SECTION TRANSAXLE & TRANSMISSION

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PRECAUTION PRECAUTIONS

Precaution for Technicians Using Medical Electric

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OPERATION PROHIBITION

WARNING:

- Parts with strong magnet is used in this vehicle.
- Technicians using a medical electric device such as pacemaker must never perform operation on the vehicle, as magnetic field can affect the device function by approaching to such parts.

NORMAL CHARGE PRECAUTION

WARNING:

- If a technician uses a medical electric device such as an implantable cardiac pacemaker or an implantable cardioverter defibrillator, the possible effects on the devices must be checked with the device manufacturer before starting the charge operation.
- As radiated electromagnetic wave generated by on board charger at normal charge operation may
 effect medical electric devices, a technician using a medical electric device such as implantable cardiac pacemaker or an implantable cardioverter defibrillator must not enter the vehicle compartment
 (including luggage room) during normal charge operation.

PRECAUTION AT TELEMATICS SYSTEM OPERATION

WARNING:

- If a technician uses implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), avoid the device implanted part from approaching within approximately 220 mm (8.66 in) from interior/exterior antenna.
- The electromagnetic wave of TCU might affect the function of the implantable cardiac pacemaker or the implantable cardioverter defibrillator (ICD), when using the service, etc.
- If a technician uses other medical electric devices than implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), the electromagnetic wave of TCU might affect the function of the device. The possible effects on the devices must be checked with the device manufacturer before TCU use.

PRECAUTION AT INTELLIGENT KEY SYSTEM OPERATION

WARNING:

- If a technician uses implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), avoid the device implanted part from approaching within approximately 220 mm (8.66 in) from interior/exterior antenna.
- The electromagnetic wave of Intelligent Key might affect the function of the implantable cardiac pacemaker or the implantable cardioverter defibrillator (ICD), at door operation, at each request switch operation, or at engine starting.
- If a technician uses other medical electric devices than implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), the electromagnetic wave of Intelligent Key might affect the function of the device. The possible effects on the devices must be checked with the device manufacturer before Intelligent Key use.

Point to Be Checked Before Starting Maintenance Work

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The high voltage system may starts automatically. It is required to check that the timer air conditioner and timer charge (during EVSE connection) are not set before starting maintenance work. NOTE:

If the timer air conditioner or timer charge (during EVSE connection) is set, the high voltage system starts automatically even when the power switch is in OFF state.

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS

< PRECAUTION >

[REDUCTION GEAR]

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 power switch ON, 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 power switch OFF, disconnect the 12V battery, and wait at least 3 minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc to prevent damage to windshield.

High Voltage Precautions

DANGER:

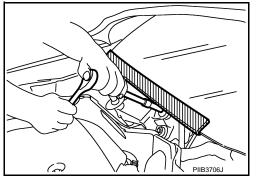
Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.
- Be sure to wear insulated protective equipment before beginning work on the high voltage system.
- Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.



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< PRECAUTION >

HIGH VOLTAGE HARNESS AND EQUIPMENT IDENTIFICATION

All the high voltage harnesses and connectors are orange. The Li-ion battery and other high voltage devices include an orange high voltage label. Never touch these harnesses and high voltage parts.

HANDLING OF HIGH VOLTAGE HARNESS AND TERMINALS

Immediately insulate disconnected high voltage connectors and terminals with insulating tape.

REGULATIONS ON WORKERS WITH MEDICAL ELECTRONICS

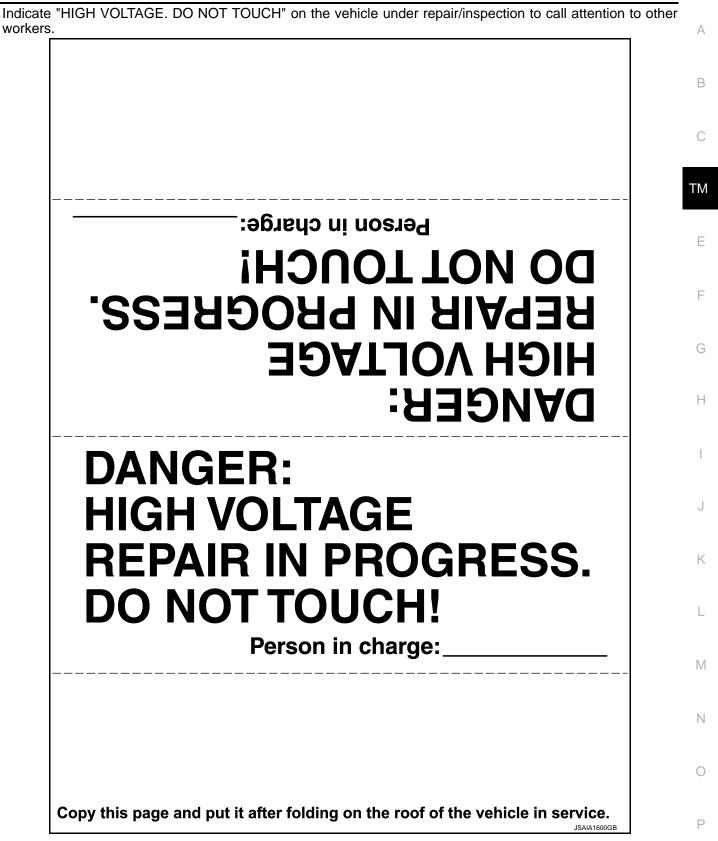
WARNING:

The vehicle contains parts that contain powerful magnets. If a person who is wearing a heart pacemaker or other medical device is close to these parts, the medical device may be affected by the magnets. Such persons must not perform work on the vehicle.

PROHIBITED ITEMS TO CARRY DURING THE WORK

Hybrid vehicles and electric vehicles contain parts with high voltage and intense magnetic force. Never carry metal products and magnetic recording media (e.g. cash card, prepaid card) to repair/inspect high voltage parts. If this is not observed, the metal products may create a risk of short circuit and the magnetic recording media may lose their magnetic recording.

POSTING A SIGN OF "DANGER! HIGH VOLTAGE AREA. KEEP OUT"



Precautions for Removing Battery Terminal

• When removing the 12V battery terminal, turn OFF the power switch and wait at least 5 minutes.

NOTE:

< PRECAUTION >

ECU may be active for several minutes after the power switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- Always disconnect the battery terminal within 60 minutes after turning OFF the power switch. Even when the power switch is OFF, the 12V battery automatic charge control may automatically start after a lapse of 60 minutes from power switch OFF.
- Disconnect 12V battery terminal according to the following steps.

WORK PROCEDURE

 Check that EVSE is not connected. NOTE:

If EVSE is connected, the air conditioning system may be automatically activated by the timer A/C function.

- 2. Turn the power switch OFF \rightarrow ON \rightarrow OFF. Get out of the vehicle. Close all doors (including back door).
- 3. Check that the charge status indicator lamp does not blink and wait for 5 minutes or more. **NOTE:**

If the battery is removed within 5 minutes after the power switch is turned OFF, plural DTCs may be detected.

- 4. Remove 12V battery terminal within 60 minutes after turning the power switch OFF \rightarrow ON \rightarrow OFF. CAUTION:
 - After all doors (including back door) are closed, if a door (including back door) is opened before battery terminals are disconnected, start over from Step 1.
 - After turning the power switch OFF, if "Remote A/C" is activated by user operation, stop the air conditioner and start over from Step 1.
 NOTE:

Once the power switch is turned $ON \rightarrow OFF$, the 12V battery automatic charge control does not start for approximately 1 hour.

• For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the power switch.

NOTE:

If the power switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

• After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC. **NOTE:**

The removal of 12V battery may cause a DTC detection error.

DO BATTERY BATTERY SEF289H

< PREPARATION > PREPARATION

PREPARATION

Commercial Service Tools

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Tool name		Description
nsulated gloves Guaranteed insulation performance for 1000V/300A]	\wedge	Removing and installing high voltage components
-	AINS &	
	JMCIA0149ZZ	
eather gloves Use leather gloves that can fasten the		Removing and installing high voltage components
vrist tight]		Protect insulated gloves
	JPCIA0066ZZ	
nsulated safety shoes	~	Removing and installing high voltage com- ponents
	JPCIA0011ZZ	
Safety glasses [ANSI Z87.1]		 Removing and installing high voltage components
		To protect eye from the spatter on the work to electric line
	JPCIA0012ZZ	
Face shield		 Removing and installing high voltage components To protect face from the spatter on the
		work to electric line
	JPCIA0167ZZ	

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PREPARATION

< PREPARATION >

[REDUCTION GEAR]

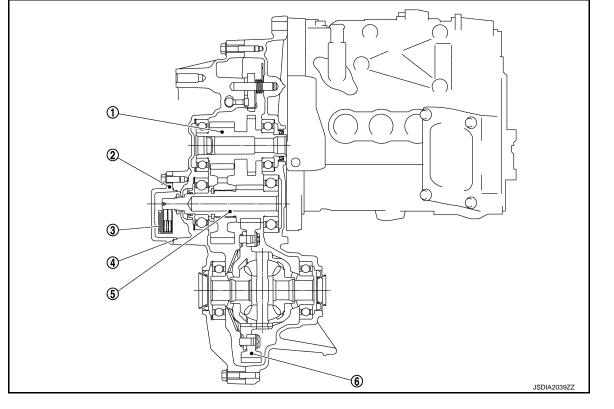
Tool name		Description
Insulated helmet	JPCIA0013ZZ	Removing and installing high voltage components
Insulation resistance tester (Multi tester)	JPCIA0014ZZ	Measuring insulation resistance, voltage, and resistance

< SYSTEM DESCRIPTION >

[REDUCTION GEAR]

SYSTEM DESCRIPTION STRUCTURE AND OPERATION

Sectional View



1. Input gear

2. Brush cover

4. O-ring

- 5. Main shaft

- Earth brush 3.
- 6. Final gear

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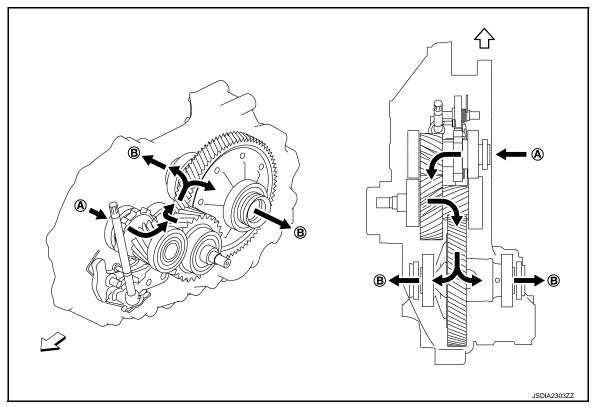
STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

Power Transfer Diagram

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[REDUCTION GEAR]



- A. From traction motor
- B. To drive shaft

: Vehicle front

< PERIODIC MAINTENANCE >

PERIODIC MAINTENANCE REDUCTION GEAR OIL

Inspection

OIL LEAKAGE

Check reduction gear surrounding area (oil seal, drain plug, and filler plug etc.) for oil leakage.

OIL LEVEL

• Remove filler plug (1) and gasket. Then check that oil is filled up from mounting hole for the filler plug.

CAUTION:

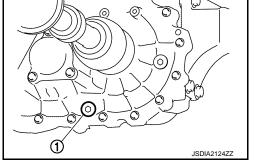
Turn the power switch OFF while checking oil level.

- Set a gasket on filler plug and install it on reduction gear and tighten to the specified torque. Refer to <u>TM-19</u>, "Exploded View".
 CAUTION:
 - Never reuse gasket.
 - If foreign matter, such as gear abrasion powder, is on the magnet of the filler plug, wipe it free of adherents before installation.

Draining and Refilling

DRAINING

- 1. Turn the power switch OFF.
- 2. Remove filler plug.
- 3. Remove drain plug (1) and drain gear oil.
- Set a gasket on drain plug and install it to reduction gear and tighten to the specified torque. Refer to <u>TM-19</u>, "Exploded View". CAUTION:
 - Never reuse gasket.
 - If foreign matter, such as gear abrasion powder, is on the magnet of the drain plug, wipe it free of adherents before installation.



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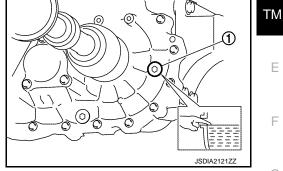
REFILLING

1. Remove filler plug (1). Fill with new gear oil until oil level reaches the specified level near filler plug mounting hole.

Oil grade: Refer to MA-13, "FOR NORTH
AMERICA : Fluids and Lubricants"
(For North America), MA-14, "FOR
BRAZIL : Fluids and Lubricants" (For
Brazil).Oil capacity: Refer to TM-23, "Conoral Specifica"

Oil capacity : Refer to <u>TM-23, "General Specifica-</u> tions".

- After refilling oil, check oil level. Set a gasket on filler plug, then install it to reduction gear. Refer to <u>TM-19</u>, "Exploded View". CAUTION:
 - Never reuse gasket.
 - If foreign matter, such as gear abrasion powder, is on the magnet of the filler plug, wipe it free of adherents before installation.



[REDUCTION GEAR]

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< REMOVAL AND INSTALLATION > **REMOVAL AND INSTALLATION** EARTH BRUSH

Exploded View

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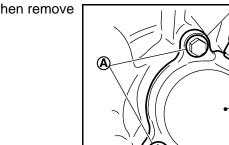
SEC. 320 C 9.0 (0.92, 80) 0 19.5 (2.0, 14) G 33 JSDIA2923GB 1. Reduction gear 2. Earth brush 3. O-ring Brush cover : Vehicle front : Always replace after every disassembly. : N·m (kg-m, ft-lb)

Removal and Installation

REMOVAL

4.

- 1. Remove front under cover. Refer to EXT-23, "FRONT UNDER COVER : Exploded View".
- 2. Disconnect breather hose (1) from brush cover (2), then remove the brush cover bolts (A) and remove brush cover.



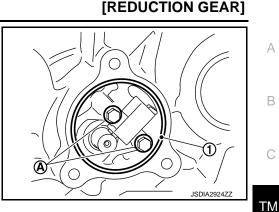
(A) JSDIA2106ZZ

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EARTH BRUSH

< REMOVAL AND INSTALLATION >

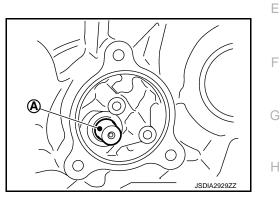
- Remove O-ring (1). Remove brush fixing bolts (A), then remove earth brush.
 CAUTION:
 - Carefully remove earth brush, because the spring in the earth brush pushes out the brush.
 - Never touch brush area.



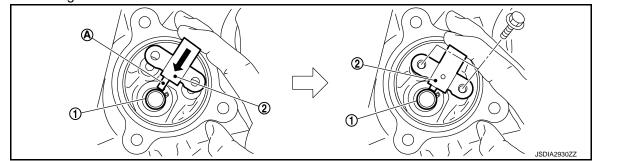
INSTALLATION

Note the following, and install in the reverse order of removal. **CAUTION:**

- Degrease shaft surface (brush contact surface) (A), and verify that there is no dust or other substance on it, then install the earth brush.
- Degrease brush surface, and verify that there is no dust or other substance on it, then install the earth brush.
- Never reuse O-ring.
- Never apply oil to O-ring. Verify that there is no oil on it, then install O-ring.
- Never touch brush area.

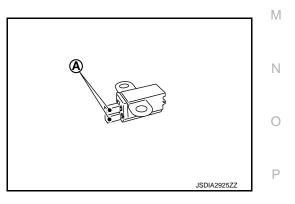


• When assembling earth brush, do not touch brush area (A), press earth brush (2) onto shaft (1) and fasten with brush fixing bolt.



CAUTION:

Never touch brush area (A).



When Replacing With New Part

NOTE:

A new earth brush includes a stopper for preventing brush pop-out. Install with stopper attached.

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EARTH BRUSH

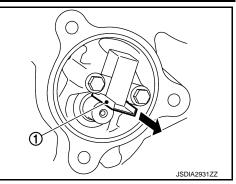
< REMOVAL AND INSTALLATION >

When installing a new earth brush, pull out stopper (1) after installation, allowing brush to contact shaft.

CAUTION:

Before installation, degrease the stopper surface (shaft side) and check that the surface is free of foreign matter.

[REDUCTION GEAR]



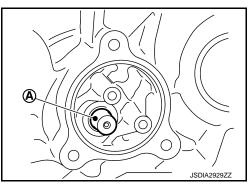
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Inspection

INSPECTION OF REDUCTION GEAR MAIN SHAFT

Check that there is no substance such as oil and dust on main shaft surface (A), and that no corrosion has occurred.

- When substances such as oil and dust are adherent to the shaft surface (brush contact surface), remove them and degrease the shaft surface to install brush.
- When there is corrosion on shaft surface, remove corrosion to install brush.



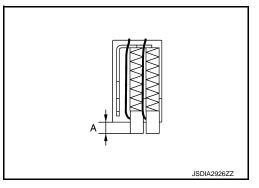
INSPECTION FOR BRUSH WEAR

Remove earth brush and measure amount of protrusion (A). If it is at or below limit value, replace earth brush.

Brush wear limit : TM-23, "Earth Brush"

CAUTION:

When reusing with original parts, never allow oil to contact brush area. Refer to <u>TM-14, "Removal and Installation"</u>.



< REMOVAL AND INSTALLATION > BREATHER HOSE

[REDUCTION GEAR]

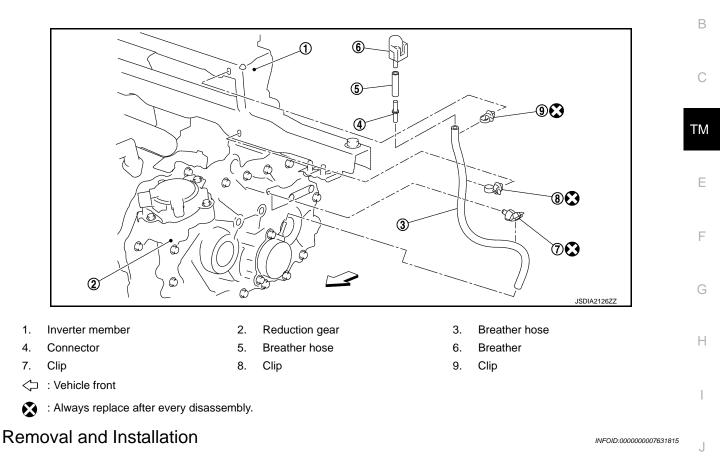
Exploded View

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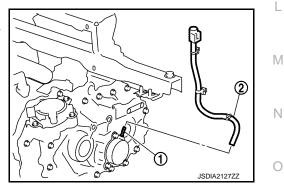


REMOVAL

- 1. Remove front under cover. Refer to EXT-23, "FRONT UNDER COVER : Exploded View".
- 2. Use a suitable tool and remove clip, then pull breather hose off brush cover tube part of reduction gear.

INSTALLATION

1. Face a paint mark on breather hose toward left side of vehicle, then fit breather hose (2) over brush cover tube part (1) of reduction gear.



NOTE:

BREATHER HOSE

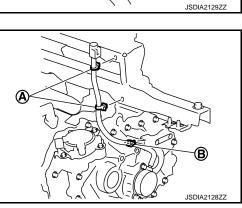
< REMOVAL AND INSTALLATION >

[REDUCTION GEAR]

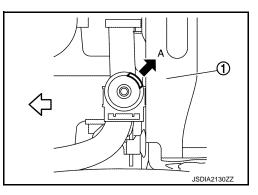
As shown in figure, fit breather hose onto brush cover tube part all the way to its base (A).

Install clips (A) into inverter member holes and clip (B) into reduction gear bolt hole.
 CAUTION:

Never reuse resin clip (hose clip).



- 3. Face breather opening in direction (A) shown in figure.
 - (1) : Inverter member
 - : Vehicle front



< UNIT REMOVAL AND INSTALLATION > UNIT REMOVAL AND INSTALLATION

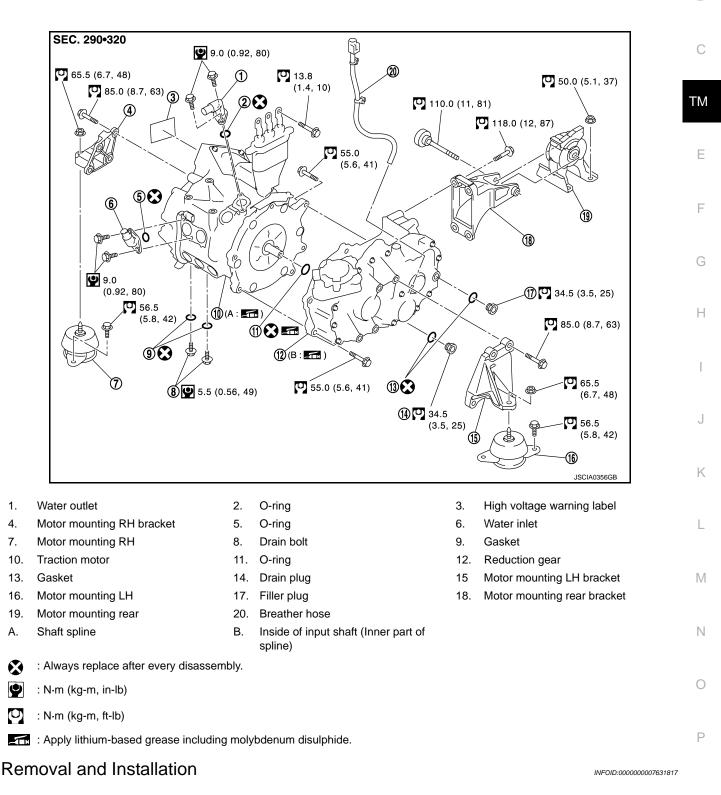
REDUCTION GEAR

Exploded View

[REDUCTION GEAR]

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WARNING:

• Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are han-

< UNIT REMOVAL AND INSTALLATION >

dled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

- Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- To prevent the removed service plug from being connected by mistake during the procedure, always carry it in your pocket or put it in the tool box.
- Be sure to wear insulating protective equipment consisting of glove, shoes, face shield and glasses before beginning work on the high voltage system.
- Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.
- Refer to TM-5, "High Voltage Precautions".

CAUTION:

There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.

