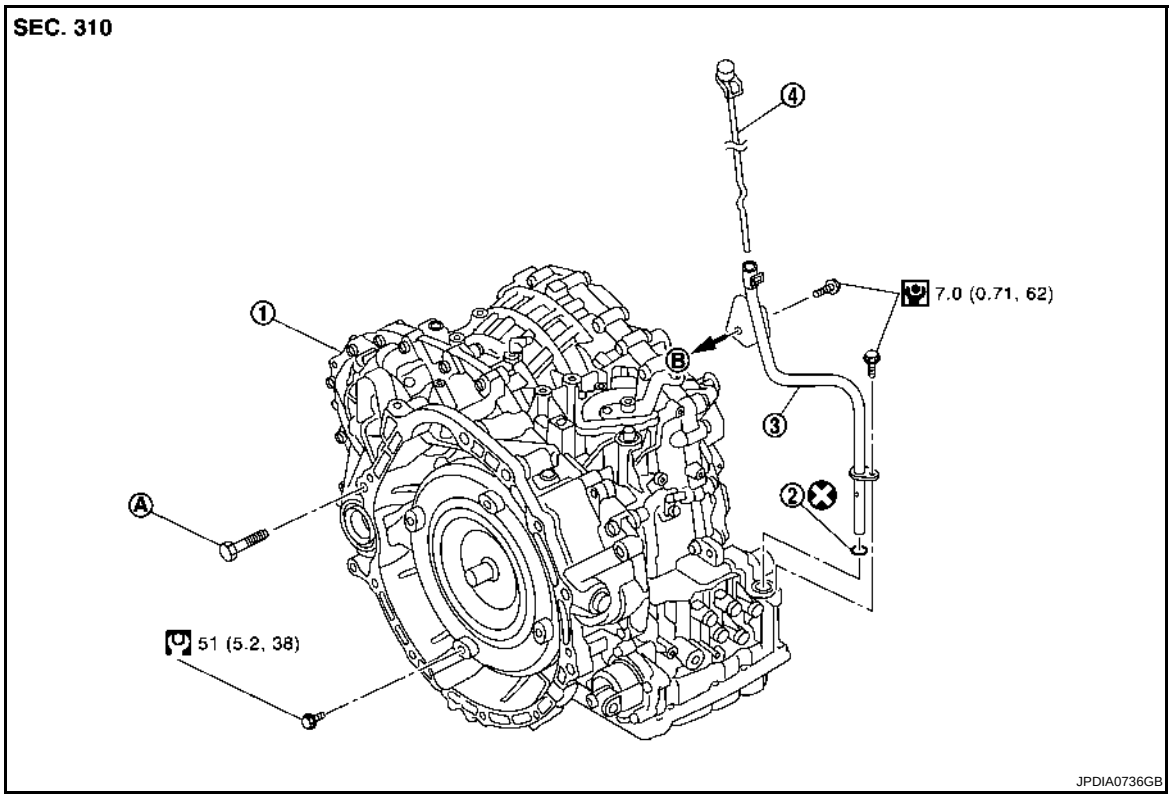
YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-168, "Exploded View".

REMOVAL AND INSTALLATION

TRANSAXLE ASSEMBLY

Exploded View

INFOID:0000000003806551



1. Transaxle assembly
2. O-ring
3. CVT fluid charging pipe
4. CVT fluid level gauge
A. For tightening torque, refer to TM-332, "Removal and Installation".
B. To water outlet

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000003806552

WARNING:
Never remove the reservoir tank cap when the engine is hot. Serious burns could occur from high pressure engine coolant escaping from the reservoir tank.

REMOVAL

1. Remove the engine, the transaxle assembly and front suspension member. Refer to EM-67, "Exploded View".
2. Lift with hoist and separate engine, transaxle assembly from front suspension member. Refer to EM-67, "Exploded View".
3. Remove air breather hose. Refer to TM-328, "Exploded View".
4. Remove CVT fluid level gauge and CVT fluid charging pipe.
5. Disconnect the following connectors:
   - Primary speed sensor connector
   - Secondary speed sensor connector
   - PNP switch connector
   - CVT unit connector
6. Remove crankshaft position sensor (POS). Refer to EM-38, "Exploded View".