REMOVAL

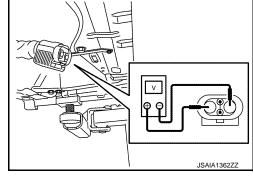
WARNING:

Disconnect high voltage. Refer to <u>GI-31, "How to Disconnect High Voltage"</u>.

- 1. Check voltage in high voltage circuit. (Check that condenser are discharged.)
- a. Lift up the vehicle and remove Li-ion battery under covers. Refer to <u>EVB-161</u>, "<u>Exploded View</u>" (TYPE 1), <u>EVB-377</u>, "<u>Exploded View</u>" (TYPE 2), <u>EVB-597</u>, "<u>Exploded View</u>" (TYPE 3), or <u>EVB-829</u>, "<u>Exploded View</u>" (TYPE 4). To identify vehicle type, refer to <u>EVB-14</u>, "<u>How to Check Vehicle Type</u>".
- b. Disconnect high voltage harness connector from front side of Li-ion battery. Refer to <u>EVB-161, "Removal and Installation"</u> (TYPE 1), <u>EVB-377, "Removal and Installation"</u> (TYPE 2), <u>EVB-597, "Removal and Installation"</u> (TYPE 3), or <u>EVB-829, "Removal and Installation"</u> (TYPE 4). To identify vehicle type, refer to <u>EVB-14, "How to Check Vehicle Type"</u>.
- c. Measure voltage between high voltage harness connector terminals.

DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.



Standard

: 5 V or less

CAUTION:

For voltage measurements, use a tester which can measure to 500 V or higher.

- 2. Drain coolant from radiator. Refer to HCO-11. "Draining and Refilling".
- 3. Remove traction motor inverter. Refer to <u>TMS-115</u>, "Removal and Installation".
- 4. Drain reduction gear oil from reduction gear. Refer to <u>TM-13, "Draining and Refilling"</u>.
- 5. Remove traction motor and reduction gear from vehicle together as suspension member assembly. Refer to <u>FSU-22, "Removal and Installation"</u>.
- 6. Remove right and left front drive shafts. Refer to <u>FAX-21, "RIGHT SIDE : Removal and Installation"</u> (RH) and <u>FAX-20, "LEFT SIDE : Removal and Installation"</u> (LH).
- Install motor slinger onto traction motor, then lift traction motor with hoist to hold the position of traction motor.
 NOTE:

The traction motor does not become displaced when motor mounting and motor mounting bracket are removed.

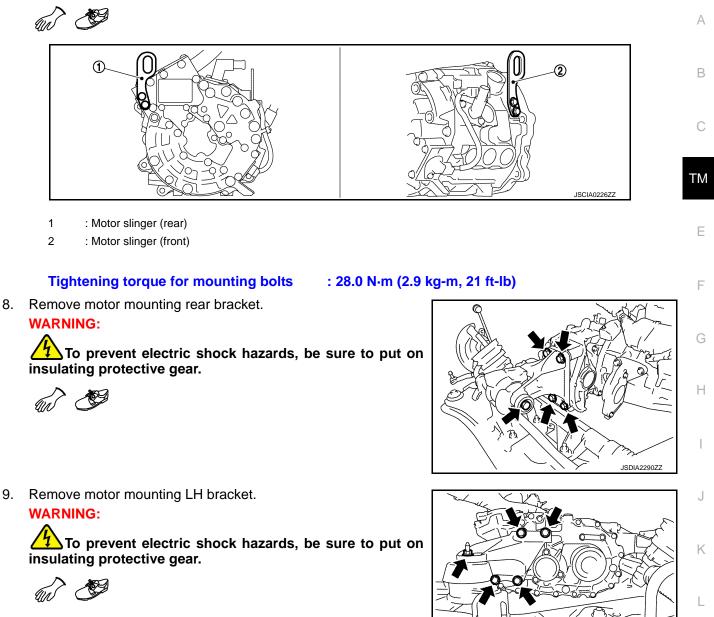
WARNING:

 \checkmark To prevent electric shock hazards, be sure to put on insulating protective gear.

TM-20

REDUCTION GEAR

< UNIT REMOVAL AND INSTALLATION >



10. Remove bolts fixing traction motor and reduction gear, then remove reduction gear.

WARNING:

To prevent electric shock hazards, be sure to put on insulating protective gear.

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INSTALLATION Note the following, and install in the reverse order of removal.

WARNING:

To prevent electric shock hazards, be sure to put on insulating protective gear.

CAUTION:

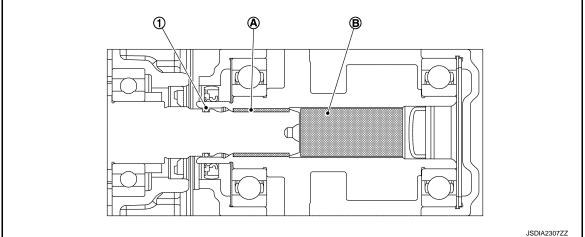
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- < UNIT REMOVAL AND INSTALLATION >
- Be sure to reinstall high voltage harness clips in their original positions. If a clip is damaged, replace it with a new clip before installing.
- Be sure to perform correct air bleeding after adding coolant. Refer to <u>HCO-11, "Draining and Refill-ing"</u>.
- Before installing reduction gear to traction motor, apply recommended grease to full periphery of shaft spline (A). Inject recommended grease [8.5 g (0.3 oz) min., 20 g (0.7 oz) max.] into inner part of reduction gear input shaft spline (B). Do not damage O-ring (1) when installing reduction gear.



CAUTION:

Clean the grease applying area to remove old grease and abrasion powder before applying grease.

- After all parts are installed, be sure to check equipotential of traction motor, electric compressor, and traction motor inverter.
- Refer to TMS-126, "Inspection and Adjustment". (Traction motor)
- Refer to <u>HA-50, "Inspection"</u>. (Electric compressor)
- Refer to TMS-121, "Inspection and Adjustment". (Traction motor inverter)

Adjustment

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It is necessary to clear the P position learning value and perform the relearning of the P position after the reduction gear is removed and installed or replaced. Refer to <u>TM-57</u>, "Work Procedure".

SERVICE DATA AND SPECIFICATIONS (SDS) < SERVICE DATA AND SPECIFICATIONS (SDS) [REDUCTION GEAR] SERVICE DATA AND SPECIFICATIONS (SDS) А SERVICE DATA AND SPECIFICATIONS (SDS) **General Specifications** INFOID:000000007631819 В RE1F61A Reduction gear model С 7.937 Gear ratio 17 Input gear Number of teeth Main gear (IN / OUT) 31 / 17 ТΜ Final gear 74 Oil capacity (Approx.) ℓ (US pt, Imp pt) 1.1 (2-3/8, 1-7/8) Ε

Earth Brush

Unit: mm (in)

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Item Limit	
Brush wear amount 4.0 (0.157)	

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< PRECAUTION >

PRECAUTION PRECAUTIONS

Precaution for Technicians Using Medical Electric

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OPERATION PROHIBITION

WARNING:

- Parts with strong magnet is used in this vehicle.
- Technicians using a medical electric device such as pacemaker must never perform operation on the vehicle, as magnetic field can affect the device function by approaching to such parts.

NORMAL CHARGE PRECAUTION

WARNING:

- If a technician uses a medical electric device such as an implantable cardiac pacemaker or an implantable cardioverter defibrillator, the possible effects on the devices must be checked with the device manufacturer before starting the charge operation.
- As radiated electromagnetic wave generated by on board charger at normal charge operation may
 effect medical electric devices, a technician using a medical electric device such as implantable cardiac pacemaker or an implantable cardioverter defibrillator must not enter the vehicle compartment
 (including luggage room) during normal charge operation.

PRECAUTION AT TELEMATICS SYSTEM OPERATION

WARNING:

- If a technician uses implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), avoid the device implanted part from approaching within approximately 220 mm (8.66 in) from interior/exterior antenna.
- The electromagnetic wave of TCU might affect the function of the implantable cardiac pacemaker or the implantable cardioverter defibrillator (ICD), when using the service, etc.
- If a technician uses other medical electric devices than implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), the electromagnetic wave of TCU might affect the function of the device. The possible effects on the devices must be checked with the device manufacturer before TCU use.

PRECAUTION AT INTELLIGENT KEY SYSTEM OPERATION

WARNING:

- If a technician uses implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), avoid the device implanted part from approaching within approximately 220 mm (8.66 in) from interior/exterior antenna.
- The electromagnetic wave of Intelligent Key might affect the function of the implantable cardiac pacemaker or the implantable cardioverter defibrillator (ICD), at door operation, at each request switch operation, or at engine starting.
- If a technician uses other medical electric devices than implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), the electromagnetic wave of Intelligent Key might affect the function of the device. The possible effects on the devices must be checked with the device manufacturer before Intelligent Key use.

Point to Be Checked Before Starting Maintenance Work

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The high voltage system may starts automatically. It is required to check that the timer air conditioner and timer charge (during EVSE connection) are not set before starting maintenance work. NOTE:

If the timer air conditioner or timer charge (during EVSE connection) is set, the high voltage system starts automatically even when the power switch is in OFF state.

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS

< PRECAUTION >

[ELECTRIC SHIFT]

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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

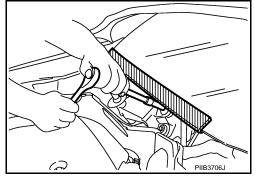
WARNING:

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 power switch ON, 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 power switch OFF, disconnect the 12V battery, and wait at least 3 minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc to prevent damage to windshield.



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BATTERY

Precautions for Removing Battery Terminal

 When removing the 12V battery terminal, turn OFF the power switch and wait at least 5 minutes.
 NOTE:

ECU may be active for several minutes after the power switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- Always disconnect the battery terminal within 60 minutes after turning OFF the power switch. Even when the power switch is OFF, the 12V battery automatic charge control may automatically start after a lapse of 60 minutes from power switch OFF.
- Disconnect 12V battery terminal according to the following steps.

WORK PROCEDURE

1. Check that EVSE is not connected.

NOTE:

If EVSE is connected, the air conditioning system may be automatically activated by the timer A/C function.

2. Turn the power switch OFF \rightarrow ON \rightarrow OFF. Get out of the vehicle. Close all doors (including back door).

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< PRECAUTION >

3. Check that the charge status indicator lamp does not blink and wait for 5 minutes or more. **NOTE:**

If the battery is removed within 5 minutes after the power switch is turned OFF, plural DTCs may be detected.

- 4. Remove 12V battery terminal within 60 minutes after turning the power switch OFF \rightarrow ON \rightarrow OFF. CAUTION:
 - After all doors (including back door) are closed, if a door (including back door) is opened before battery terminals are disconnected, start over from Step 1.
 - After turning the power switch OFF, if "Remote A/C" is activated by user operation, stop the air conditioner and start over from Step 1.

NOTE:

Once the power switch is turned $ON \rightarrow OFF$, the 12V battery automatic charge control does not start for approximately 1 hour.

• For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the power switch.

NOTE:

If the power switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

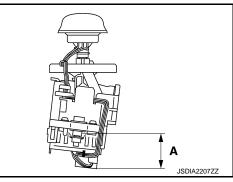
• After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC. **NOTE:**

The removal of 12V battery may cause a DTC detection error.

General Precautions

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- Never turn the power switch ON while the selector lever is in the D or R position. Otherwise, the vehicle may start abruptly resulting in an accident.
- Never shift the selector lever to the R position while the vehicle is moving forward, or to the D position while moving backward, or press the P position switch while the vehicle is in motion. Otherwise, excessive force may be applied to the drive system causing damage.
- Never allow the vehicle to coast backward while the selector lever is in the D position or forward while the selector lever is in the R position.
- Part A shown in the figure contains a strong magnet. Persons with an electro-medical apparatus should keep away from this area. Otherwise, the magnet may cause the electro-medical apparatus to malfunction.
- Keep magnetic objects, such as magnetic cards, and metal products (e.g. watches) away from the area surrounding the magnet.



DESCRIPTION

< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION DESCRIPTION

Description

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[ELECTRIC SHIFT]

- Instead of the conventional mechanical shift mechanism, the electric shift system is adopted which electrically detects shifting operation and locks/unlocks the parking mechanism by operating the parking actuator.
- The momentary-type selector lever is adopted for mouse-like fine shift operability.
- The automatic P position function, which automatically shifts the gear to the P position if the power switch is turned OFF in the R, N, or D position, is adopted.
- For improved functionality and operability, the P position switch, which allows direct switching to the P position at the touch of the switch, is provided on the top of the selector lever.

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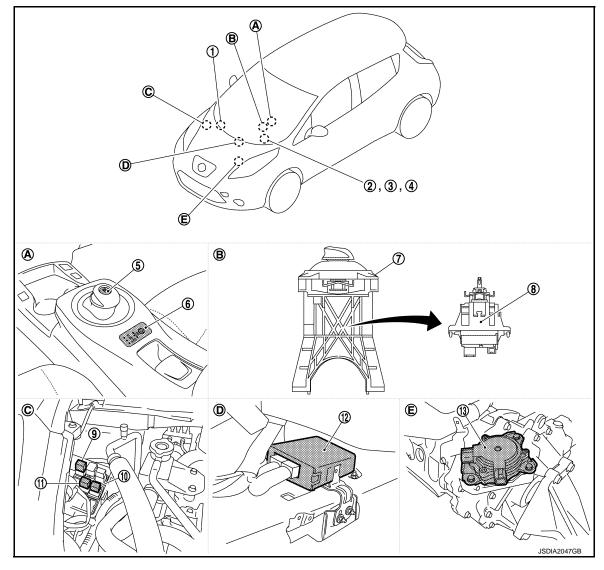
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< SYSTEM DESCRIPTION >

COMPONENT PARTS

Component Parts Location

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A. Finisher

D.

- B. Electric shift selector
- E. Reduction gear, upper
- C. Motor room

COMPONENT DESCRIPTION

Center console, under

No.	Name	Function
1	VCM	Switches the driving condition, according to a shift position signal received from the electric shift control module.
2	Combination meter	Sounds a buzzer, according to a command sent from the electric shift control module when the shift reject function is activated.
3	Shift position indicator	TM-32, "Shift Position Indicator"
4	Electric shift warning lamp	TM-30, "Electric Shift Warning Lamp"
5	P position switch	TM-31, "P Position Switch"
6	Selector indicator	TM-32, "Selector Indicator"
7	Electric shift selector	TM-30, "Electric Shift Selector"
8	Electric shift sensor	TM-31, "Electric Shift Sensor"

COMPONENT PARTS

< SYSTEM DESCRIPTION >

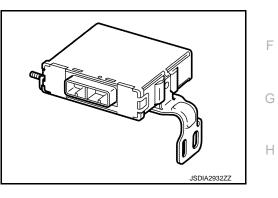
[ELECTRIC SHIFT]

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No.	Name	Function	^
9	Electric shift power supply relay	The electric shift power supply relay is turned ON by the electric shift control module when the power switch is turned ON and supplies a system voltage to the electric shift control module.	A
10	Parking actuator relay A	Parking actuator relay A is turned ON by the electric shift control module when the power switch is turned ON and supplies power to motor coil A located in the parking actuator.	В
11	Parking actuator relay B	Parking actuator relay B is turned ON by the electric shift control module when the power switch is turned ON and supplies power to motor coil B located in the parking actuator.	С
12	Electric shift control module	TM-29. "Electric Shift Control Module"	ТМ
13	Parking actuator	TM-29, "Parking Actuator"	

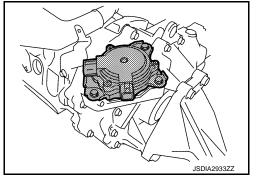
Electric Shift Control Module

- The electric shift control module is started by the power switch signal and wake-up signal transmitted from BCM.
- The electric shift control module determines the shift position based on the shift position data (ON/OFF signal) from the electric shift sensor, and transmits the shift position data to VCM via EV system CAN.
- The electric shift control module operates the parking actuator based on the signal from the P position switch.



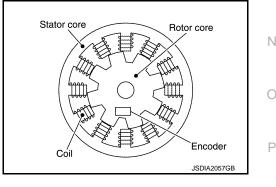
Parking Actuator

- The parking actuator is installed above the reduction gear.
- The parking actuator is operated by the signal from the electric shift control module and locks/unlocks the parking mechanism in the reducer.
- The parking actuator consists of the motor, encoder, angle sensor, and actuator reduction gear.



MOTOR

- A dual 3-phase SR motor is used.
- Two different types of coils are placed on the stator core around the motor and the current that passes through the coils in sequence generates the rotating force for the inner rotor core.



ENCODER

- The Hall IC type rotation angle sensor is used for higher accuracy in the detection of the rotor rotation angle.
- It detects the rotor rotation angle and outputs pulse signals to the electric shift control module.
- The electric shift control module controls the timing of the current feed to the coils optimally based on the signal from the encoder.

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COMPONENT PARTS

< SYSTEM DESCRIPTION >

ANGLE SENSOR

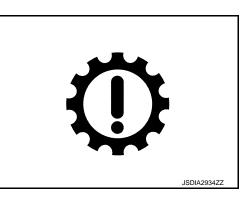
The Hall IC type angle sensor is used for higher accuracy in the detection of the manual plate angle.

ACTUATOR REDUCTION GEAR

The actuator reduction gear consists of a cycloidal gear and includes a motor with its torque amplified for secure operation under high torque-requiring conditions.

Electric Shift Warning Lamp

- The electric shift warning lamp illuminates if a malfunction occurs in the electric shift system.
- When the power switch is turned ON, the electric shift warning lamp illuminates for approximately 2 seconds for a bulb check and then turns OFF.



Electric Shift Selector

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Shift position	Operation/Function					
H (Home position)	The selector lever automatically moves back to the home position after it is operated.					
P (P position switch)	Completely stop the vehicle and push the P posi- tion switch on the top of the selector lever while depressing the brake pedal.					
R	While depressing the brake pedal, slide the selec- tor lever forward along the gate.	R (O)				
Ν	While depressing the brake pedal, slide the selec- tor lever to the left and hold it for approx. 1 second.					
D/ECO	 While depressing the brake pedal, slide the selector lever backward along the gate. If the selector lever is slid backward again while driving in the D position, the vehicle switches to ECO mode. To switch from ECO mode to the D position driving, slide the selector lever backward again. 					

NOTE:

- Shifting is not possible when the power switch is OFF or ACC.
- Buzzer sounds and shifting is not possible when the selector lever is shifted from the P position to another position without depressing the brake pedal while the power switch is ON.
- The gear always shifts to the N position when selector lever is shifted from the P position to another position while depressing the brake pedal while the power switch is ON.
- Direct shifting to the ECO mode from the P position is not possible.

< SYSTEM DESCRIPTION >

Electric Shift Sensor

• The electric shift sensor integrates 6 non-contact sensors (Hall IC) and transmits ON/OFF signals to the electric shift control module.

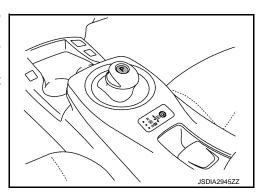
• The electric shift control module determines the shift position from the combination of the ON/OFF signals.

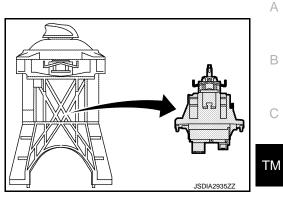
Electric shift control	Selector lever	P position	Electric shift sensor						P position SW		-
module recognition position		SW	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	F
Н	Н	No push	OFF	OFF	ON	OFF	OFF	ON	OFF	ON	-
Р	Н	Push	OFF	OFF	ON	OFF	OFF	ON	ON	OFF	(
R	R	No push	ON	ON	OFF	OFF	OFF	OFF	OFF	ON	-
Ν	Ν	No push	OFF	ON	ON	ON	OFF	OFF	OFF	ON	
D	D	No push	OFF	OFF	OFF	ON	ON	OFF	OFF	ON	-

P Position Switch

- The P position switch allows direct one-touch switching to the P position from any position while the vehicle is stopped.
- The P position switch does not have a function to cancel the P position.
- The P position switch transmits the ON/OFF signals of 2 contact switches to the electric shift control module.

Electric shift control	Selector lever P positi		n Electric shift sensor							tion SW		
ecognition tion	position	position	position	SW	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
1	Н	No push	OFF	OFF	ON	OFF	OFF	ON	OFF	ON		
>	Н	Push	OFF	OFF	ON	OFF	OFF	ON	ON	OFF		
ł	R	No push	ON	ON	OFF	OFF	OFF	OFF	OFF	ON		
J	Ν	No push	OFF	ON	ON	ON	OFF	OFF	OFF	ON		
)	D	No push	OFF	OFF	OFF	ON	ON	OFF	OFF	ON		





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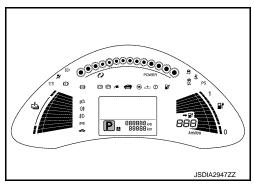
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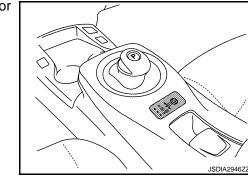
Selector Indicator

The selector indicator is located in the finisher area and the lamp for the currently selected shift position illuminates.

Shift Position Indicator

- The shift position indicator is located in the combination meter.
- The shift position indicator indicates the currently selected shift position.
- The shift position indicator turns OFF if a malfunction occurs in the electric shift system.





[ELECTRIC SHIFT]



STRUCTURE AND OPERATION

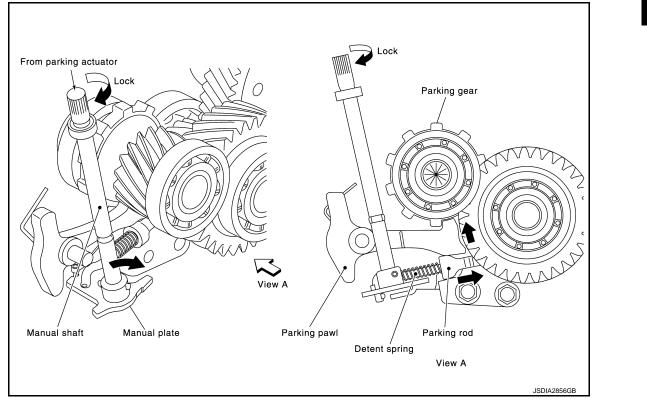
< SYSTEM DESCRIPTION >

STRUCTURE AND OPERATION

Operating Principle

PARKING MECHANISM

- The parking mechanism consists of the manual shaft, manual plate, detent spring, parking rod, parking pawl and parking gear, and it is locked/unlocked by the operation of the parking actuator.
- If the parking actuator is operated by the signal from the electric shift control module, the manual shaft and manual plate that is mechanically connected to the parking actuator rotates sliding the parking rod. The sliding parking rod pushes up the parking pawl, which engages with the parking gear locking the parking mechanism. ТΜ



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< SYSTEM DESCRIPTION >

SYSTEM

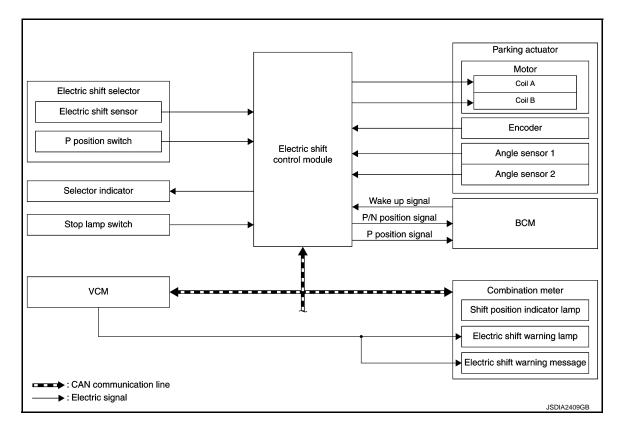
System Description

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[ELECTRIC SHIFT]

- The electric shift system detects each shift position electrically. In addition, in P position, the electric shift system activates the parking actuator, according to electrical signals received from the P position switch and brings the vehicle into the parking state.
- In the event of a malfunction in the electric shift system, the shift position indicator (in the combination meter) turns OFF and only the selector indicator (in the electric shift selector area) indicates the shift position.
- In the event of a malfunction in the electric shift system, the system enters fail-safe mode. Refer to <u>TM-45</u>, <u>"Fail-Safe"</u>.

SYSTEM DIAGRAM



< SYSTEM DESCRIPTION >

Circuit Diagram

[ELECTRIC SHIFT]



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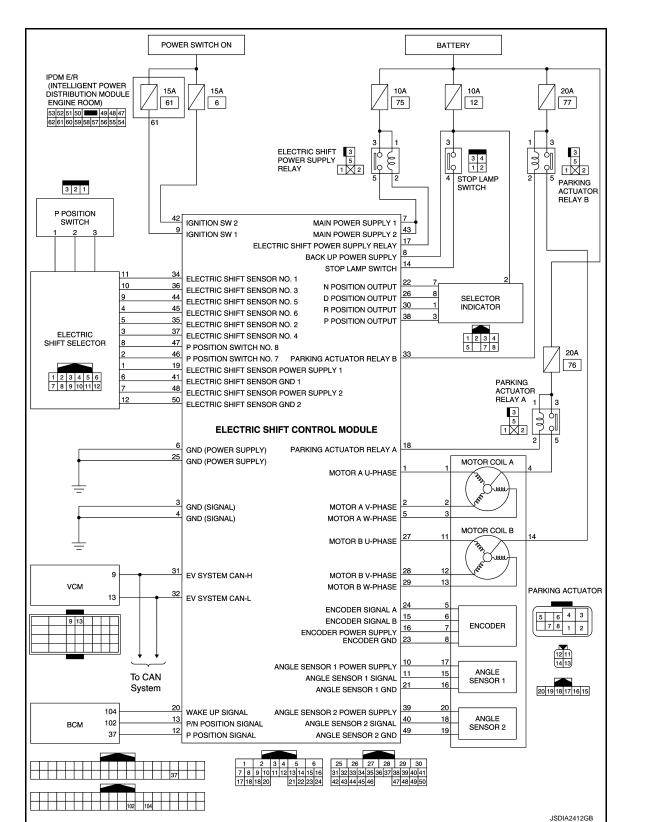
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SYSTEM

< SYSTEM DESCRIPTION >

Fail-Safe

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[ELECTRIC SHIFT]

DTC	Vehicle behavior						
P0571							
P0705	When shifting to the R position and the D position, the reaction becomes slower and it takes approximately 1 sec ond to complete shifting						
P0706	Shifting to the R position, N position and D position is prohibited						
Dozoo	Malfunction in P position	Shifting from the P position to another position is prohibited					
P0780	Malfunction in position other than P	Shifting to the P position is prohibited					
P1722		_					
B4000	Malfunction in P position	Shifting from the P position to another position is prohibited					
P1802	Malfunction in position other than P	Shifting to the P position is prohibited					
54000	Malfunction in P position	Shifting from the P position to another position is prohibited					
P1803	Malfunction in position other than P	Shifting to the P position is prohibited					
P1804							
P1811	Automatic P position system is disabled						
P1895							
P1896	When shifting to the R position and the ond to complete shifting	D position, the reaction becomes slower and it takes approximately 1 sec					
P1897	_						
P1899	_						
P189A	_						
P189B	_						
P189C		_					
P189D		_					
BLOOF	Malfunction in P position	Shifting from the P position to another position is prohibited					
P189E	Malfunction in position other than P	Shifting to the P position is prohibited					
P189F							
P18A0	_						
P18A1	_						
P18A2		_					
	Malfunction in P position	Shifting from the P position to another position is prohibited					
P18A3	Malfunction in position other than P	Shifting to the P position is prohibited					
	Malfunction in P position	Shifting from the P position to another position is prohibited					
P18A4	Malfunction in position other than P Shifting to the P position is prohibited						
P18A6		_					
P18A7	Shifting operation is prohibited						
P18A8	Pushing the P position switch does not switch the to the P position						
	Malfunction in P position	Shifting from the P position to another position is prohibited					
P18A9	Malfunction in position other than P Shifting to the P position is prohibited						
P18AA	Shifting from the P position to another position is prohibited						
P18AB	Automatic P position system may be d	isabled					
P18AC		_					
P18AD		_					
P18AE							

SYSTEM

< SYSTEM DESCRIPTION >

DTC	Vehicle behavior			
U1000	EV system CAN with VCM blocked	Shifting to the R position and the D position is prohibited		
01000	Other than the above	_		
U1010	Shifting to the R position and the D position is prohibited			
U1086		_		

Protection Control

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[ELECTRIC SHIFT]

If shifting from the P position to another position and shifting from another position to the P position are repeated within a short period of time, it may become impossible to shift from the P position to another position and from another position to the P position for system protection. In this case, the system automatically returns to the normal state allowing shifting after approximately 10 seconds.

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Revision: 2014 June

DIAGNOSIS SYSTEM (ELECTRIC SHIFT)

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (ELECTRIC SHIFT) DIAGNOSIS DESCRIPTION

DIAGNOSIS DESCRIPTION : System Description

This is an on-board trouble diagnosis system which automatically detects malfunction. Detected malfunction is memorized in ECU as DTC. Diagnosis information can be confirmed using CONSULT.

DIAGNOSIS DESCRIPTION : DTC

• DTC (P0571, P0705, P0780, etc.) is specified by SAE J2012/ISO 15031-6.

• Electric shift control module memorizes DTC when malfunction is detected. It can memorize plural DTCs.

DIAGNOSIS DESCRIPTION : Counter System

Counter system counts up at every operation of power switch from OFF to ON under condition that the same malfunction is not detected. On the other hand, if the same DTC as memorized one is detected again, the count is reset and the counter system counts up again from "0".

CONSULT Function

APPLICABLE ITEMS

Mode	Function description	
All DTC Reading	Display all DTCs or diagnostic items that all ECUs are recording and judging	
Work Support	This mode enables a technician to adjust some devices faster and more accurately.	
Self Diagnostic Results	Retrieve DTC from ECU and display diagnostic items.	
Data Monitor	Monitor the input/output signal of the control unit in real time.	
CAN Diagnosis	This mode displays a network diagnosis result about CAN by diagram.	
CAN Diagnosis Support Monitor	It monitors the status of CAN communication.	
ECU Identification	Display the ECU identification number (part number etc.) of the selected system.	

WORK SUPPORT

Item name	Description
P POSITION LEARNING VALUE	Erase the P position stored in the electric shift control module. Refer to <u>TM-57</u> , "Work Proce-
CLEAR	<u>dure"</u> .

SELF DIAGNOSTIC RESULTS

Display Item List Refer to TM-47, "DTC Index".

How to Read DTC

DTC is displayed on "Self Diagnostic results" of CONSULT.

When DTC is currently detected, "CRNT" is displayed. If "PAST" is displayed, it shows a malfunction occurred in the past.The trip number of drive without malfunction of concerned DTC can be confirmed with "IGN counter" inside "FFD".

How to Erase DTC

NOTE:

If the power switch is kept ON after repair operation, operate the power switch to OFF. Operate the power switch to ON again after waiting at least 10 seconds.

- 1. Touch "SHIFT" of CONSULT.
- 2. Touch "Self Diagnostic Result".
- 3. Touch "Erase". (DTC memorized in electric shift control module is erased.)

IGN Counter

IGN counter is displayed in "FFD". It displays the number of operations of power switch from OFF to ON after DTC recovery to normal.

[ELECTRIC SHIFT]

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DIAGNOSIS SYSTEM (ELECTRIC SHIFT)

< SYSTEM DESCRIPTION >

- If malfunction (DTC) is currently detected, "0" is displayed.
- The displayed number counts up at each operation of power switch from OFF to ON after recovery to normal, such as $1 \rightarrow 2 \rightarrow 3...38 \rightarrow 39$.
- If the number of operation exceeds 39, the displayed number will be fixed at "39" until the self diagnosis result is erased.

DATA MONITOR

Monitored item (Unit)		Remarks	С
SHIFT SENSOR 1		Displays the signal value of electric shift sensor No. 1	
SHIFT SENSOR 2		Displays the signal value of electric shift sensor No. 2	
SHIFT SENSOR 3		Displays the signal value of electric shift sensor No. 3	ΤN
SHIFT SENSOR 4		Displays the signal value of electric shift sensor No. 4	
SHIFT SENSOR 5		Displays the signal value of electric shift sensor No. 5	E
SHIFT SENSOR 6		Displays the signal value of electric shift sensor No. 6	
P POSITION SWITCH 1		Displays the signal value of P position switch No. 7	
P POSITION SWITCH 2		Displays the signal value of P position switch No. 8	F
BRAKE SWITCH		Displays the signal value of the stop lamp switch.	
PARKING ACTUATOR RELAY A		Displays the command value from the electric shift control module to parking ac- tuator relay A	G
PARKING ACTUATOR RELAY B		Displays the command value from the electric shift control module to parking ac- tuator relay B	L
P/N POSITION CONDITION		Displays the P position and N position status recognized by the electric shift con- trol module	-
NOT P POSITION CONDITION		Displays a status other than the P position recognized by the electric shift control module	I
IGNITION SWITCH		Displays the input status of the power switch	
BRAKE SWITCH (CAN)		Displays the signal value of the stop lamp switch received from VCM	J
P POSITIONI LEARNING STATUS		Displays the P position learning status	
BACK UP POWER VOLTAGE	(V)	Monitors the voltage value of the memory backup power supply and displays the monitored value	K
MAIN POWER VOLTAGE	(V)	Monitors the voltage value of the main power supply for the electric shift control module and displays the monitored value	
MOTOR A U VOLTAGE	(V)	Displays the motor A U-phase terminal voltage A/D converted value	L
MOTOR A V VOLTAGE	(V)	Displays the motor A V-phase terminal voltage A/D converted value	
MOTOR A W VOLTAGE	(V)	Displays the motor A W-phase terminal voltage A/D converted value	
MOTOR B U VOLTAGE	(V)	Displays the motor B U-phase terminal voltage A/D converted value	N
MOTOR B V VOLTAGE	(V)	Displays the motor B V-phase terminal voltage A/D converted value	
MOTOR B W VOLTAGE	(V)	Displays the motor B W-phase terminal voltage A/D converted value	
ANGLE SENSOR 1 VOLTAGE	(V)	Displays the input voltage value of angle sensor 1	
ANGLE SENSOR 2 VOLTAGE	(V)	Displays the input voltage value of angle sensor 2	
RANGE POSITION		Displays the position recognized by the electric shift control module	С
SHIFT POSITION JUDGMENT		Displays the shift input position recognized by the electric shift control module	
TARGET SHIFT POSITION		Displays the target shift position recognized by the electric shift control module	F
ECO MODE REQUEST		Displays the ECO mode status recognized by the electric shift control module	ſ
ACTUAL P POSITION		Displays the P position status recognized by the electric shift control module	
VEHICLE SPEED (VDC)	(km/h or mph)	Displays the signal value of the vehicle speed received from ABS actuator control unit	
VEHICLE SPEED (VCM)	(km/h or mph)	Displays the vehicle speed signal value received from VCM	

В

DIAGNOSIS SYSTEM (ELECTRIC SHIFT)

< SYSTEM DESCRIPTION >

Monitored item (Unit)	Remarks
E-SHIFT WARNING LAMP	Displays the electric shift warning lamp signal status transmitted from the electric shift control module
E-SHIFT WARNING MSG	Displays the master warning message status transmitted from the electric shift control module

ECU DIAGNOSIS INFORMATION ELECTRIC SHIFT CONTROL MODULE

Reference Value

CONSULT DATA MONITOR STANDARD VALUE

Monitor item	Condition	Value / Status (Approx.)	
SHIFT SENSOR 1	Selector lever is held in R position	ON	
SHIFT SENSUR I	Other than the above	OFF	ΤN
	Selector lever is held in R and N positions	ON	
SHIFT SENSOR 2	Other than the above	OFF	
	Selector lever is held in H (Home) and N positions	ON	E
SHIFT SENSOR 3	Other than the above	OFF	
SHIFT SENSOR 4	Selector lever is held in N and D positions	ON	F
SHIFT SENSOR 4	Other than the above	OFF	
SHIFT SENSOR 5	Selector lever is held in D position	ON	
SHIFT SENSOR 5	Other than the above	OFF	(
SHIFT SENSOR 6	Selector lever in H (Home) position	ON	
SHIFT SENSOR 6	Other than the above	OFF	ŀ
	P position switch is pushed	ON	
P POSITION SWITCH 1	Other than the above	OFF	
	P position switch is pushed	OFF	
P POSITION SWITCH 2	Other than the above	ON	
	Brake pedal is depressed	ON	
BRAKE SWITCH	Brake pedal is released	OFF	
PARKING ACTUATOR RELAY A	Power switch is ON	ON	
PARKING ACTUATOR RELAY B	Power switch is ON	ON	
	Selector lever in P and N positions	ON	
P/N POSITION CONDITION	Other than the above	OFF	
	Selector lever in P position	OFF	
NOT P POSITION CONDITION	Other than the above	ON	
IGNITION SWITCH	Power switch is ON	ON	
	Brake pedal is depressed	ON	
BRAKE SWITCH (CAN)	Brake pedal is released	OFF	
	P position learning is completed	COMP	
P POSITION LEARNING STATUS	P position learning is not completed	INCOMP	
BACK UP POWER VOLTAGE	Power switch is ON	9 – 16 V	(
MAIN POWER VOLTAGE	Power switch is ON	9 – 16 V	
MOTOR A U VOLTAGE	No shifting	9 – 16 V	
MOTOR A V VOLTAGE	No shifting	9 – 16 V	
MOTOR A W VOLTAGE	No shifting	9 – 16 V	
MOTOR B U VOLTAGE	No shifting	9 – 16 V	
MOTOR B V VOLTAGE	No shifting	9 – 16 V	
MOTOR B W VOLTAGE	No shifting	9 – 16 V	

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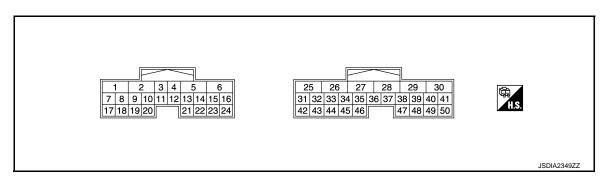
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< ECU DIAGNOSIS INFORMATION >

[ELECTRIC SHIFT]

Monitor item	Condition	Value / Status (Approx.)
ANGLE SENSOR 1 VOLTAGE	Selector lever in P position (Manual plate: P position)	1.42 – 2.20 V
ANGLE SENSOR I VOLIAGE	Other than the above (Manual plate: Not P position)	2.85 – 3.56 V
ANGLE SENSOR 2 VOLTAGE	Selector lever in P position (Manual plate: P position)	1.42 – 2.20 V
ANGLE SENSOR 2 VOLTAGE	Other than the above (Manual plate: Not P position)	2.85 – 3.56 V
	Selector lever in P position	Р
RANGE POSITION	Selector lever in R position	R
RANGE POSITION	Selector lever in N position	Ν
	Selector lever in D position	D
	Selector lever in P position	Р
	Selector lever in R position	R
SHIFT POSITION JUDGMENT	Selector lever in N position	N
	Selector lever in D position	D
	Selector lever in P position	Р
	Selector lever in R position	R
TARGET SHIFT POSITION	Selector lever in N position	N
	Selector lever in D position	D
	During ECO mode driving	ECO
ECO MODE REQUEST	Other than the above	NORML
	Selector lever in P position	Р
ACTUAL P POSITION	Other than the above	NOT P
VEHICLE SPEED (VDC)	During driving	Almost same as the speedometer display
VEHICLE SPEED (VCM)	During driving	Almost same as the speedometer display
	Electric shift warning lamp: ON	ON
E-SHIFT WARNING LAMP	Electric shift warning lamp: OFF	OFF
	Warning message is not displayed	_
	Warning message: "When Parked Apply Parking Brake"	MSG1
E-SHIFT WARNING MSG	Warning message: "T/M system malfunction visit dealer"	MSG2
	Warning message: "Check position of shift lever"	MSG3

TERMINAL LAYOUT



< ECU DIAGNOSIS INFORMATION >

PHYSICAL VALUES

	erminal Item						
+	-	Signal name	Input/ Output		Condition	Value (Approx.)	
1	Ground	MOTOR COIL A U-	Output	Power switch ON		9 – 16 V	
(L)	Ground	PHASE	Output	Power switc	h OFF	0 V	
2	Ground	MOTOR COIL A V-	Output	Power switc	h ON	9 – 16 V	
(G)	Croana	PHASE	Output	Power switc	h OFF	0 V	
3 (B)	Ground	GND	—		Always	0 V	
4 (B)	Ground	GND	_		Always	0 V	
5	Oracial	MOTOR COIL A W-	Outrast	Power switc	h ON	9 – 16 V	
(Y)	Ground	PHASE	Output	Power switc	h OFF	0 V	
6 (B)	Ground	GND (MOTOR)			Always	0 V	
7	Creation 1	MAIN POWER SUPPLY		Power switc	h ON	9 – 16 V	
(W)	Ground	1	Input	Power switc	h OFF	0 V	
8 (R)	Ground	BACK UP POWER SUPPLY	Input		Always	9 – 16 V	
9	0		1	Power switch ON		9 – 16 V	
(BR)	Ground	POWER SW 1	Input	Power switch OFF		0 V	
10 (Y)	Ground	ANGLE SENSOR 1 POWER SUPPLY		Power switc	h ON	5 V	
11		ANGLE SENSOR 1	Input	Input READY	Selector lever is P position (Manual plate: P position)	1.42 – 2.20 V	
(L)	Ground	SIGNAL			Other than the above (Manual plate: Not P position)	2.85 – 3.56 V	
12			_		Selector lever is P position	0 V	
(W)	Ground	P POSITION SIGNAL	Output	READY	Other than the above	9–16 V	
13	Ground	P/N POSITION SIGNAL	Output	READY	Selector lever is P and N posi- tions	9 – 16 V	
(R)	Cround		Output	Juiput	I LI	Other than the above	0 V
14	0		1	Power	Brake pedal is depressed	9 – 16 V	
(P)	Ground	STOP LAMP SWITCH	Input	switch ON	Brake pedal is released	0 V	
15 (LG)	Ground	ENCODER SIGNAL B	Input	Parking actuator is operated		10.0mSec/div 10.0mSec/div 20V/div JSDIA2351GB	
16 (R)	Ground	ENCODER POWER SUPPLY	_	Power switc	h ON	5 V	
17	0		<u> </u>	Power switc	h ON	0 V	
(V)	Ground	POWER SUPPLY RE- LAY	Output	Power switc	h OFF	9 – 16 V	
18		PARKING ACTUATOR		Power switc	h ON	0 V	
(SB)			Power switc	h OFF	9 – 16 V		

< ECU DIAGNOSIS INFORMATION >

	rminal e color)	Item		Condition		Value (Approx.)	
+	-	Signal name	Input/ Output		Condition	value (Approx.)	
19 (P)	Ground	ELECTRIC SHIFT SEN- SOR POWER SUPPLY 1	_	Power switch ON		5 V	
20 (LG)	Ground	WAKE UP SIGNAL	Input	Power switc	ch ON	9 – 16 V	
21 (GR)	Ground	ANGLE SENSOR 1 GND	_		Always	0 V	
22 (L)	Ground	N POSITION OUTPUT (SELECTOR INDICA- TOR)	Output	READY	Selector lever is N position Other than the above	1 V or less 9 – 16 V	
23 (G)	Ground	ENCODER GND	_		Always	0 V	
24 (W)	Ground	ENCODER SIGNAL A	Input	Parking actuator is operated		10.0mSec/div 10.0mSec/div 20V/div JSDIA2351GB	
25 (B)	Ground	GND (MOTOR)	—		Always	0 V	
26 (R)	Ground	D POSITION OUTPUT (SELECTOR INDICA- TOR)	Output	READY	Selector lever is D position Other than the above	1 V or less 9 – 16 V	
27	Ground	MOTOR COIL B U-	Output	Power switch ON		9 – 16 V	
(BR)		PHASE		Power switch OFF Power switch ON		0 V 9 – 16 V	
28 (G)	Ground	MOTOR COIL B V- PHASE	Output	Power switc		0 V	
29	Ground	MOTOR COIL B W-	Output	Power switc	ch ON	9 – 16 V	
(R)	Clound	PHASE	Output	Power switc		0 V	
30 (Y)	Ground	R POSITION OUTPUT (SELECTOR INDICA- TOR)	Output	READY	Selector lever is R position Other than the above	1 V or less 9 – 16 V	
31 (L)	Ground	EV SYSTEM CAN-H	Input/ Output		_	_	
32 (G)	Ground	EV SYSTEM CAN-L	Input/ Output		_	_	
33	Ground	PARKING ACTUATOR	_	Power switch ON		0 V	
(GR)		RELAY B		Power switc	h OFF Selector lever is held in R po-	9 – 16 V	
34 (LG)	(-round	ELECTRIC SHIFT SEN- SOR NO. 1	Input	READY	sition	0 V	
			Input RE		Other than the above Selector lever is held in R and	5 V	
35 (L)	Ground	ELECTRIC SHIFT SEN- SOR NO. 2		Input	READY	N positions Other than the above	0 V 5 V
36	Ground	ELECTRIC SHIFT SEN-	Innut	DEADY	Selector lever is held in H (Home) and N positions	0 V	
(P)	Ground	SOR NO. 3	Input	READY	Other than the above	5 V	

< ECU DIAGNOSIS INFORMATION >

[ELECTRIC SHIFT]

	rminal e color)	Item		Condition		Value (Approx.)	A																									
+	-	Signal name	Input/ Output		Contaition	value (Approx.)																										
37 (Y)	Ground	ELECTRIC SHIFT SEN- SOR NO. 4	Input	READY	Selector lever is held in N and D position	0 V	В																									
(1)		SOR NO. 4			Other than the above	5 V																										
38		P POSITION OUTPUT	_		Selector lever is P position	1 V or less	C																									
(B)	Ground	(SELECTOR INDICA- TOR)	Output	READY	Other than the above	9 – 16 V																										
39 (LG)	Ground	ANGLE SENSOR 2 POWER SUPPLY	_	Power switc	h ON	5 V	ΤM																									
40	Ground	ANGLE SENSOR 2	loout	READY	Selector lever is P position (Manual plate: P position)	1.42 – 2.20 V	E																									
(P)	Ground	SIGNAL	Input	READT	Other than the above (Manual plate: Not P position)	2.85 – 3.56 V																										
41 (BR)	Ground	ELECTRIC SHIFT SEN- SOR GND 1			Always	0 V	F																									
42	12	المعربة	Power switch ON		9 – 16 V																											
(G)			Input	Power switch OFF		0 V	G																									
43	Crownd	MAIN POWER SUPPLY	lanut	Power switc	h ON	9 – 16 V	_																									
(W)	Ground	2	Input	Power switc	h OFF	0 V	_ н																									
44	Ground	ELECTRIC SHIFT SEN-	Input	READY	Selector lever is held in D po- sition	0 V	_ 11																									
(SB)		SOR NO. 5						·																						Other than the above	5 V	_
45	Ground	ELECTRIC SHIFT SEN-	Input	READY	Selector lever in H (Home) po- sition	0 V																										
(BR)		SOR NO. 6	SUR NU. 6			Other than the above	5 V	J																								
46	0	P POSITION SWITCH	land	DEADY	P position switch is pushed	5 V																										
(R)	Ground	NO. 7	Input	READY	Other than the above	0 V																										
47	Craw	P POSITION SWITCH	المرجب		P position switch is pushed	0 V	K																									
(B)	Ground	NO. 8	Input	nput READY	Other than the above	5 V																										
48 (SB)	Ground	ELECTRIC SHIFT SEN- SOR POWER SUPPLY 2	_	Power switc	h ON	5 V	L																									
49 (G)	Ground	ANGLE SENSOR 2 GND			Always	0 V	M																									
50 (LG)	Ground	ELECTRIC SHIFT SEN- SOR GND 2	_		Always	0 V	_																									

Fail-Safe

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DTC	Vehicle behavior						
P0571							
P0705	When shifting to the R position and the ond to complete shifting	When shifting to the R position and the D position, the reaction becomes slower and it takes approximately 1 sec- ond to complete shifting					
P0706	Shifting to the R position, N position a	Shifting to the R position, N position and D position is prohibited					
D0700	Malfunction in P position	Shifting from the P position to another position is prohibited					
P0780	Malfunction in position other than P	Shifting to the P position is prohibited					
P1722							

< ECU DIAGNOSIS INFORMATION >

[ELECTRIC SHIFT]

DTC		Vehicle behavior		
P1802	Malfunction in P position	Shifting from the P position to another position is prohibited		
P1002	Malfunction in position other than P	Shifting to the P position is prohibited		
D1002	Malfunction in P position	Shifting from the P position to another position is prohibited		
P1803	Malfunction in position other than P	Shifting to the P position is prohibited		
P1804				
P1811	Automatic P position system is disable	d		
P1895		_		
P1896	When shifting to the R position and the ond to complete shifting	D position, the reaction becomes slower and it takes approximately 1 sec		
P1897		_		
P1899		_		
P189A		_		
P189B		_		
P189C		_		
P189D		_		
P189E	Malfunction in P position	Shifting from the P position to another position is prohibited		
FIO9E	Malfunction in position other than P	Shifting to the P position is prohibited		
P189F		_		
P18A0		-		
P18A1		_		
P18A2		_		
P18A3	Malfunction in P position	Shifting from the P position to another position is prohibited		
FTOAS	Malfunction in position other than P	Shifting to the P position is prohibited		
P18A4	Malfunction in P position	Shifting from the P position to another position is prohibited		
FT0A4	Malfunction in position other than P	Shifting to the P position is prohibited		
P18A6				
P18A7	Shifting operation is prohibited			
P18A8	Pushing the P position switch does not	switch the to the P position		
P18A9	Malfunction in P position	Shifting from the P position to another position is prohibited		
PTOAS	Malfunction in position other than P	Shifting to the P position is prohibited		
P18AA	Shifting from the P position to another p	position is prohibited		
P18AB	Automatic P position system may be di	sabled		
P18AC		_		
P18AD		<u> </u>		
P18AE		_		
114000	EV system CAN with VCM blocked	Shifting to the R position and the D position is prohibited		
U1000	Other than the above	_		
U1010	Shifting to the R position and the D position is prohibited			
U1086		_		

Protection Control

INFOID:000000007631851

If shifting from the P position to another position and shifting from another position to the P position are repeated within a short period of time, it may become impossible to shift from the P position to another position and from another position to the P position for system protection. In this case, the system automatically returns to the normal state allowing shifting after approximately 10 seconds.

< ECU DIAGNOSIS INFORMATION >

DTC Inspection Priority Chart

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

Priority	Detected items (DTC)	Reference	В
	P0706 TRANSMISSION RANGE SENSOR A	<u>TM-63</u>	
	P0780 SHIFT ERROR	<u>TM-66</u>	С
	P1802 CONTROL MODULE	<u>TM-68</u>	
	P1803 CONTROL MODULE	<u>TM-69</u>	
	P1897 ENCODER ERROR	<u>TM-79</u>	—— TM
	P189E ACTUATOR LOCK	<u>TM-95</u>	
1	P18A3 CONTROL MODULE	<u>TM-104</u>	E
	P18A4 CONTROL MODULE	<u>TM-105</u>	
	P18A7 SHIFT SIGNAL OFF	<u>TM-108</u>	
	P18A8 P POSITION SWITCH	<u>TM-112</u>	F
	P18A9 PARKING ACTUATOR FUNCTION	<u>TM-114</u>	
	P18AA P POSITION LEARNING ERROR	<u>TM-115</u>	G
	P18AB IGNITION SWITCH	<u>TM-116</u>	
	P0571 BRAKE SWITCH A	<u>TM-58</u>	
	P0705 TRANSMISSION RANGE SENSOR A	<u>TM-60</u>	Н
	P1722 VEHICLE SPEED	<u>TM-67</u>	
	P1804 CONTROL MODULE	<u>TM-70</u>	
	P1811 ELECTRIC SHIFT POWER SUPPLY RELAY	<u>TM-71</u>	
	P1895 MOTOR SPEED	<u>TM-74</u>	
	P1896 SHIFT POWER SUPPLY	<u>TM-75</u>	J
	P1899 MOTOR A	<u>TM-81</u>	
	P189A MOTOR A	<u>TM-83</u>	
	P189B MOTOR B	<u>TM-87</u>	— K
	P189C MOTOR B	<u>TM-89</u>	
2	P189D BACK UP VOLTAGE	<u>TM-93</u>	L
	P189F ANGLE SENSOR 1	<u>TM-96</u>	
	P18A0 ANGLE SENSOR 2	<u>TM-98</u>	
	P18A1 ANGLE SENSOR 1	<u>TM-100</u>	M
	P18A2 ANGLE SENSOR 2	<u>TM-102</u>	
	P18A6 WAKE UP SIGNAL	<u>TM-106</u>	N
	P18AC PARKING ACTUATOR RELAY A	<u>TM-118</u>	
	P18AD PARKING ACTUATOR RELAY B	<u>TM-120</u>	
	P18AE STUCK IN SHIFT	<u>TM-122</u>	0
	U1000 CAN COMM CIRC	<u>TM-123</u>	
	U1010 CONTROL UNIT (CAN)	<u>TM-124</u>	P
	U1086 CAN ERROR	TM-125	

DTC Index

NOTE:

If some DTCs are displayed at the same time, perform inspections one by one based on the priority as per the following list. Refer to <u>TM-47</u>, "<u>DTC Inspection Priority Chart</u>".

TM-47

INFOID:000000007631853

[ELECTRIC SHIFT]

Α

< ECU DIAGNOSIS INFORMATION >

DTC [*]			Master	warning	O: c
	Item name (CONSULT screen terms)	Electric shift warning lamp	Yellow	Red	Reference
P0571	BRAKE SWITCH A		0		<u>TM-58</u>
P0705	TRANSMISSION RANGE SENSOR A		0		<u>TM-60</u>
P0706	TRANSMISSION RANGE SENSOR A	O (Vehicle stopped)	O (During driv- ing)	O (After stop)	<u>TM-63</u>
P0780	SHIFT ERROR	0		0	<u>TM-66</u>
P1722	VEHICLE SPEED	_	0	_	<u>TM-67</u>
P1802	CONTROL MODULE	0		0	<u>TM-68</u>
P1803	CONTROL MODULE	0		0	<u>TM-69</u>
P1804	CONTROL MODULE	_			<u>TM-70</u>
P1811	ELECTRIC SHIFT POWER SUPPLY RE- LAY	O (After power switch OFF)	O (During driv- ing)	O (After power switch OFF)	<u>TM-71</u>
P1895	MOTOR SPEED	_	0	_	<u>TM-74</u>
P1896	SHIFT POWER SUPPLY	_	0	_	<u>TM-75</u>
P1897	ENCODER ERROR	O (After power switch OFF)	O (During driv- ing)	O (After power switch OFF)	<u>TM-79</u>
P1899	MOTOR A	_	0	_	<u>TM-81</u>
P189A	MOTOR A	_	0	_	<u>TM-83</u>
P189B	MOTOR B	_	0	_	<u>TM-87</u>
P189C	MOTOR B	_	0	_	<u>TM-89</u>
P189D	BACK UP VOLTAGE	—	0		<u>TM-93</u>
P189E	ACTUATOR LOCK	0	_	0	<u>TM-95</u>
P189F	ANGLE SENSOR 1	—	0	_	<u>TM-96</u>
P18A0	ANGLE SENSOR 2	_	0	_	<u>TM-98</u>
P18A1	ANGLE SENSOR 1	—	0		<u>TM-100</u>
P18A2	ANGLE SENSOR 2	_	0		<u>TM-102</u>
P18A3	CONTROL MODULE	0		0	<u>TM-104</u>
P18A4	CONTROL MODULE	0		0	<u>TM-105</u>
P18A6	WAKE UP SIGNAL	—			<u>TM-106</u>
P18A7	SHIFT SIGNAL OFF	O (Vehicle stopped)	O (During driv- ing)	O (After stop)	<u>TM-108</u>
P18A8	P POSITION SWITCH	O (Vehicle stopped)	O (During driv- ing)	O (After stop)	<u>TM-112</u>
P18A9	PARKING ACTUATOR FUNCTION	0	_	0	<u>TM-114</u>
P18AA	P POSITION LEARNING ERROR	0		0	<u>TM-115</u>

< ECU DIAGNOSIS INFORMATION >

[ELECTRIC SHIFT]

DTC [*]	Item name	······································		warning	Reference	А
CONSULT	(CONSULT screen terms)	lamp	Yellow	Red	Reference	A
P18AB	IGNITION SWITCH	O (Vehicle stopped)	O (During driv- ing)	O (After stop)	<u>TM-116</u>	В
P18AC	PARKING ACTUATOR RELAY A	—	0	—	<u>TM-118</u>	-
P18AD	PARKING ACTUATOR RELAY B	—	0	—	<u>TM-120</u>	С
P18AE	STUCK IN SHIFT	—	0	—	<u>TM-122</u>	
U1000	CAN COMM CIRC	—	0	—	<u>TM-123</u>	ТМ
U1010	CONTROL UNIT (CAN)	—	0	—	<u>TM-124</u>	-
U1086	CAN ERROR	—	0	_	<u>TM-125</u>	Е

*: These numbers are prescribed by SAE J2012/ISO 15031-6.

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Revision: 2014 June

WIRING DIAGRAM ELECTRIC SHIFT SYSTEM

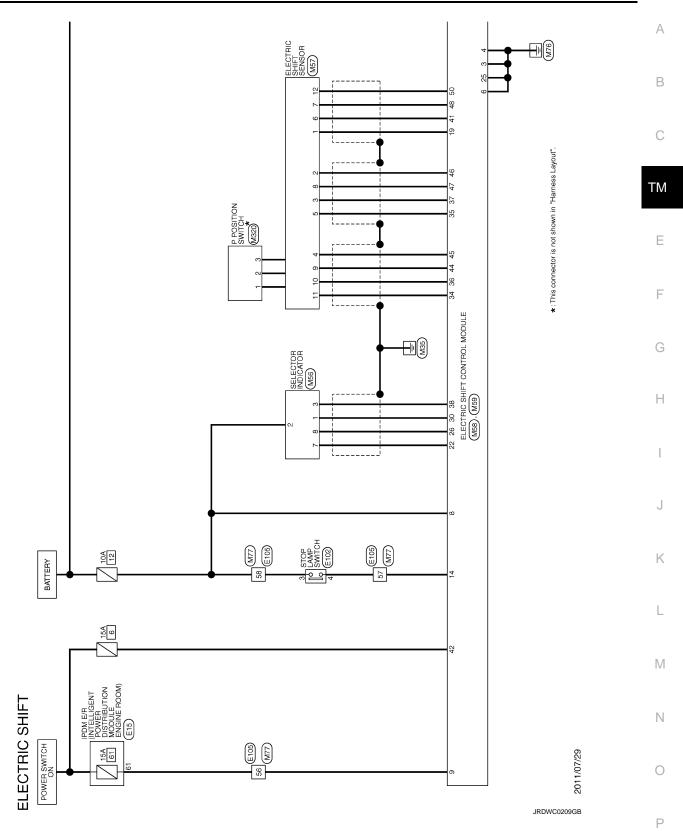
Wiring Diagram

INFOID:000000007631854

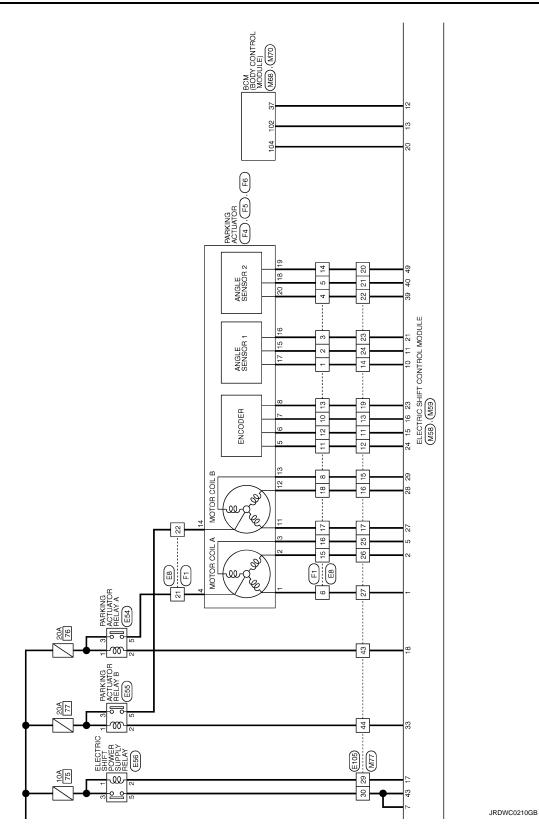
For connector terminal arrangements, harness layouts, and alphabets in a \bigcirc (option abbreviation; if not described in wiring diagram), refer to <u>GI-12, "Connector Information"</u>.

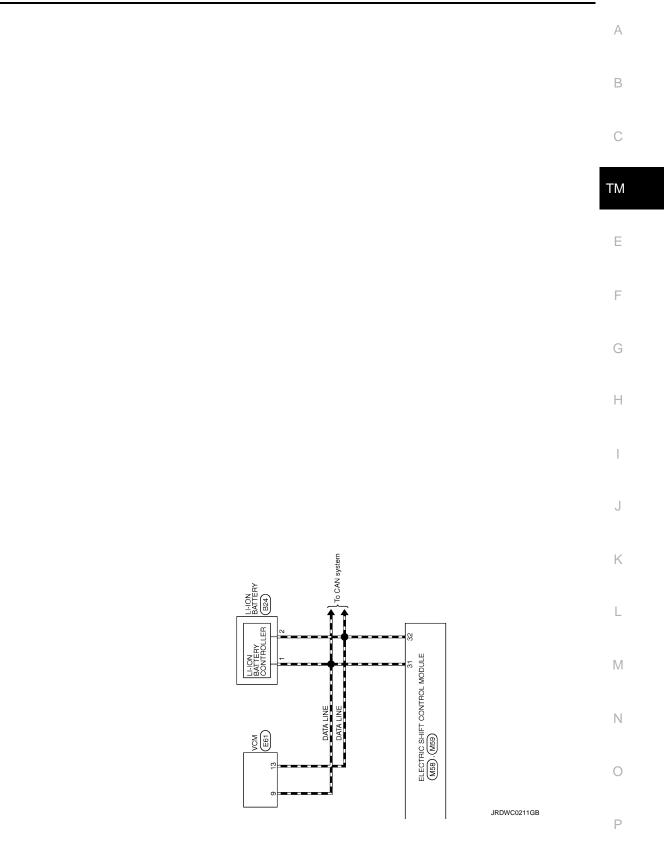
ELECTRIC SHIFT SYSTEM

< WIRING DIAGRAM >



ELECTRIC SHIFT SYSTEM





< BASIC INSPECTION >

BASIC INSPECTION DIAGNOSIS AND REPAIR WORK FLOW

Diagnosis Flow

INFOID:000000007631855

1.OBTAIN INFORMATION ABOUT SYMPTOM

Refer to <u>TM-55</u>. "Question sheet" and interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred) as much as possible when the customer brings in the vehicle.

>> GO TO 2.

2. CHECK DTC IN VCM

1. Check DTC in VCM.

2. Check related service bulletins for information.

Are any DTCs detected?

YES >> Check the DTC. Refer to EVC-84, "DTC Index".

NO >> GO TO 3.

3.CHECK DTC IN ELECTRIC SHIFT

1. Before checking the malfunction, check whether any DTC exists.

- 2. If DTC exists, perform the following operations.
- Record the DTC and freeze frame data. (Print out the data using CONSULT and affix them to the Work Order Sheet.)
- Erase DTCs.
- Check the relationship between the cause that is clarified with DTC and the malfunction information described by the customer.
- 3. Check the information of related service bulletins and others also.

Do malfunction information and DTC exist?

Malfunction information and DTC exists. >>GO TO 4. Malfunction information exists, but no DTC. >>GO TO 5. No malfunction information, but DTC exists. >>GO TO 6.

4.REPRODUCE MALFUNCTION SYMPTOM

Check any malfunction described by a customer, except those with DTC on the vehicle.

Also investigate whether the symptom is a fail-safe or normal operation. Refer to TM-45, "Fail-Safe".

When a malfunction symptom is reproduced, the question sheet is effective. Refer to <u>TM-55</u>, "Question sheet". Verify the relationship between the symptom and the conditions in which the malfunction described by the customer occurs.

>> GO TO 6.

5.REPRODUCE MALFUNCTION SYMPTOM

Check the malfunction described by the customer on the vehicle.

Also investigate whether the symptom is a fail-safe or normal operation. Refer to <u>TM-45</u>, "Fail-Safe". When a malfunction symptom is reproduced, the question sheet is effective. Refer to <u>TM-55</u>, "Question sheet". Verify the relationship between the symptom and the conditions in which the malfunction described by the customer occurs.

>> GO TO 8.

6.PERFORM "DTC CONFIRMATION PROCEDURE"

Perform "DTC CONFIRMATION PROCEDURE" of the appropriate DTC to check if DTC is detected again. Refer to <u>TM-47</u>, "<u>DTC Inspection Priority Chart</u>" when multiple DTCs are detected, and then determine the order for performing the diagnosis.

NOTE:

If no DTC is detected, refer to the freeze frame data.

	CTION >					[ELE	•••••••	
s any DTC dete	cted?							
YES >> GO								
		ing to <u>GI-51, "I</u>						
.REPAIR OR F	REPLACE	THE MALFUI	NCTIONING	PARTS				
Repair or replace Reconnect parts				ing, and then	erase DTC if n	ecessary.		
·			0 1	0,				
>> GO	TO 8.							
\mathbf{B} .FINAL CHEC	К							
Perform "DTC C Check that malfu eferring to the s	unctions a	re not reprodu	uced when o	btaining the m				
DTC or malfur		•						
YES >> GO								
NO >> Befo	ore deliver	ing the vehicle	e to the custor	mer, make sur	e that DTC is e	erased.		
Question she	et						INFOID:000000	0007631856
ESCRIPTION								
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VORKSHEET	eferring to	Motor No. Incident Date Model & Year Mileage	Quest not move (□	tion Sheet km / Mile	Manuf. Date VIN In Service Date	Road cond Operating Weather c Symptoms	ditions conditions onditions,	
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VORKSHEET Customer name Symptoms	SAMPLE	the question provide the question provide the question provide the question provide the question of the questi	Quest not move (□ ft P position	tion Sheet km / Mile Any position	Manuf. Date VIN In Service Date	Road cond Operating Weather c Symptoms	ditions conditions, conditions, s sereor	
uestion sheet re	SAMPLE MR/MS	the question p Motor No. Incident Date Model & Year Mileage Des not shift Does not shift Others	Quest not move (ft P position ft R, N and D pos Under certai	tion Sheet km / Mile Any position sitions	Manuf. Date VIN In Service Date Particular position One of the service of the ser	Road cone Operating Weather c Symptoms	ditions conditions, conditions, s sereor	
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VORKSHEET Customer name Symptoms	SAMPLE MR/MS MR/MS	the question p Motor No. Incident Date Model & Year Mileage Does not shift Does not shift Others All the time All the time Fine Hot	Quest not move (D ft P position ft R, N and D position ft R, N and D position Clouding Warm	tion Sheet km / Mile Any position sitions in conditions Raining Cool	Manuf. Date VIN In Service Date Particular position	Road cone Operating Weather c Symptoms	ditions conditions, conditions, sereor () () () () () () () () () () () () ()	

DIAGNOSIS AND REPAIR WORK FLOW

Revision: 2014 June

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

	Questi	ion Sheet		
Driving conditions	□ Not affected			
	□ At starting □ While idling	□ While engine racing	□ At racing	□ While cruis- ing
	□ While accelerating	□ While decelerating	While turni	ng (Right / Left)
	□ Vehicle speed [km/h (MPH)]		
Other conditions				

P POSITION LEARNING VALUE CLEAR

< BASIC INSPECTION > P POSITION LEARNING VALUE CLEAR

1.P POSITION LEARNING VALUE CLEAR

Description

The electric shift control module memorizes the P position. Therefore, it is necessary to clear the P position learning value and perform the relearning of the P position after the electric shift control module and the parking actuator (reduction gear) are removed and installed or replaced.

Work Procedure

	With CONSULT	TM
1. 2	Power switch ON. Press the P position switch to shift to P position.	
2. 3.	Select "Work Support" in "SHIFT".	E
4.	Select "P POSITION LEARNING VALUE CLEAR".	
5.	Touch "CLEAR".	
		F
_	>> GO TO 2.	1
2.	P POSITION LEARNING	
1.	Power switch OFF.	G
	Power switch ON.	
3.		
	CAUTION: Nover shift change	Η
4	Never shift change. Check that the master warning is OFF and no warning message is displayed.	
	>> END	I
		J
		K
		L
		M
		Ν

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INFOID:000000007631859

<u>< DTC/CIRCUIT DIAGNOSIS ></u> DTC/CIRCUIT DIAGNOSIS

P0571 BRAKE SWITCH A

DTC Logic

DTC DETECTION LOGIC

 DTC
 Trouble diagnosis name
 DTC detection condition
 Possible cause

 P0571
 Brake Switch "A" Circuit
 It is detected that the stop lamp switch cannot be switched to ON/OFF.
 • Stop lamp switch (ON stuck or OFF stuck)

 • Electric shift control module
 • Harness or connectors (Each circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(I) With CONSULT

- 1. Set the vehicle to READY.
- 2. Accelerate the vehicle up to 50 km/h (31 MPH) and then depress the brake pedal to decelerate and stop the vehicle.
- 3. Repeat step 2 five more times.
- 4. Check DTC.

Is "P0571" detected?

- YES >> Go to TM-58, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK STOP LAMP SWITCH SIGNAL

With CONSULT

- 1. Set the vehicle to READY.
- 2. Select "Data Monitor" in "SHIFT".
- 3. Select "BRAKE SWITCH" and "BRAKE SWITCH (CAN)".
- 4. Identify an abnormal signal value.

Condition	Item		
Condition	BRAKE SWITCH	BRAKE SWITCH (CAN)	
Brake pedal is depressed	ON	ON	
Brake pedal is released	OFF	OFF	

Which signal value is abnormal?

BRAKE SWITCH>>GO TO 2.

BRAKE SWITCH (CAN)>>GO TO 5.

2.CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- 1. Power switch OFF.
- 2. Disconnect the stop lamp switch connector.
- 3. Check the voltage between stop lamp switch vehicle side harness connector terminal and ground.

INFOID:000000007631860

P0571 BRAKE SWITCH A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Connector E102 the inspection result in the second secon	normal? LFUNCTION ITEMS	ninal 3	Ground	9 – 16 V
YES >> GO TO 4. NO >> GO TO 3. DETECTION OF MA heck the following iten Harness open circuit battery. 12V battery 10A fuse (# 12)	LFUNCTION ITEMS			
YES >> GO TO 4. NO >> GO TO 3. DETECTION OF MA heck the following iten Harness open circuit battery. 12V battery 10A fuse (# 12)	LFUNCTION ITEMS	;		
heck the following iten Harness open circuit battery. 12V battery 10A fuse (# 12)	าร:			
Harness open circuit battery. 12V battery 10A fuse (# 12)				
the inspection result		en the stop lamp	switch vehicle side harnes	ss connector and 12
			sitte et le sisle etl	
	mittent incident. Reference the malfunction of the		<u>intent incluent</u> .	
.CHECK STOP LAM	•	•		
	tric shift control mod			
	hicle side harness c e vehicle side harness	onnector terminal.	e vehicle side harness co	
Connector	Terminal	Connector	Terminal	Continuity
M58	14	E102	4	Existed
Check the continuinground.	y between electric s	shift control modul	e vehicle side harness co	onnector terminal ar
Electric shift control me	dule vehicle side harnes	s connector		
Connector	Terr	minal	Ground	Continuity
M58		14	Ground	Not existed
the inspection result of YES >> GO TO 5. NO >> Repair or re CHECK STOP LAMP	place the malfunction		spection".	

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P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

P0705 TRANSMISSION RANGE SENSOR A

DTC Logic

Position Pattern Table

INFOID:000000007631861

No. 6

ON

ON

OFF

OFF

OFF

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P0705	Transmission Range Sensor "A"	One of the electric shift sensors No. 1 to No.	 Electric shift sensor Harness or connectors
	Circuit (PRNDL Input)	6 is stuck at ON or OFF.	(Each circuit is open or shorted.)

Electric shift sensor Electric shift control module Selector lever position recognition position No. 1 No. 2 No. 3 No. 4 No. 5 н н OFF OFF ON OFF OFF Ρ Н OFF OFF ON OFF OFF R R OFF OFF ON ON OFF OFF OFF Ν Ν ON ON ON D OFF OFF D OFF ON ON

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

() With CONSULT

- 1. Set the vehicle to READY.
- 2. Select "Data Monitor" in "SHIFT".
- 3. Select "RANGE POSITION".
- 4. Shift the selector lever as follows. (Hold the selector lever at each position for 2 seconds or more.)
- $H \to N \to R \to N \to D \to N \to H$
- 5. Repeat step 4 five more times.
- 6. Check DTC.

Is "P0705" detected?

YES >> Go to <u>TM-60</u>, "Diagnosis Procedure". NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631862

1.CHECK ELECTRIC SHIFT SENSOR INPUT SIGNAL

With CONSULT

- 1. Set the vehicle to READY.
- 2. Select "Data Monitor" in "SHIFT".
- 3. Select "SHIFT SENSOR 1", "SHIFT SENSOR 2", "SHIFT SENSOR 3", "SHIFT SENSOR 4", "SHIFT SENSOR 5", and "SHIFT SENSOR 6".
- 4. Operate the selector lever to identify a electric shift sensor of which value does not change.

Monitor item	Condition	Value / Status
SHIFT SENSOR 1	Selector lever is held in R position	ON
	Other than the above	OFF

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

Monitor item Condition Value / Status А Selector lever is held in R and N positions ON SHIFT SENSOR 2 Other than the above OFF Selector lever is held in H (Home) and N positions ON В SHIFT SENSOR 3 Other than the above OFF Selector lever is held in N and D positions ON SHIFT SENSOR 4 Other than the above OFF Selector lever is held in D position ON SHIFT SENSOR 5 Other than the above OFF ТΜ Selector lever in H (Home) position ON SHIFT SENSOR 6 OFF Other than the above

Without CONSULT

1. Set the vehicle to READY.

- 2. Operate the selector lever.
- Check the voltage between electric shift control module vehicle side harness connector terminal and ground.

Electric shift sen-		stric shift control module vehicle side harness connector		Condition	Voltage (Approx.)	(
sor	Connector terminal				(Applox.)				
1		34		Selector lever is held in R position	0 V	ŀ			
I		34		Other than the above	5 V				
		05		Selector lever is held in R and N positions	0 V				
2		35		Other than the above	5 V				
3		36 Selector lever in tions		Selector lever is held in H (Home) and N positions	0 V				
	M59	M59				Ground	Other than the above	5 V	U.
4		07		Selector lever is held in N and D position	0 V				
4		37		Other than the above	5 V	ŀ			
-				Selector lever is held in D position	0 V				
5		44		Other than the above	5 V				
				Selector lever in H (Home) position	0 V	L			
6		45		Other than the above	5 V				

>> GO TO 2.

2. CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND ELECTRIC SHIFT SENSOR

1. Power switch OFF.

2. Disconnect the electric shift control module connector.

3. Disconnect the electric shift sensor connector.

Check the continuity between the malfunctioning electric shift sensor identified at Step 1 and the harness

 connector terminal located on the vehicle side of the electric shift control module.

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P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift sensor	Electric shift control module vehicle side har- ness connector		Electric shift sensor v conne	Continuity	
	Connector	terminal	Connector	terminal	
1		34		11	
2	M59	35	M57	5	
3		36		10	Existed
4		37	10157	3	Existed
5		44		9	
6		45		4	

5. Check the continuity electric shift control module vehicle side harness connector terminal and ground.

Electric shift sensor		le vehicle side harness con- ctor	Ground	Continuity
	Connector	terminal		
1		34		
2		35		
3	M59	36	Ground	Not existed
4	10139	37	Ground	NOT EXISTED
5		44		
6		45		

Is the inspection result normal?

YES >> Replace the electric shift sensor. Refer to <u>TM-131, "Exploded View"</u>.

NO >> Repair or replace damaged parts.

P0706 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

P0706 TRANSMISSION RANGE SENSOR A

DTC Logic

[ELECTRIC SHIFT]

INFOID:000000007631863

	diagnosis name	nosis name DTC detection condition			Possible cause		
P0706 Transmission ra Range/Perform	ange sensor "A" Circuit ance	Two or more sen sensors No. 1 to OFF.				hift sensor or connectors cuit is open o	-
osition Pattern Table							
Electric shift control module	Selector lever position	on		·	shift sensor		·
recognition position		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Н	н	OFF	OFF	ON	OFF	OFF	ON
P R	H R	OFF ON	OFF ON	ON OFF	OFF OFF	OFF OFF	ON OFF
N	R	OFF	ON	OFF	OFF	OFF	OFF
D	D	OFF	OFF	OFF	ON	ON	OFF
>> GO TO 2. .PERFORM DTC CON With CONSULT Set the vehicle to RI Select "Data Monitor	EADY. " in "SHIFT".	CEDURE					
 Select "RANGE POS Shift the selector lev H → N → R → N → Repeat step 4 five m 	$D \rightarrow N \rightarrow H$	I the selector le	ever at eac	h position	for 2 seco	nds or moi	re.)
. Select "RANGE POS . Shift the selector lev $H \rightarrow N \rightarrow R \rightarrow N \rightarrow$	$D \rightarrow N \rightarrow H$ hore times. 8. "Diagnosis Proce		ever at eac	h position	for 2 seco	nds or mor	re.)
. Select "RANGE POS . Shift the selector lev $H \rightarrow N \rightarrow R \rightarrow N \rightarrow$. Repeat step 4 five m . Check DTC. <u>s "P0706" detected?</u> YES >> Go to <u>TM-63</u>	$D \rightarrow N \rightarrow H$ hore times. 8. "Diagnosis Proce N END		ever at eac	h position	for 2 seco		re.)
Select "RANGE POS Shift the selector lev $H \rightarrow N \rightarrow R \rightarrow N \rightarrow$ Repeat step 4 five m Check DTC. <u>"P0706" detected?</u> YES >> Go to <u>TM-63</u> NO >> INSPECTIO	D → N → H hore times. <u>8. "Diagnosis Proce</u> N END re	dure".	ever at eac	h position	for 2 seco		

Monitor item	Condition	Value / Status
SHIFT SENSOR 1	Selector lever is held in R position	ON
	Other than the above	OFF

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P0706 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Monitor item	Condition	Value / Status
SHIFT SENSOR 2	Selector lever is held in R and N positions	ON
SHIFT SENSOR 2	Other than the above	OFF
SHIFT SENSOR 3	Selector lever is held in H (Home) and N positions	ON
SHIFT SENSOR S	Other than the above	OFF
SHIFT SENSOR 4	Selector lever is held in N and D positions	ON
SHIFT SENSOR 4	Selector lever is held in R and N positions Other than the above Selector lever is held in H (Home) and N positions Other than the above Selector lever is held in N and D positions Other than the above Selector lever is held in D positions Other than the above Selector lever is held in D position Other than the above Selector lever is held in D position Other than the above Selector lever in H (Home) position	OFF
SHIFT SENSOR 5	Selector lever is held in D position	ON
SHIFT SENSOR S	Other than the above	OFF
SHIFT SENSOR 6	Selector lever in H (Home) position	ON
SHIFT SENSOR 0	Other than the above	OFF

Without CONSULT

- 1. Set the vehicle to READY.
- 2. Operate the selector lever.
- 3. Check the voltage between electric shift control module vehicle side harness connector terminal and ground.

Electric shift sen-		rol module vehicle s connector	Ground	Condition	Voltage (Approx.)	
sor	Connector	terminal			(//pprox.)	
1		34		Selector lever is held in R position	0 V	
I		34		Other than the above	5 V	
		25		Selector lever is held in R and N positions	0 V	
2		30	35	Other than the above	5 V	
3		36		Selector lever is held in H (Home) and N positions	0 V	
	M59			Ground	Other than the above	5 V
4		07		Selector lever is held in N and D position	0 V	
4		37		Other than the above	5 V	
F		44		Selector lever is held in D position	0 V	
5		44		Other than the above	5 V	
0		45		Selector lever in H (Home) position	0 V	
6		45		Other than the above	5 V	

>> GO TO 2.

 $2. {\sf CHECK} \text{ harness between electric shift control module and electric shift sensor}$

1. Power switch OFF.

- 2. Disconnect the electric shift control module connector.
- 3. Disconnect the electric shift sensor connector.
- 4. Check the continuity between the malfunctioning electric shift sensor identified at Step 1 and the harness connector terminal located on the vehicle side of the electric shift control module.

P0706 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift sensor		module vehicle side har- connector	Electric shift sensor v conne		Continuity	А
	Connector	terminal	Connector	terminal		
1		34		11		В
2		35	Ť	5		
3	M59	36	M57	10	Existed	С
4	10139	37		3	Existed	C
5		44	*	9		
6		45	*	4		ТМ

5. Check the continuity electric shift control module vehicle side harness connector terminal and ground.

Electric shift sensor		le vehicle side harness con- ctor	Ground	Ground Continuity	
	Connector	terminal			
1		34			F
2	M59	35			
3		36	Ground	Not existed	G
4		37	Ground	NULEXISIEU	G
5		44			
6		45			Н

Is the inspection result normal?

YES >> Replace the electric shift sensor. Refer to <u>TM-131, "Exploded View"</u>.

NO >> Repair or replace damaged parts.

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P0780 SHIFT ERROR

< DTC/CIRCUIT DIAGNOSIS >

P0780 SHIFT ERROR

[ELECTRIC SHIFT]

INFOID:000000007631865

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P0780	Shift Error	In spite of the command from the electric shift control mod- ule, the parking actuator does not complete the switching to the designated position (P position or another position).	Parking actuator

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

() With CONSULT

- 1. Set the vehicle to READY.
- 2. Shift the selector lever to N position and wait for 10 seconds or more.
- 3. Press the P position switch to shift to P position and wait for 10 seconds or more.

4. Check DTC.

Is "P0780" detected?

YES >> Go to TM-66, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631866

1.REPLACE REDUCTION GEAR

Replace the reduction gear due to malfunction in the parking actuator. Refer to <u>TM-19</u>, "<u>Removal and Installa-</u> tion".

>> END

< DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

P1722 VEHICLE SPEED

DTC Logic

[ELECTRIC SHIFT]

INFOID:000000007631867

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DTC	Trouble diagnosis name	DTC detection condition	Possible cause	
P1722	Vehicle Speed Signal Circuit	 The electric shift control module detects a malfunction in the CAN communication signal with the ABS actuator and electric unit (control unit). The ABS actuator and electric unit (control unit) detects a malfunction with the wheel sensor. 	 ABS actuator and electric unit (control unit) VCM Electric shift control module Harness or connectors (Each circuit is open or shorted.) 	C TM
CAUTION	FIRMATION PROCED			E
	RATION BEFORE WORK			F
	DTC CONFIRMATION P	ROCEDURE" occurs just before, power s	switch OFF and wait for at least	
~	> GO TO 2.			G
-	RM DTC CONFIRMATIO	N PROCEDURE		
With CC				Н
2. Drive t	ne vehicle.	MPH) or more for 60 seconds.		I
	<u>detected?</u> > Go to <u>TM-67, "Diagnosi</u> > INSPECTION END	s Procedure".		J
Diagnos	is Procedure		INFOID:00000007631868	K
1.снеск	DTC OF ABS ACTUATC	R AND ELECTRIC UNIT (CONTROL UN	IT)	
With CC 1. Power	NSULT switch ON.			L
	m "Self Diagnostic Result <u>2 detected?</u>	S III ABS.		M
	> Check DTC detected ite > GO TO 2.	m. Refer to <u>BRC-50, "DTC Index"</u> .		
~	DTC OF VCM			Ν
	NSULT switch ON. m "Self Diagnostic Result	s" in "EV/HEV".		0
YES >:	<u>> detected?</u> > Check DTC detected ite > GO TO 3.	m. Refer to <u>EVC-84, "DTC_Index"</u> .		Ρ
-		NT		
Refer to G	-51, "Intermittent Incident			
Is the inspe	ection result normal?			

NO >> Repair or replace damaged parts.

P1802 CONTROL MODULE

< DTC/CIRCUIT DIAGNOSIS >

P1802 CONTROL MODULE

DTC Logic

INFOID:000000007631869

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P1802	Control Module (RAM)	A malfunction is detected in the electric shift control module.	Electric shift control module

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

() With CONSULT

1. Power switch OFF to ON and wait for 2 seconds or more.

2. Check DTC.

Is "P1802" detected?

YES >> Go to TM-68, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1.REPLACE ELECTRIC SHIFT CONTROL MODULE

Replace the electric shift control module. Refer to TM-130, "Removal and Installation".

>> END

INFOID:000000007631870

P1803 CONTROL MODULE

< DTC/CIRCUIT DIAGNOSIS >

P1803 CONTROL MODULE

DTC Logic

[ELECTRIC SHIFT]

INFOID:000000007631871

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DTC DETECTION LOGIC В DTC Trouble diagnosis name DTC detection condition Possible cause A malfunction is detected in the electric shift P1803 Electric shift control module Control Module (ROM) control module. DTC CONFIRMATION PROCEDURE TΜ **1.**PREPARATION BEFORE WORK If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least Ε 10 seconds, then perform the next test. >> GO TO 2. F 2. PERFORM DTC CONFIRMATION PROCEDURE (P)With CONSULT 1. Power switch OFF to ON and wait for 2 seconds or more. Check DTC. 2. Is "P1803" detected? YES >> Go to TM-69, "Diagnosis Procedure". Н >> INSPECTION END NO **Diagnosis** Procedure INFOID:000000007631872 **1.**REPLACE ELECTRIC SHIFT CONTROL MODULE Replace the electric shift control module. Refer to TM-130, "Removal and Installation". >> END Κ L

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P1804 CONTROL MODULE

< DTC/CIRCUIT DIAGNOSIS >

P1804 CONTROL MODULE

DTC Logic

INFOID:000000007631873

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P1804	Control Module (EEPROM)	A malfunction is detected in the electric shift control module.	Electric shift control module

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

() With CONSULT

1. Power switch OFF to ON and wait for 2 seconds or more.

2. Check DTC.

Is "P1804" detected?

YES >> Go to TM-70, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1.REPLACE ELECTRIC SHIFT CONTROL MODULE

Replace the electric shift control module. Refer to TM-130, "Removal and Installation".

>> END

INFOID:000000007631874

P1811 ELECTRIC SHIFT POWER SUPPLY RELAY AGNOSIS > [ELECTRIC SHIFT]

< DTC/CIRCUIT DIAGNOSIS >

P1811 ELECTRIC SHIFT POWER SUPPLY RELAY

DTC Logic

INFOID:000000007631875

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause	
		Battery voltage from the electric shift power supply relay is less than the specified value.	 Electric shift power supply relay (OFF stuck) Harness or fuse (Open) 	С
P1811	Electric Shift Power Supply Re- lay Circuit	It is detected that the voltage from the elec- tric shift power supply relay does not lower	 Electric shift power supply relay (ON stuck) Harness 	ТМ
		even though the electric shift power supply relay is OFF.	 12V battery short (Switch side) Ground short (Coil side) 	
	IFIRMATION PROCEDU	RE		F
		OCEDURE" occurs just before, powe	er switch OFF and wait for at least	Г
	s, then perform the next test	<i>i</i>		
				G

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

- T. Power switch ON and wait for 5 seconds or more.
- 2. Check DTC.

Is "P1811" detected?

- YES >> Go to TM-71, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND ELECTRIC SHIFT POWER K SUPPLY RELAY

- 1. Disconnect the electric shift control module connector.
- 2. Disconnect the electric shift power supply relay.
- Check the continuity between electric shift power supply relay vehicle side harness connector terminal and ground.

Connector Terminal	Electric shift power supply relay vehicle side harness connector		r Ground Continuity	
E56 2 Ground Not existed	Connector	Terminal	Ground	Continuity
	E56	2	Ground	Not existed

4. Check the continuity between electric shift power supply relay vehicle side harness connector terminals and electric shift control module vehicle side harness connector terminals.

Electric shift power supply relay vehicle side harness connector		Electric shift control module vehicle side harness con- nector		Continuity	
Connector	Terminal	Connector	Terminal		Ρ
	2	M58	17		
E56	F	OCIVI	7	Existed	
	5	M59	43		

5. Check the voltage between electric shift control module vehicle side harness connector terminals and ground.

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INFOID:000000007631876

P1811 ELECTRIC SHIFT POWER SUPPLY RELAY

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift control module vehicle side harness connector		Ground	Voltage	
Connector	Terminal	Ground	(Approx.)	
M58	7	Ground	0 V	
M59	43	Giodild	0 V	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2. CHECK GROUND CIRCUIT

Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

Electric shift control module vehicle side harness connector		Ground	Continuity	
Connector	Terminal	Ground	Continuity	
M58	3	Ground	Existed	
	4	Ground	Existed	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK ELECTRIC SHIFT POWER SUPPLY RELAY

Check the electric shift power supply relay. Refer to <u>TM-72</u>, "Component Inspection (Electric Shift Power Supply Relay)".

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace the electric shift power supply relay. Refer to TM-28, "Component Parts Location".

4. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between 12V battery and electric shift power supply relay vehicle side harness connector terminal 1 and 3.
- 12V battery
- 10A fuse (# 75)

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.

NO >> Repair or replace damaged parts.

Component Inspection (Electric Shift Power Supply Relay)

INFOID:000000007631877

1.CHECK ELECTRIC SHIFT POWER SUPPLY RELAY

1. Disconnect the electric shift power supply relay. Refer to TM-28. "Component Parts Location".

- 2. Apply 12 V direct current between electric shift power supply relay terminals 1 and 2.
 - CAUTION:
 - Never make the terminals short.
 - Connect the fuse between the terminals when applying the voltage.
- 3. Check the continuity between electric shift power supply relay terminals 3 and 5.

Electric shift power supply relay Terminal		Condition	Continuity
		Condition	
2	5	Apply 12 V direct current between terminals 1 and 2.	Existed
3	5	Does not apply 12 V direct current between terminals 1 and 2.	Not existed

Is the inspection result normal?

YES >> INSPECTION END

ртс	/CIRCUIT DIAGNOSIS >	PLY RELAY [ELECTRIC SHIFT]
0	>> Replace the electric shift power supply relay.	

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P1895 MOTOR SPEED

< DTC/CIRCUIT DIAGNOSIS >

P1895 MOTOR SPEED

DTC Logic

INFOID:000000007631878

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P1895	Motor Speed Signal	The motor speed signal from the traction motor inverter is not normal.	 Traction motor Traction motor inverter Electric shift control module Harness or connectors (CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE CAUTION:

Always drive vehicle at a safe speed.

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn the power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

- 1. Set the vehicle to READY.
- 2. Drive the vehicle at 30 km/h (19 MPH) or more for 60 seconds.
- 3. Stop the vehicle.
- 4. Check DTC.

Is "P1895" detected?

- YES >> Go to TM-74, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK DTC OF TRACTION MOTOR INVERTER

With CONSULT

- 1. Power switch ON.
- 2. Perform "Self Diagnostic Results" in "MOTOR CONTROL".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to <u>TMS-36, "DTC Index"</u>.
- NO >> GO TO 2.

2.CHECK INTERMITTENT INCIDENT

Refer to GI-51, "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace the electric shift control module. Refer to TM-130, "Removal and Installation".
- NO >> Repair or replace damaged parts.

INFOID:000000007631879

< DTC/CIRCUIT DIAGNOSIS >

P1896 SHIFT POWER SUPPLY

DTC Logic

[ELECTRIC SHIFT]

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DTC DETECTION LOGIC В DTC DTC detection condition Possible cause Trouble diagnosis name It is detected that electric shift sensors No. 1, 3, and · Electric shift sensor 5 are stuck at OFF. · Electric shift control module Electric Shift Sensor Power P1896 · Harness or connectors Supply It is detected that electric shift sensors No. 2, 4, and (Each circuit is open or short-ТΜ 6 are stuck at OFF. ed.) Position Pattern Table Electric shift sensor Electric shift control module Selector lever position recognition position No. 1 No. 2 No. 3 No. 4 No. 5 No. 6 ON н Н OFF OFF OFF OFF ON Ρ н OFF OFF ON OFF OFF ON OFF R R OFF OFF OFF ON ON OFF OFF OFF Ν Ν ON ON ON D D OFF OFF OFF ON ON OFF DTC CONFIRMATION PROCEDURE Н **1.**PREPARATION BEFORE WORK If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test. >> GO TO 2. 2. PERFORM DTC CONFIRMATION PROCEDURE (P)With CONSULT 1. Set the vehicle to READY. Κ 2. Select "Data Monitor" in "SHIFT". 3. Select "RANGE POSITION". 4. Shift the selector lever as follows. (Hold the selector lever at each position for 2 seconds or more.) $H \rightarrow N \rightarrow R \rightarrow N \rightarrow D \rightarrow N \rightarrow H$ L Repeat step 4 five times. 5. Check DTC. 6. Is "P1896" detected? Μ YES >> Go to TM-75, "Diagnosis Procedure". >> INSPECTION END NO **Diagnosis** Procedure Ν INFOID:000000007631881 1.CHECK ELECTRIC SHIFT SENSOR INPUT SIGNAL (P)With CONSULT 1. Set the vehicle to READY. 2. Select "Data Monitor" in "SHIFT". Select "SHIFT SENSOR 1", "SHIFT SENSOR 2", "SHIFT SENSOR 3", "SHIFT SENSOR 4", "SHIFT SEN-Ρ 3. SOR 5", and "SHIFT SENSOR 6". 4. Operate the selector lever to identify a electric shift sensor of which value does not change.

Monitor item	Condition	Value / Status
SHIFT SENSOR 1	Selector lever is held in R position	
	Other than the above	OFF

P1896 SHIFT POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Monitor item	Condition	Value / Status
SHIFT SENSOR 2	Selector lever is held in R and N positions	ON
SHIFT SENSOR 2	Other than the above	OFF
SHIFT SENSOR 3	Selector lever is held in H (Home) and N positions	ON
SHIFT SENSOR 3	Other than the above	OFF
SHIFT SENSOR 4	Selector lever is held in N and D positions	ON
SHIFT SENSOR 4	Other than the above	OFF
SHIFT SENSOR 5	Selector lever is held in D position	ON
SHIFT SENSOR 5	Other than the above	OFF
SHIFT SENSOR 6	Selector lever in H (Home) position	ON
SHIFT SENSUR D	Other than the above	OFF

Without CONSULT

- 1. Set the vehicle to READY.
- 2. Operate the selector lever.
- 3. Check the voltage between electric shift control module vehicle side harness connector terminal and ground.

Electric shift sen-	Electric shift control module vehicle side harness connector		Ground	Condition	Voltage (Approx.)
sor	Connector	terminal			(Appiox.)
1		34		Selector lever is held in R position	0 V
I		34		Other than the above	5 V
2	-			Selector lever is held in R and N positions	0 V
2		35		Other than the above	5 V
3	-	36	Ground	Selector lever is held in H (Home) and N positions	0 V
	M59			Other than the above	5 V
4	-	07		Selector lever is held in N and D position	0 V
4		37		Other than the above	5 V
F	-	4.4		Selector lever is held in D position	0 V
5		44		Other than the above	5 V
_	-	45		Selector lever in H (Home) position	0 V
6		45		Other than the above	5 V

>> GO TO 2.

2. CHECK ELECTRIC SHIFT SENSOR POWER SUPPLY CIRCUIT

- 1. Power switch OFF.
- 2. Disconnect the electric shift sensor connector.
- 3. Power switch ON.
- 4. Check the power circuit of the malfunctioning electric shift sensor identified at Step 1.
- 5. Check the voltage between electric shift sensor vehicle side harness connector terminal and ground.

Electric shift sensor	Electric shift sensor vehic	le side harness connector	Ground	Voltage	
	Connector	Terminal	Ground	(Approx.)	
1, 3, 5	M57	1	Ground	5 V	
2, 4, 6	10137	7	Ground		

Is the inspection result normal?

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

P1896 SHIFT POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

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3.CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND ELECTRIC SHIFT SENSOR

- 1. Power switch OFF.
- 2. Disconnect the electric shift control module connector.
- Check the continuity between electric shift control module vehicle side harness connector terminal and electric shift sensor vehicle side harness connector terminal.

Electric shift sensor	Electric shift control module vehicle side har- ness connector		Electric shift sensor vehicle side harness connector		Continuity	С
	Connector	Terminal	Connector	Terminal		
1, 3, 5	M58	19	M57	1	Existed	ТМ
2, 4, 6	M59	48	10137	7	LAISIEU	

4. Check the continuity between electric shift control module vehicle side harness connector terminal and ground.

Electric shift sensor		ehicle side harness connector	Ground	Continuity	
Electric shint sensor	Connector	Terminal	Ground	Continuity	F
1, 3, 5	M58	19	Ground	Not existed	
2, 4, 6	M59	48	Ground	NOT EXISTED	_

Is the inspection result normal?

YES >> 1. Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.
 2. If inspection result is OK, replace the electric shift control module. Refer to <u>TM-130, "Removal and Installation"</u>.

NO >> Repair or replace damaged parts.

4.CHECK ELECTRIC SHIFT SENSOR GROUND CIRCUIT

- 1. Power switch OFF.
- 2. Disconnect the electric shift control module connector.
- 3. Check the continuity between electric shift control module vehicle side harness connector terminal and electric shift sensor vehicle side harness connector terminal.

Electric shift sensor	r Electric shift control module vehicle side har- ness connector		Electric shift sensor conr	Continuity	K	
	Connector	Terminal	Connector	Terminal		
1, 3, 5	M59	41	M57	6	Existed	
2, 4, 6	10109	50	1 CIVI	12	EXISTED	L

Check the continuity between electric shift control module vehicle side harness connector terminal and ground.

Electric shift sensor	Electric shift control module v	ehicle side harness connector	Cround	Continuity	-
Electric Shirt Serisor	Connector	Terminal	Terminal Ground		N
1, 3, 5	M59	41	Ground	Not existed	- 11
2, 4, 6	10139	50	Ground	NOT EXISTED	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

5.CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND ELECTRIC SHIFT SENSOR $^{m P}$

1. Check the continuity between electric shift control module vehicle side harness connector terminal and electric shift sensor vehicle side harness connector terminal.

P1896 SHIFT POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift sensor	Electric shift control module vehicle side harness connector		Electric shift sensor conr	Continuity	
	Connector	Terminal	Connector	Terminal	
1		34		11	
2		35		5	
3	M59	36	M57	10	Existed
4		37	NIG7	3	Existed
5		44		9	
6		45		4	

2. Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

Electric shift sensor	Electric shift control module vehicle side harness con- nector		Ground	Continuity
	Connector Terminal			
1		34		
2		35		Net evicte d
3		36		
4	M59	37	Ground	Not existed
5		44		
6		45		

Is the inspection result normal?

YES >> 1. Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.

If inspection result is OK, replace the electric shift sensor. Refer to <u>TM-131, "Exploded View"</u>.
 NO >> Repair or replace damaged parts.

P1897 ENCODER ERROR

< DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

P1897 ENCODER ERROR

DTC Logic

[ELECTRIC SHIFT]

INFOID:000000007631882

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DTC	Trouble diagnosis name	DTC	detection condition		Possi	ible cause
P1897	Encoder Error		re not transmitted de actuator by the electr		 Encoder (Parl Harness or co (Each circuit is) 	
DTC CON	FIRMATION PROCE	DURF				
CAUTION:						
4	ive vehicle at a safe s	-				
	RATION BEFORE WO					
	DTC CONFIRMATION		occurs just befo	ore, power s	switch OFF an	d wait for at least
0 Second						
>:	> GO TO 2.					
PERFO	RM DTC CONFIRMAT	ON PROCEDU	RE			
With CO	NSULT					
. Set the	e vehicle to READY.					
	ne selector lever to N po the P position switch to				or more	
. Check		onine to repositio				
	detected?					
	> Go to <u>TM-79, "Diagno</u> > INSPECTION END	<u>sis Procedure"</u> .				
Jagnosi	is Procedure					INFOID:000000007631883
I.CHECK	ENCODER POWER S		Т			
	switch OFF.					
	nect the parking actuat the voltage between pa		ehicle side harn	ess connec	tor terminal an	d around
. Oneon	the vehage between p					a groana.
Parkin	g actuator vehicle side harne	ess connector	Ground	C	ondition	Voltage
Co	nnector	Terminal				(Approx.)
	F4	7	Ground	Power swite	ch ON	5 V
	ection result normal?					
	> GO TO 2. > GO TO 4.					
-	HARNESS BETWEEN	I ELECTRIC SH	IFT CONTROL I	MODULE A		R
	switch OFF.					
	nect the electric shift c	ontrol module co	nnector.			
	the continuity betweer			hicle side h	arness connec	ctor terminals and
parking	g actuator vehicle side	narness connect	or terminals.			

P1897 ENCODER ERROR

< DTC/CIRCUIT DIAGNOSIS >

	dule vehicle side harness nector	Parking actuator vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
	15		6	
M58	23	F4	8	Existed
	24		5	

4. Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

Electric shift control module	vehicle side harness connector	Ground	Continuity
Connector	Connector Terminal		Continuity
	15		Not existed
M58	23	Ground	
	24		

Is the inspection result normal?

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

3.CHECK INTERMITTENT INCIDENT

Refer to GI-51, "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace the reduction gear due to malfunction in the encoder (parking actuator). Refer to <u>TM-19.</u> <u>"Removal and Installation"</u>.
- NO >> Repair or replace damaged parts.

4.CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND ENCODER

1. Power switch OFF.

2. Disconnect the electric shift control module connector.

3. Check the continuity between electric shift control module vehicle side harness connector terminal and parking actuator vehicle side harness connector terminal.

Electric shift control module vehicle side harness connector		Parking actuator vehicle	e side harness connector	Continuity
Connector	Terminal	Connector	Terminal	
M58	16	F4	7	Existed

4. Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

Electric shift control module v	whicle side harness connector	Ground	Continuity	
Connector	Connector Terminal		Continuity	
M58	16	Ground	Not existed	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.

NO >> Repair or replace damaged parts.

P1899 MOTOR A

< DTC/CIRCUIT DIAGNOSIS >

P1899 MOTOR A

DTC DETECTION LOGIC

DTC Logic

[ELECTRIC SHIFT]

Possible cause

· Electric shift control module

Harness (12V battery short)

Motor coil A (Parking actuator)

INFOID:000000007631884

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INFOID:000000007631885

DTC Trouble diagnosis name When the power switch is ON, either of two energized phases is in the non-energized state. P1899 Motor "A" Circuit High NOTE: Energized: Approx. 0 V, Non-energized: 9 - 16 V DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

DTC detection condition

>> GO TO 2. 2.PERFORM DTC CONFIRMATION PROCEDURE
 With CONSULT Power switch ON and wait for 2 seconds or more. Check DTC.
Is "P1899" detected?
YES >> Go to <u>TM-81, "Diagnosis Procedure"</u> . NO >> INSPECTION END

Diagnosis Procedure

1. CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND MOTOR COIL A

- 1. Power switch OFF.
- 2. Disconnect the electric shift control module connector.
- 3. Disconnect the parking actuator connector.
- Check the voltage electric shift control module vehicle side harness connector terminals and ground. 4.

Electric shift control module	Electric shift control module vehicle side harness connector		Voltage	
Connector	Terminal	- Ground	Voltage (Approx.)	L
	1			-
M58	2	Ground	0 V	M
	5			

5. Check the continuity electric shift control module vehicle side harness connector terminals and parking actuator vehicle side harness connector terminals.

Electric shift control mod r	e side harness connector	Continuity	0		
Connector Terminal		Connector	Terminal		
	1		1		_
M58 2		F4	2	Existed	Ρ
	5		3		

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repaire or replace damaged parts.

2.CHECK MOTOR COIL A

P1899 MOTOR A

< DTC/CIRCUIT DIAGNOSIS >

Check the motor coil A. Refer to TM-82, "Component Inspection (Motor Coil A)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-51, "Intermittent Incident".

NO >> Replace the reduction gear due to malfunction in the motor coil A (parking actuator). Refer to TM-19, "Removal and Installation".

Component Inspection (Motor Coil A)

1.CHECK MOTOR COIL A

- 1. Disconnect the parking actuator connector.
- Check the resistance between parking actuator connector terminals. 2.

Parking actua	Resistance				
Terr	Terminal				
	1				
4	2	2.3 – 2.8 Ω			
	3				

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the reduction gear due to malfunction in the motor coil A (parking actuator). Refer to TM-19, "Removal and Installation".

INFOID:000000007631886

P189A MOTOR A

< DTC/CIRCUIT DIAGNOSIS >

P189A MOTOR A

DTC Logic

DTC	Trouble diag	gnosis name	DTC detection condition		Possible cause
P189A	Motor "A" Cir	cuit Low	When the power switch is ON, one of is in the energized state even though all phases are not energized. NOTE: Energized: Approx. 0 V, Non-energiz	motor coil A	Parking actuator relay A (OFF stuck Motor coil A (Parking actuator) Electric shift control module Harness or connectors (Each circuit is open or ground short ed.)
TC CON	IFIRMATION		DURE		
.PREPA	RATION BEF	ORE WOR	K		
	DTC CONFIF		PROCEDURE" occurs just befo t.	ore, key switc	h OFF and wait for at least 1
>:	> GO TO 2.				
2.PERFO	RM DTC CO	NFIRMATIO	ON PROCEDURE		
2. Check <u>s "P189A"</u>	switch ON ar DTC. detected?		2 seconds or more. sis Procedure".		
	> INSPECTIO		sis riocedure.		
NO >:		N END	is rideaure.		INFOID:0000000076318
NO >: Diagnosi	> INSPECTIO	N END Ire	ELECTRIC SHIFT CONTROL I	MODULE AN	
NO >: Diagnosi .CHECK . Power . Discor . Discor . Check	INSPECTIO is Procedu HARNESS E switch OFF. anect the elect anect the park the continuity	ON END IFE BETWEEN tric shift co king actuato y electric s	ELECTRIC SHIFT CONTROL		D MOTOR COIL A
NO >: Diagnosi .CHECK . Power 2. Discor 3. Discor 4. Check actuate	INSPECTIO is Procedu HARNESS E switch OFF. anect the elect anect the park the continuity	DN END IFE BETWEEN tric shift co ting actuato y electric s e harness o e vehicle side	ELECTRIC SHIFT CONTROL I ntrol module connector. or connector. shift control module vehicle side connector terminals.	e harness co	D MOTOR COIL A
NO >: Diagnosi .CHECK . Power . Discor . Discor . Check actuate Electric sh	INSPECTIO is Procedu HARNESS E switch OFF. anect the elect anect the park the continuity or vehicle side ift control module	DN END IFE BETWEEN tric shift co ting actuato y electric s e harness o e vehicle side	ELECTRIC SHIFT CONTROL I ntrol module connector. or connector. shift control module vehicle side connector terminals.	e harness co	D MOTOR COIL A
NO >: Diagnosi .CHECK . Power . Discor . Discor . Discor . Check actuate Electric sh	> INSPECTIO	DN END TRE BETWEEN tric shift co king actuato y electric s e harness o e vehicle side tor Termin 1	ELECTRIC SHIFT CONTROL I ntrol module connector. or connector. shift control module vehicle side connector terminals. harness Parking actuator vehicle side al Connector	e harness co side harness cor Termina 1	D MOTOR COIL A
NO >: Diagnosi .CHECK . Power 2. Discor 3. Discor 4. Check actuate Electric sh	INSPECTIO is Procedu HARNESS E switch OFF. anect the elect anect the park the continuity or vehicle side ift control module connect	ON END IFE BETWEEN tric shift co ting actuato y electric s e harness of e vehicle side tor Termin 1 2	ELECTRIC SHIFT CONTROL I ntrol module connector. or connector. shift control module vehicle side connector terminals.	e harness co side harness cor Termina 1 2	D MOTOR COIL A
NO >: Diagnosi .CHECK . Power . Discor . Discor . Discor . Check actuate Electric sh	INSPECTIO is Procedu (HARNESS E switch OFF. nect the election inect the election or vehicle side ift control module connect ift control module connect	DN END IFE BETWEEN tric shift co king actuato y electric s e harness of e vehicle side tor Termin 1 2 5	ELECTRIC SHIFT CONTROL I ntrol module connector. or connector. shift control module vehicle side connector terminals. harness Parking actuator vehicle side al Connector F4 F4	e harness co side harness cor Termina 1 2 3	D MOTOR COIL A
NO >: Diagnosi .CHECK . Power . Discor . Discor . Discor . Check actuate Electric sh Conr	INSPECTIO is Procedu (HARNESS E switch OFF. nect the election inect the election or vehicle side ift control module connect ift control module connect	DN END IFE BETWEEN tric shift co king actuato y electric s e harness of e vehicle side tor Termin 1 2 5	ELECTRIC SHIFT CONTROL I ntrol module connector. or connector. shift control module vehicle side connector terminals. harness Parking actuator vehicle side al Connector	e harness co side harness cor Termina 1 2 3	D MOTOR COIL A
NO >: Diagnosi .CHECK . Power . Discor . Discor . Check actuate Electric sh Conr M . Check	INSPECTIO is Procedu HARNESS E switch OFF. anect the elect anect the park the continuity or vehicle side ift control module connect hector 58 the continuity	ON END IFE BETWEEN tric shift co ting actuato y electric s e harness of tor Termin 1 2 5 y electric sh	ELECTRIC SHIFT CONTROL I ntrol module connector. or connector. shift control module vehicle side connector terminals. harness Parking actuator vehicle side al Connector F4 F4	e harness co side harness cor Termina 1 2 3 narness conn	D MOTOR COIL A
NO >: Diagnosi .CHECK . Power . Discor . Discor . Check actuate Electric sh Conr M	INSPECTIO is Procedu HARNESS E switch OFF. anect the elect anect the park the continuity or vehicle side ift control module connect hector 58 the continuity	ON END IFE BETWEEN tric shift co ting actuato y electric s e harness of tor Termin 1 2 5 y electric sh	ELECTRIC SHIFT CONTROL I ntrol module connector. or connector. shift control module vehicle side connector terminals. harness Parking actuator vehicle side al Connector F4 hift control module vehicle side	e harness co side harness cor Termina 1 2 3	D MOTOR COIL A
NO >: Diagnosi .CHECK . Power 2. Discor 3. Discor 4. Check actuato Electric sh Conr M 5. Check	INSPECTIO is Procedu A HARNESS E switch OFF. anect the elect anect the elect anect the park the continuity or vehicle side ift control module connect sector 58 the continuity ctric shift control	ON END IFE BETWEEN tric shift co ting actuato y electric s e harness of tor Termin 1 2 5 y electric sh	ELECTRIC SHIFT CONTROL I ntrol module connector. or connector. shift control module vehicle side connector terminals. harness Parking actuator vehicle side al Connector F4 F4 hift control module vehicle side F4	e harness co side harness cor Termina 1 2 3 narness conn	D MOTOR COIL A
NO >: Diagnosi I.CHECK I. Power 2. Discor 3. Discor 4. Check actuato Electric sh Conr M 5. Check	INSPECTIO is Procedu A HARNESS E switch OFF. anect the elect anect the elect anect the park the continuity or vehicle side ift control module connect sector 58 the continuity ctric shift control	ON END IFE BETWEEN tric shift co ting actuato y electric s e harness of tor Termin 1 2 5 y electric sh	ELECTRIC SHIFT CONTROL I ntrol module connector. or connector. shift control module vehicle side connector terminals. harness Parking actuator vehicle side al Connector F4 nift control module vehicle side cle side harness connector Terminal	e harness co side harness cor Termina 1 2 3 narness conn	D MOTOR COIL A

NO

>> Repair or replace damaged parts.

[ELECTRIC SHIFT]

INFOID:000000007631887

А

В

< DTC/CIRCUIT DIAGNOSIS >

2. CHECK GROUND CIRCUIT

Check the continuity electric shift control module vehicle side harness connector terminals and ground.

Electric shift control module v	ehicle side harness connector	Ground	Continuity
Connector	Connector Terminal		Continuity
M58	6	Ground	Existed
10150	25	Ground	LXISIEU

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK PARKING ACTUATOR RELAY A

Check the parking actuator relay A. Refer to <u>TM-85</u>, "Component Inspection (Parking Actuator Relay A)". Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace the parking actuator relay A. Refer to <u>TM-28, "Component Parts Location"</u>.

4.CHECK HARNESS BETWEEN PARKING ACTUATOR RELAY A AND 12V BATTERY

Check the voltage parking actuator relay A vehicle side harness connector terminal and ground.

Parking actuator relay A ve	hicle side harness connector	Ground	Voltage	
Connector	Connector Terminal		voltage	
E54	1	Ground	9 – 16 V	
LJ 4	3	Cibulid	3 - 10 V	

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

5. DETECT MALFUNCTIONING ITEM

Check the following.

Harness for short or open between parking actuator relay A and 12V battery

12V battery

20A fuse (# 76)

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.

NO >> Repair or replace damaged parts.

6.CHECK HARNESS BETWEEN PARKING ACTUATOR AND PARKING ACTUATOR RELAY A

Check the continuity parking actuator vehicle side harness connector terminal and parking actuator relay A vehicle side harness connector terminal.

Parking actuator vehicle	e side harness connector	с, ,	vehicle side harness con- ctor	Continuity
Connector	Terminal	Connector	Terminal	
F4	4	E54	5	Existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace damaged parts.

7.CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND PARKING ACTUATOR RELAY A

1. Check the continuity electric shift control module vehicle side harness connector terminal and parking actuator relay A vehicle side harness connector terminal.

P189A MOTOR A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

	ectric shift control module vehicle side harne connector Connector Terminal		n	A vehicle side harness con- ector	Continuity
Connector	Terr	minal	Connector	Terminal	
M58	1	18	E54	2	Existed
. Check the cor	ntinuity electric	shift contr	rol module vehicle sid	de harness connector te	rminal and ground.
Electric shift	control module ve	hicle side ha	rness connector	Ground	Continuity
Connec	tor		Terminal		
M58			18	Ground	Not existed
<u>s the inspection re</u> YES >> GO Te NO >> Repai	O 8. r or replace da	amaged pa	irts.		
Check the motor of the state of		actuator).	Refer to <u>TM-85, "Cor</u>	mponent Inspection (Mot	tor Coil A)".
NO >> Repla <u>19, "R</u>	ce the reduction temoval and Ir	on gear du nstallation"		e motor coil A (parking a	actuator). Refer to <u>TM</u>
Component In	spection (F	Parking A	Actuator Relay A	.)	INFOID:00000000763188
CHECK PARKI					
Disconnect th Apply 12 V dir CAUTION: • Never make	e parking acturect current be the terminal	ator relay <i>i</i> tween parl			<u>on"</u> .
 Disconnect th Apply 12 V dia CAUTION: Never make Connect the Check the cordinates 	e parking acturect current be the terminal e fuse betwee	ator relay a tween park Is short. en the tern	A. Refer to <u>TM-28, "(</u> king actuator relay A ninals when applyir actuator relay A term	terminals 1 and 2. ng the voltage. ninals 3 and 5.	
Disconnect th Apply 12 V dir CAUTION: • Never make • Connect th B. Check the cor Parking act	e parking acturect current be the terminal e fuse betwee ntinuity betwee	ator relay a tween park Is short. en the tern	A. Refer to <u>TM-28, "(</u> king actuator relay A ninals when applyir	terminals 1 and 2. ng the voltage. ninals 3 and 5.	on". Continuity
Disconnect th Apply 12 V dir CAUTION: Never make Connect th Check the cor Parking act Terr	e parking acturect current be e the terminal e fuse betwee ntinuity betwee uator relay A ninal	ator relay <i>i</i> atween park is short. en the tern en parking	A. Refer to <u>TM-28, "(</u> king actuator relay A ninals when applyir actuator relay A term	terminals 1 and 2. ng the voltage. ninals 3 and 5. dition	
Disconnect th Apply 12 V din CAUTION: • Never make • Connect th B. Check the cor Parking act Terr 3	e parking acturect current be the terminal e fuse betwee ntinuity betwee uator relay A ninal	ator relay <i>i</i> etween park is short. en the tern en parking Apply	A. Refer to <u>TM-28, "C</u> king actuator relay A ninals when applyir actuator relay A term Cond	terminals 1 and 2. ng the voltage. ninals 3 and 5. dition	Continuity Existed
Disconnect th Apply 12 V dir CAUTION: Never make Connect th Check the cor Parking act Terr 3 s the inspection re YES >> INSPE	e parking acturect current be the terminal for the terminal for the terminal for the terminal for the parking spection (Note: The parking spection (Note: The terminal for the parking spection (Note: The terminal for ter	ator relay / atween park is short. en the tern en parking Apply Does i g actuator r	A. Refer to <u>TM-28, "(</u> king actuator relay A minals when applyin actuator relay A term Cond 12 V direct current betwe not apply 12 V direct current relay A.	terminals 1 and 2. ng the voltage. ninals 3 and 5. dition en terminals 1 and 2.	Continuity Existed
 Disconnect th Apply 12 V dia CAUTION: Never make Connect th Check the cor Parking acts Terr 3 the inspection re YES >> INSPE NO >> Repla Component In CHECK MOTO Disconnect th 	e parking acturect current be the terminal for the terminal for the terminal for the parking spection (Normal Coll A e parking actual for the parking actual for the parking actual for the parking for the parking actual for the pa	ator relay / etween park s short. en the term en parking Apply Does i g actuator r Aotor Co	A. Refer to <u>TM-28, "(</u> king actuator relay A ninals when applyir actuator relay A term Cond 12 V direct current betwe not apply 12 V direct curre	terminals 1 and 2. ng the voltage. hinals 3 and 5. dition en terminals 1 and 2. ent between terminals 1 and 2	Continuity Existed . Not existed
 Disconnect th Apply 12 V dia CAUTION: Never make Connect th Check the cor Parking acts Terr 3 the inspection re YES >> INSPE NO >> Repla Component In CHECK MOTO Disconnect th 	e parking acturect current be the terminal e fuse between the terminal 5 esult normal? ECTION END ce the parking spection (Normal A content of the terminal A content of terminal A	ator relay / etween park short. en the term en parking Apply Does i dator conne en parking Parking actua	A. Refer to <u>TM-28, "(</u> king actuator relay A minals when applyin actuator relay A term Cond 12 V direct current betwe not apply 12 V direct current relay A. iI A)	terminals 1 and 2. ng the voltage. hinals 3 and 5. dition en terminals 1 and 2. ent between terminals 1 and 2	Continuity Existed . Not existed
 Disconnect th Apply 12 V dia CAUTION: Never make Connect th Check the cor Parking acts Terr 3 the inspection re YES >> INSPE NO >> Repla Component In CHECK MOTO Disconnect th 	e parking acturect current be the terminal e fuse between the terminal 5 esult normal? ECTION END ce the parking spection (Normal A content of the terminal A content of terminal A	ator relay / etween park short. en the term en parking Apply Does i dator conne en parking Parking actua	A. Refer to <u>TM-28, "(</u> king actuator relay A minals when applyin actuator relay A term Cond 12 V direct current betwe not apply 12 V direct curre relay A. iI A)	terminals 1 and 2. ng the voltage. ninals 3 and 5. dition en terminals 1 and 2. ent between terminals 1 and 2 erminals.	Continuity Existed . Not existed
 Disconnect th Apply 12 V dia CAUTION: Never make Connect th Check the cor Parking acts Terr 3 the inspection re YES >> INSPE NO >> Repla Component In CHECK MOTO Disconnect th 	e parking acturect current be e the terminal e fuse betwee nationaly betwee uator relay A ninal 5 esult normal? ECTION END ce the parking spection (Normal) R COIL A e parking actu- istance betwee	ator relay / etween park short. en the term en parking Apply Does i dator conne en parking Parking actua	A. Refer to <u>TM-28, "(</u> king actuator relay A minals when applyin actuator relay A term Cond 12 V direct current betwe not apply 12 V direct current relay A. iI A)	terminals 1 and 2. ng the voltage. ninals 3 and 5. dition en terminals 1 and 2. ent between terminals 1 and 2 erminals.	Continuity Existed . Not existed . INFOID:00000000763189 Resistance
 Disconnect th Apply 12 V dia CAUTION: Never make Connect th Check the cor Parking acts Terr 3 the inspection re YES >> INSPE NO >> Repla Component In CHECK MOTO Disconnect th 	e parking acturect current be the terminal e fuse between the terminal 5 esult normal? ECTION END ce the parking spection (Normal A content of the terminal A content of terminal A	ator relay / etween park short. en the term en parking Apply Does i dator conne en parking Parking actua	A. Refer to <u>TM-28, "(</u> king actuator relay A minals when applyin actuator relay A term Cond 12 V direct current betwe not apply 12 V direct current relay A. iI A)	terminals 1 and 2. ng the voltage. ninals 3 and 5. dition en terminals 1 and 2. ent between terminals 1 and 2 erminals.	Continuity Existed . Not existed

P189A MOTOR A

< DTC/CIRCUIT DIAGNOSIS >

- [ELECTRIC SHIFT]
- NO >> Replace the reduction gear due to malfunction in the motor coil A (parking actuator). Refer to <u>TM-</u> <u>19, "Removal and Installation"</u>.

< DTC/CIRCUIT DIAGNOSIS >

P189B MOTOR B

DTC Logic

А

В

INFOID:000000007631891

DTC DETECTION LOGIC

	8	ame	DTC detection condition		le cause
P189B	Motor "B" Circuit High	gized pha NOTE:	e power switch is ON, either of two ener- ases is in the non-energized state. d: Approx. 0 V, Non-energized: 9 – 16 V	 Electric shift co Motor coil B (P Harness (12V) 	arking actuator)
	IFIRMATION PRO				
	RATION BEFORE				
				witch OFF and	weit for at lease
	s, then perform the		URE" occurs just before, power s	witch OFF and	wait for at leas
	-,				
>	> GO TO 2.				
2.perfo	RM DTC CONFIRM	IATION PROC	EDURE		
With CO	NSULT				
	switch ON and wa	t for 2 seconds	or more.		
2. Check s "P189B"	detected?				
	> Go to <u>TM-87, "Dia</u>	anosis Proced	ure".		
	> INSPECTION EN		<u></u> .		
Diagnosi	is Procedure				INFOID:00000000763189
Jugitool					
1.снеск	HARNESS BETW	EEN ELECTRI	C SHIFT CONTROL MODULE AN	ND MOTOR CC	DIL B
1.CHECK	HARNESS BETW			ND MOTOR CC	DIL B
1 .CHECK I. Power 2. Discon 3. Discon	HARNESS BETW switch OFF. nnect the electric sh nnect the parking ad	ift control modu tuator connect	ule connector. or.		
1 .CHECK I. Power 2. Discon 3. Discon	HARNESS BETW switch OFF. nnect the electric sh nnect the parking ad	ift control modu tuator connect	ule connector.		
1.CHECK I. Power 2. Discon 3. Discon 4. Check	HARNESS BETW switch OFF. nnect the electric sh nnect the parking ad	ift control modu tuator connect shift control m	ule connector. or. odule vehicle side harness conne	ector terminals a	and ground.
1.CHECK I. Power 2. Discon 3. Discon 4. Check	HARNESS BETW switch OFF. nect the electric sh nect the parking ac the voltage electric	ift control modu tuator connect shift control m	ule connector. or. odule vehicle side harness conne		
1.CHECK I. Power 2. Discon 3. Discon 4. Check	A HARNESS BETW switch OFF. nect the electric sh nect the parking ac the voltage electric ectric shift control modu	ift control modu tuator connect shift control m	ule connector. or. odule vehicle side harness conne	ector terminals a	and ground. Voltage
1.CHECK I. Power 2. Discon 3. Discon 4. Check	A HARNESS BETW switch OFF. nect the electric sh nect the parking ac the voltage electric ectric shift control modu	ift control modu tuator connect shift control m	ule connector. or. odule vehicle side harness conne ness connector Terminal 27	ector terminals a	and ground. Voltage
1.CHECK I. Power 2. Discon 3. Discon 4. Check	A HARNESS BETW switch OFF. anect the electric sh anect the parking ac the voltage electric ectric shift control modu Connector	ift control modu tuator connect shift control m	ule connector. or. odule vehicle side harness conne ness connector Terminal 27	octor terminals a	and ground. Voltage (Approx.)
1. CHECK 1. Power 2. Discon 3. Discon 4. Check Ele 5. Check	THARNESS BETW switch OFF. anect the electric sh anect the parking ac the voltage electric ectric shift control modu Connector M59 the continuity electric	ift control modu tuator connect shift control m le vehicle side har	ule connector. or. odule vehicle side harness conne ness connector Terminal 27 28 29 ol module vehicle side harness co	octor terminals a	Voltage (Approx.) 0 V
1. CHECK 1. Power 2. Discon 3. Discon 4. Check Ele 5. Check	THARNESS BETW switch OFF. nect the electric sh nect the parking ac the voltage electric ectric shift control modu Connector M59	ift control modu tuator connect shift control m le vehicle side har	ule connector. or. odule vehicle side harness conne ness connector Terminal 27 28 29 ol module vehicle side harness co	octor terminals a	Voltage (Approx.) 0 V
1. CHECK 1. Power 2. Discon 3. Discon 4. Check Ele 5. Check actuato	THARNESS BETW switch OFF. anect the electric sh anect the parking ac the voltage electric ectric shift control modu Connector M59 the continuity electric	ift control modu tuator connect shift control m le vehicle side har tric shift contro ess connector	ule connector. or. odule vehicle side harness connector Terminal 27 28 29 Ol module vehicle side harness conterminals.	ound bund bund bund bund	Voltage (Approx.) 0 V
1. CHECK 1. Power 2. Discon 3. Discon 4. Check Ele 5. Check actuato	THARNESS BETW switch OFF. anect the electric sh anect the parking ac the voltage electric ectric shift control modu Connector M59 the continuity elector or vehicle side harr	ift control modu tuator connect shift control m le vehicle side har tric shift contro ess connector	ule connector. or. odule vehicle side harness connector ness connector Terminal 27 28 29 of module vehicle side harness conterminals.	ound bund bund bund bund	Voltage (Approx.) 0 V
CHECK Ower Discon Discon Discon Check Ele Check Check Check Check Check	THARNESS BETW switch OFF. anect the electric sh anect the parking ac the voltage electric ectric shift control modu Connector M59 the continuity elector or vehicle side harr	ift control modu tuator connect shift control m le vehicle side har tric shift contro ess connector side harness con- Terminal	ule connector. or. odule vehicle side harness conne ness connector Terminal 27 28 29 of module vehicle side harness conterminals. Parking actuator vehicle side harness	ector terminals a bund bund connector termir is connector rminal	and ground. Voltage (Approx.) 0 V nals and parking
CHECK Discon Discon Discon Check Ele Electric shift Con	HARNESS BETW switch OFF. nect the electric sh nect the parking ac the voltage electric ectric shift control modu Connector M59 the continuity elector t control module vehicle nector nector	ift control modu tuator connect shift control m le vehicle side har tric shift contro ess connector side harness con-	ule connector. or. odule vehicle side harness connector ness connector Terminal 27 28 29 ol module vehicle side harness conterminals. Parking actuator vehicle side harness Connector Terminal	ctor terminals a bund bund connector termin is connector rminal	and ground. Voltage (Approx.) 0 V nals and parking
CHECK Discon Discon Discon Check Ele Electric shift Con	THARNESS BETW switch OFF. anect the electric sh anect the parking ac the voltage electric ectric shift control modu Connector M59 the continuity elector t control module vehicle nector	ift control modu tuator connect shift control m le vehicle side har tric shift contro ess connector side harness con- Terminal	ule connector. or. odule vehicle side harness conne ness connector Terminal 27 28 29 of module vehicle side harness conterminals. Parking actuator vehicle side harness	ector terminals a bund bund connector termir is connector rminal	and ground. Voltage (Approx.) 0 V nals and parking

P189B MOTOR B

< DTC/CIRCUIT DIAGNOSIS >

Check the motor coil B. Refer to TM-88, "Component Inspection (Motor Coil B)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.

NO >> Replace the reduction gear due to malfunction in the motor coil B (parking actuator). Refer to <u>TM-</u><u>19, "Removal and Installation"</u>.

Component Inspection (Motor Coil B)

1.CHECK MOTOR COIL B

- 1. Disconnect the parking actuator connector.
- 2. Check the resistance between parking actuator connector terminals.

Parking actua	Parking actuator connector		
Terr	Terminal		
	11		
14	12	2.3 – 2.8 Ω	
	13		

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the reduction gear due to malfunction in the motor coil B (parking actuator). Refer to <u>TM-</u><u>19, "Removal and Installation"</u>.

INFOID:000000007631893

P189C MOTOR B

< DTC/CIRCUIT DIAGNOSIS >

P189C MOTOR B

DTC Logic

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INFOID:000000007631894

DTC	Trouble diagno	osis name	DTC detection	condition		Possible cause
P189C	Motor "B" Circu	it Low	When the power switch is C is in the energized state ev B all phases are not energi NOTE: Energized: Approx. 0 V, No	en though motor coil zed.	 Motor coi Electric s Harness 	ctuator relay B (OFF stuck) I B (Parking actuator) hift control module or connectors cuit is open or ground short-
	FIRMATION F					
	DTC CONFIRM s, then perform		PROCEDURE" occurs	just before, powe	switch OF	F and wait for at least
	GO TO 2. RM DTC CONF	FIRMATIC	IN PROCEDURE			
. Check <u>"P189C"</u> YES >>	switch ON and	"Diagnos	e seconds or more.			
iagnosi	s Procedure	9				INFOID:000000007631895
iagnosi	S Procedure	9	ELECTRIC SHIFT CON	NTROL MODULE	AND MOT	
CHECK CHECK Power Discon Discon Check	s Procedure HARNESS BE switch OFF. nect the electri nect the parkin the continuity	C Shift cor g actuato electric sl	ntrol module connector.			OR COIL B
CHECK CHECK Disconi Disconi Check actuato	s Procedure HARNESS BE switch OFF. nect the electri nect the parkin the continuity	C Shift cor g actuato electric sl narness c	ntrol module connector. r connector. hift control module veh onnector terminals.		connector	OR COIL B terminals and parking
CHECK CHECK Disconi Disconi Check actuato	s Procedure HARNESS BE switch OFF. nect the electri nect the parkin the continuity or vehicle side f ft control module v connector	C Shift cor g actuato electric sl narness c	ntrol module connector. r connector. hift control module veh onnector terminals. harness Parking actuato	nicle side harness	connector connector	OR COIL B
CHECK	s Procedure HARNESS BE switch OFF. nect the electri nect the parkin the continuity or vehicle side f ft control module v connector	C Shift Cor g actuato electric sl narness c ehicle side l	ntrol module connector. r connector. hift control module veh onnector terminals. harness Parking actuato	nicle side harness	connector connector ninal	OR COIL B terminals and parking
CHECK	s Procedure HARNESS BE switch OFF. nect the electri nect the parkin the continuity or vehicle side f ft control module v connector	E TWEEN I c shift cor g actuato electric sl narness c ehicle side I Termina	ntrol module connector. r connector. hift control module veh onnector terminals. harness Parking actuato	nicle side harness or vehicle side harness r Term 1	connector connector ninal	OR COIL B terminals and parking
CHECK CHECK Conn Check Conn Conn Ms	S Procedure	E TWEEN I c shift cor g actuato electric si narness c ehicle side I Termina 27 28 29	ntrol module connector. r connector. hift control module veh onnector terminals. harness Parking actuato	nicle side harness or vehicle side harness r Tern 1 1	connector connector ninal 1 2 3	OR COIL B terminals and parking Continuity Existed
CHECK Power Discon Discon Check actuato	S Procedure	E TWEEN I c shift cor g actuato electric si narness c ehicle side I Termina 27 28 29	ntrol module connector. r connector. hift control module veh onnector terminals. harness Parking actuato	nicle side harness or vehicle side harness r Tern 1 1	connector connector ninal 1 2 3	OR COIL B terminals and parking Continuity Existed
iagnosis CHECK Power Disconi Disconi Check actuato Electric shif Conn Ma Check	S Procedure HARNESS BE switch OFF. nect the electri nect the parkin the continuity or vehicle side h ft control module v connector ector	E TWEEN I c shift cor g actuato electric sl narness c ehicle side I Termina 27 28 29 electric sh	ntrol module connector. r connector. hift control module veh onnector terminals. harness Parking actuato	nicle side harness or vehicle side harness r Term 1 1 2le side harness co	connector connector ninal 1 2 3 onnector te	OR COIL B terminals and parking Continuity Existed
Liagnosis CHECK Power Disconi Disconi Check actuato Electric shift Conn Me	S Procedure HARNESS BE switch OFF. nect the electri nect the parkin the continuity or vehicle side h ft control module v connector ector	E TWEEN I c shift cor g actuato electric sl narness c ehicle side I Termina 27 28 29 electric sh	htrol module connector. r connector. hift control module veh onnector terminals. harness Parking actuato al Connector F5 ift control module vehic	nicle side harness or vehicle side harness r Tern 1 1	connector connector ninal 1 2 3 onnector te	OR COIL B terminals and parking Continuity Existed
Liagnosis CHECK Power Disconi Disconi Check actuato Electric shift Conn Me	S Procedure	E TWEEN I c shift cor g actuato electric sl narness c ehicle side I Termina 27 28 29 electric sh	htrol module connector. r connector. hift control module veh onnector terminals. harness Parking actuato al Connector F5 ift control module vehic le side harness connector	nicle side harness or vehicle side harness r Term 1 1 2le side harness co	connector connector ninal 1 2 3 onnector te	OR COIL B terminals and parking Continuity Existed
Liagnosis CHECK Power Disconi Disconi Check actuato Electric shift Conn Me	S Procedure	E TWEEN I c shift cor g actuato electric sl narness c ehicle side I Termina 27 28 29 electric sh	htrol module connector. r connector. hift control module veh onnector terminals. harness Parking actuato al Connector F5 ift control module vehic le side harness connector Terminal	nicle side harness or vehicle side harness r Term 1 1 2le side harness co	connector connector hinal 1 2 3 connector te und	OR COIL B terminals and parking Continuity Existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

< DTC/CIRCUIT DIAGNOSIS >

2. CHECK GROUND CIRCUIT

Check the continuity electric shift control module vehicle side harness connector terminals and ground.

Electric shift control module v	ehicle side harness connector	Ground	Continuity
Connector	Terminal	Ground	Continuity
M58	6	Ground	Existed
10150	25	Ground	LXISIEU

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK PARKING ACTUATOR RELAY B

Check the parking actuator relay B. Refer to <u>TM-91</u>, "Component Inspection (Parking Actuator Relay B)". Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace the parking actuator relay B. Refer to <u>TM-28, "Component Parts Location"</u>.

4.CHECK HARNESS BETWEEN PARKING ACTUATOR RELAY B AND 12V BATTERY

Check the voltage parking actuator relay B vehicle side harness connector terminal and ground.

Parking actuator relay B vel	nicle side harness connector	Ground	Voltage
Connector	Terminal	Giouna	vollage
E55	1	Ground	9 – 16 V
235	3	Ciouna	3 - 10 V

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

5.DETECT MALFUNCTIONING ITEM

Check the following.

Harness for short or open between parking actuator relay B and 12V battery

12V battery

20A fuse (# 77)

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.

NO >> Repair or replace damaged parts.

6.CHECK HARNESS BETWEEN PARKING ACTUATOR AND PARKING ACTUATOR RELAY B

Check the continuity parking actuator vehicle side harness connector terminal and parking actuator relay A vehicle side harness connector terminal.

Parking actuator vehicle	e side harness connector	с, ,	vehicle side harness con- ctor	Continuity
Connector	Terminal	Connector	Terminal	
F5	14	E55	5	Existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace damaged parts.

7. CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND PARKING ACTUATOR RELAY B

 Check the continuity electric shift control module vehicle side harness connector terminal and parking actuator relay B vehicle side harness connector terminal.

P189C MOTOR B

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

	Electric shift control module vehicle side harr connector Connector Terminal			A vehicle side harness con- nector	Continuity
Connector	Tern	ninal	Connector	Terminal	
M59	3	3	E55	2	Existed
Check the co	ntinuity electric	shift contr	rol module vehicle s	ide harness connector to	erminal and ground.
Electric shift	control module ve	nicle side ha	rness connector	Ground	Continuity
Connee			Terminal		
M59			33	Ground	Not existed
the inspection ('ES >> GO T IO >> Repa .CHECK MOT(O 8. ir or replace da	maged pa	rts.		
the inspection i ES >> Chec IO >> Repla	<u>esult normal?</u> k intermittent ir	ncident. Re	efer to <u>GI-51, "Intern</u> e to malfunction in t	<u>mponent Inspection (Monittent Incident"</u> he motor coil B (parking	
component Ir	spection (P	arking A	Actuator Relay E	3)	INFOID:00000000763189
.CHECK PARK			D		
 Disconnect th Apply 12 V di CAUTION: Never make 	ne parking acturrect current be	ator relay l tween parl s short.	B. Refer to <u>TM-28, "</u> king actuator relay E		ion".
 Disconnect the Apply 12 V di CAUTION: Never make Connect the content of the content	ne parking acturrent be rect current be e the terminal ne fuse betwee	ator relay l tween park s short. en the tern	B. Refer to <u>TM-28, "</u> king actuator relay E ninals when apply i actuator relay B terr	B terminals 1 and 2. Ing the voltage. minals 3 and 5.	
Disconnect the Apply 12 V di CAUTION: • Never mak • Connect the B. Check the connect the Parking ac	ne parking actur rect current be e the terminal ne fuse betwee ntinuity betwee	ator relay l tween park s short. en the tern	B. Refer to <u>TM-28, "</u> king actuator relay E ninals when apply i actuator relay B terr	B terminals 1 and 2.	ion". Continuity
 Disconnect the Apply 12 V di CAUTION: Never make Connect the Connect the Co	ne parking actur rect current be e the terminal ne fuse betwee ntinuity betwee tuator relay B minal	ator relay l tween park s short. n the tern n parking	B. Refer to <u>TM-28, "</u> king actuator relay E ninals when apply i actuator relay B terr	B terminals 1 and 2. Ing the voltage. minals 3 and 5.	
Disconnect th Apply 12 V di CAUTION: Never mak Connect th Check the co Parking ac Ter 3	tuator relay B	ator relay l tween park s short. In the tern n parking Apply	B. Refer to <u>TM-28, "</u> king actuator relay E ninals when apply i actuator relay B terr Cor 12 V direct current betwo	B terminals 1 and 2. Ing the voltage. minals 3 and 5.	Continuity Existed
 Disconnect th Apply 12 V di CAUTION: Never make Connect th Check the construction of the inspection of	tuator relay B minal 5 ECTION END ace the parking basection (N	ator relay l tween park s short. n the term n parking Apply Does n actuator r	B. Refer to <u>TM-28</u> , " king actuator relay E ninals when apply actuator relay B terr Cor 12 V direct current betwo not apply 12 V direct cur elay B.	B terminals 1 and 2. Ing the voltage. minals 3 and 5. Indition een terminals 1 and 2.	Continuity Existed
 Disconnect the Apply 12 V di CAUTION: Never make Connect the component in the second s	tuator relay B minal 5 ECTION END ace the parking DR COIL B me parking actu	ator relay I tween park s short. In the term n parking Apply Does actuator r lotor Co	B. Refer to <u>TM-28, "</u> king actuator relay E ninals when apply actuator relay B terr Cor 12 V direct current betwo not apply 12 V direct cur elay B. il B)	B terminals 1 and 2. Ing the voltage. minals 3 and 5. Indition een terminals 1 and 2. rent between terminals 1 and	Continuity Existed 2. Not existed
 Disconnect the Apply 12 V di CAUTION: Never make Connect the connect the co	tuator relay B minal 5 ECTION END ace the parking ace the parking DR COIL B me parking actus	ator relay I tween park s short. In the term n parking Apply Does actuator r lotor Co ator conne en parking Parking actua	B. Refer to <u>TM-28</u> , " king actuator relay E ninals when apply actuator relay B terr Cor 12 V direct current betwe not apply 12 V direct cur elay B. il B) ector. actuator connector	B terminals 1 and 2. Ing the voltage. minals 3 and 5. Indition een terminals 1 and 2. rent between terminals 1 and	Continuity Existed 2. Not existed
Disconnect the connect th	tuator relay B minal 5 ECTION END ace the parking ace the parking DR COIL B me parking actus	ator relay I tween park s short. In the term n parking Apply Does actuator r lotor Co ator conne en parking Parking actua	B. Refer to <u>TM-28</u> , " king actuator relay E ninals when apply actuator relay B terr Cor 12 V direct current betwo not apply 12 V direct cur elay B. il B)	B terminals 1 and 2. Ing the voltage. minals 3 and 5. dition een terminals 1 and 2. rent between terminals 1 and terminals.	Continuity Existed 2. Not existed
Disconnect the connect th	tuator relay B minal 5 ECTION END ace the parking ace the parking DR COIL B me parking actus	ator relay I tween park s short. In the term n parking Apply Does actuator r lotor Co ator conne en parking Parking actua	B. Refer to <u>TM-28</u> , " king actuator relay E ninals when apply actuator relay B terr Cor 12 V direct current betwe not apply 12 V direct cur elay B. il B) ector. actuator connector	B terminals 1 and 2. Ing the voltage. minals 3 and 5. Indition een terminals 1 and 2. rent between terminals 1 and	Continuity Existed 2. Not existed

P189C MOTOR B

< DTC/CIRCUIT DIAGNOSIS >

- [ELECTRIC SHIFT]
- NO >> Replace the reduction gear due to malfunction in the motor coil B (parking actuator). Refer to <u>TM-</u><u>19, "Removal and Installation"</u>.

P189D BACK UP VOLTAGE

< DTC/CIRCUIT DIAGNOSIS >

P189D BACK UP VOLTAGE

DTC Logic

INFOID:000000007631898

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DTC	Trouble diagnosis name	DTC detection condition	P	ossible cause
P189D	Memory Back Up Power Supply	It is detected that the memory backup powe supply voltage is specified value or less.	 Harness, fu 	ft control module ise, or connectors it is open or shorted.)
DTC CON	FIRMATION PROCEDU	RE		
1. prepa	RATION BEFORE WORK			
10 second	s, then perform the next tes > GO TO 2.		er switch OFF	and wait for at least
2.PERFO	RM DTC CONFIRMATION	PROCEDURE		
2. Check	switch ON and wait for 5 s	econds or more.		
	detected?			
	> Go to <u>TM-93, "Diagnosis</u> > INSPECTION END	Procedure".		
-				
Jiagnos	is Procedure			INFOID:000000007631899
1. CHECK	MEMORY BACK UP POW	/ER SUPPLY CIRCUIT		
2. Discor		ol module connector. tric shift control module vehicle sid	e harness cor	nnector terminal and
Ele	ctric shift control module vehicle s		ound	Voltage
	Connector	Terminal	ound	(Approx.)
	M58	8 Gi	ound	9–16 V
YES > NO > 2.CHECK	ection result normal? > GO TO 2. > GO TO 3. & GROUND CIRCUIT	ic shift control module vehicle side	harness con	nector terminals and
-		· · · · · · · · · · · · · · · · · · ·		1
E	lectric shift control module vehicle		Ground	Continuity
	Connector	Terminal		
		3		1

Is the inspection result normal?

M58

YES Check intermittent incident. Refer to GI-51, "Intermittent Incident". >> 1.

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If inspection result is OK, replace the electric shift control module. Refer to TM-130, "Removal 2. and Installation".

Ground

>> Repair or replace damaged parts. NO

Existed

< DTC/CIRCUIT DIAGNOSIS >

3. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between electric shift control module vehicle side harness connector and 12V battery.
- 12V battery
- 10A fuse (# 12)
- Is the inspection result normal?
- YES >> Check intermittent incident. Refer to GI-51, "Intermittent Incident".
- NO >> Repair or replace damaged parts.

P189E ACTUATOR LOCK

< DTC/CIRCUIT DIAGNOSIS >

P189E ACTUATOR LOCK

DTC Logic

[ELECTRIC SHIFT]

INFOID:000000007631900

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DTC DETECTION LOGIC В DTC Trouble diagnosis name DTC detection condition Possible cause Parking Actuator The parking actuator has a mechanical P189E Parking Actuator Lock malfunction. (Parking mechanism) DTC CONFIRMATION PROCEDURE ТΜ **1.**PREPARATION BEFORE WORK If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least Ε 10 seconds, then perform the next test. >> GO TO 2. F 2.PERFORM DTC CONFIRMATION PROCEDURE (P)With CONSULT Set the vehicle to READY. 1. Press the P position switch to shift to P position and wait for 5 seconds or more. 2. Shift the selector lever to N position and wait for 5 seconds or more. 3. 4. Check DTC. Н Is "P189E" detected? YES >> Go to TM-95, "Diagnosis Procedure". >> INSPECTION END NO **Diagnosis** Procedure INFOID:000000007631901 **1.**REPLACE REDUCTION GEAR Replace the reduction gear due to malfunction in the parking actuator. Refer to TM-19, "Removal and Installation". Κ >> END L

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P189F ANGLE SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

P189F ANGLE SENSOR 1

DTC Logic

INFOID:000000007631902

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P189F	Angle Sensor 1	Output value of angle sensor 1 is out of the spec- ified value.	 Angle sensor 1 (Parking actuator) Electric shift control module Harness (Open or short)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(I) With CONSULT

1. Power switch ON and wait for 5 seconds or more.

2. Check DTC.

Is "P189F" detected?

YES >> Go to TM-96, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631903

1.CHECK ANGLE SENSOR 1 SIGNAL

- 1. Check the voltage between electric shift control module vehicle side harness connector terminal and ground.
- 2. Set the vehicle to READY.

	dule vehicle side harness nector	Ground Condition		Voltage
Connector	Terminal			
M58	11	Ground	Selector lever in P position (Manual plate: P position)	1.42 – 2.20 V
OCINI		Ground	Other than the above (Manual plate: Not P position)	2.85 – 3.56 V

Is the inspection result normal?

>> 1. Check intermittent incident. Refer to GI-51, "Intermittent Incident".

2. If inspection result is OK, replace the electric shift control module. Refer to <u>TM-130</u>, "<u>Removal</u> <u>and Installation</u>".

NO >> GO TO 2.

YES

2.CHECK ANGLE SENSOR 1 POWER SUPPLY CIRCUIT

1. Power switch OFF.

2. Disconnect the parking actuator connector.

3. Check the voltage between parking actuator vehicle side harness connector terminal and ground.

Parking actuator vehicle side harness connector		Ground	Condition	Voltage	
Connector	Terminal	Clound	Condition	(Approx.)	
F6	17	Ground	Power switch ON	5 V	

Is the inspection result normal?

P189F ANGLE SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

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

 $\mathbf{3}$. Check harness between electric shift control module and parking actuator

1. Power switch OFF.

2. Disconnect the electric shift control module connector.

 Check the continuity between electric shift control module vehicle side harness connector terminals and parking actuator vehicle side harness connector terminals.

Electric shift control module vehicle side harness connector		Parking actuator vehicle side harness connector		Continuity	
Connector	Terminal	Connector	Terminal		ТМ
M58	11	F6	15	- Existed	
	21	۲O	16		_
					E

4. Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

Electric shift control module vehicle side harness connector		Ground	Continuity	F
Connector	Terminal	Ground	Continuity	
M58	11	Ground	Not existed	G
	21	Ground	NOT EXISTED	0

Is the inspection result normal?

- YES >> 1. Check intermittent incident. Refer to GI-51, "Intermittent Incident".
 - 2. If inspection result is OK, replace the reduction gear due to malfunction in the angle sensor 1 (parking actuator). Refer to <u>TM-19</u>, "<u>Removal and Installation</u>".
- NO >> Repair or replace damaged parts.

4.CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND PARKING ACTUATOR

1. Power switch OFF.

- 2. Disconnect the electric shift control module connector.
- 3. Check the continuity between electric shift control module vehicle side harness connector terminal and parking actuator vehicle side harness connector terminal.

					K
Electric shift control module vehicle side harness connector		Parking actuator vehicle side harness connector		Continuity	
Connector	Terminal	Connector	Terminal	*	L
M58	10	F6	17	Existed	_

 Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

Electric shift control module vehicle side harness connector		Ground	Continuity	-
Connector	Terminal	Giodila	Continuity	Ν
M58	10	Ground	Not existed	_

Is the inspection result normal?

YES >> 1. Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.

2. If inspection result is OK, replace the electric shift control module. Refer to <u>TM-130, "Removal</u> <u>and Installation"</u>.

NO >> Repair or replace damaged parts.

P18A0 ANGLE SENSOR 2

< DTC/CIRCUIT DIAGNOSIS >

P18A0 ANGLE SENSOR 2

DTC Logic

INFOID:000000007631904

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P18A0	Angle Sensor 2	Output value of angle sensor 2 is out of the spec- ified value	 Angle sensor 2 (Parking actuator) Electric shift control module Harness (Open or short)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(I) With CONSULT

T. Power switch ON and wait for 5 seconds or more.

2. Check DTC.

Is "P18A0" detected?

YES >> Go to TM-98, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631905

1.CHECK ANGLE SENSOR 2 SIGNAL

- 1. Check the voltage between electric shift control module vehicle side harness connector terminal and ground.
- 2. Set the vehicle to READY.

Electric shift control module vehicle side harness connector		Ground	Condition	Voltage
Connector	Terminal			
M59		Ground	Selector lever in P position (Manual plate: P position)	1.42 – 2.20 V
	40		Other than the above (Manual plate: Not P position)	2.85 – 3.56 V

Is the inspection result normal?

- >> 1. Check intermittent incident. Refer to GI-51, "Intermittent Incident".
 - 2. If inspection result is OK, replace the electric shift control module. Refer to <u>TM-130</u>, "<u>Removal</u> <u>and Installation</u>".

NO >> GO TO 2.

YES

2.CHECK ANGLE SENSOR 2 POWER SUPPLY CIRCUIT

1. Power switch OFF.

2. Disconnect the parking actuator connector.

3. Check the voltage between parking actuator vehicle side harness connector terminal and ground.

Parking actuator vehicle side harness connector		Ground	Condition	Voltage	
Connector	Terminal	Cround	Condition	(Approx.)	
F6	20	Ground	Power switch ON	5 V	

Is the inspection result normal?

P18A0 ANGLE SENSOR 2

< DTC/CIRCUIT DIAGNOSIS >

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

 $\mathbf{3}$. Check harness between electric shift control module and parking actuator

1. Power switch OFF.

2. Disconnect the electric shift control module connector.

 Check the continuity between electric shift control module vehicle side harness connector terminals and parking actuator vehicle side harness connector terminals.

	Electric shift control module vehicle side harness connector		Parking actuator vehicle side harness connector		Continuity	
-	Connector	Terminal	Connector	Terminal		TM
-	M59	40	F6	18	Evictod	
	INI09	49	Fΰ	19	Existed	_

4. Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

Electric shift control module vehicle side harness connector		Ground	Continuity	F
Connector	Terminal	Giouna	Continuity	
M59	40	Ground	Not existed	G
	49	Ground	Not existed	

Is the inspection result normal?

- YES >> 1. Check intermittent incident. Refer to GI-51, "Intermittent Incident".
 - 2. If inspection result is OK, replace the reduction gear due to malfunction in the angle sensor 2 (parking actuator). Refer to <u>TM-19</u>, "<u>Removal and Installation</u>".
- NO >> Repair or replace damaged parts.

4.CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND PARKING ACTUATOR

1. Power switch OFF.

- 2. Disconnect the electric shift control module connector.
- 3. Check the continuity between electric shift control module vehicle side harness connector terminal and parking actuator vehicle side harness connector terminal.

					K
Electric shift control module vehicle side harness connector		Parking actuator vehicle side harness connector		Continuity	
Connector	Terminal	Connector	Terminal	*	L
M59	39	F6	20	Existed	_

 Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

Electric shift control module vehicle side harness connector		Ground	Continuity	
Connector	Terminal	Giodila	Continuity	Ν
M59	39	Ground	Not existed	-

Is the inspection result normal?

YES >> 1. Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.

2. If inspection result is OK, replace the electric shift control module. Refer to <u>TM-130, "Removal</u> <u>and Installation"</u>.

NO >> Repair or replace damaged parts.

P18A1 ANGLE SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

P18A1 ANGLE SENSOR 1

DTC Logic

INFOID:000000007631906

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P18A1	Angle Sensor 1 Performance Error	A malfunction is detected in the performance of angle sensor 1.	 Angle sensor 1 (Parking actuator) Electric shift control module Harness (Open or short)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(I) With CONSULT

T. Power switch ON and wait for 2 seconds or more.

2. Check DTC.

Is "P18A1" detected?

YES >> Go to TM-100, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631907

1.CHECK ANGLE SENSOR 1 POWER SUPPLY CIRCUIT

1. Power switch OFF.

- 2. Disconnect the parking actuator connector.
- 3. Check the voltage between parking actuator vehicle side harness connector terminal and ground.

Parking actuator vehicle side harness connector		Ground	Condition	Voltage
Connector	Terminal	Cround	Condition	(Approx.)
F6	17	Ground	Power switch ON	5 V

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND PARKING ACTUATOR

1. Power switch OFF.

2. Disconnect the electric shift control module connector.

3. Check the continuity between electric shift control module vehicle side harness connector terminals and parking actuator vehicle side harness connector terminals.

Electric shift control module vehicle side harness connector		Parking actuator vehicle side harness connector		Continuity
Connector	Terminal	Connector Terminal		
M58	11	F6	15	Existed
MOO	21	ΓŬ	16	Existed

4. Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

P18A1 ANGLE SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

	rol module vehicle side h	narness connector	Ground	Continuity
Connector		Terminal	Gibana	Continuity
M58		11 21	Ground	Not existed
2. If insp (parkii NO >> Repair or i	 intermittent incider bection result is OK, ng actuator). Refer t replace damaged page 	to <u>TM-19, "Removal an</u> arts.	gear due to malfunction	
. Check the continu	ectric shift control me	shift control module	vehicle side harness co	nnector terminal and
Electric shift control mod conn		Parking actuator vehi	cle side harness connector	Continuity
Connector	Terminal	Connector	Terminal	
M58	10	F6	17	Existed
Connector		Torminal	Ground	Continuity
Connector M58 Is the inspection result		Terminal 10	Ground	Not existed
M58 <u>s the inspection result</u> YES >> 1. Check 2. If insp <u>and In</u>	k intermittent incider	¹⁰ nt. Refer to <u>GI-51, "Inte</u> replace the electric shif	Ground	Not existed
M58 <u>s the inspection result</u> YES >> 1. Check 2. If insp and In	k intermittent incider pection result is OK, <u>installation</u> ".	¹⁰ nt. Refer to <u>GI-51, "Inte</u> replace the electric shif	Ground	Not existed

P18A2 ANGLE SENSOR 2

< DTC/CIRCUIT DIAGNOSIS >

P18A2 ANGLE SENSOR 2

DTC Logic

INFOID:000000007631908

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P18A2	Angle Sensor 2 Performance Error	A malfunction is detected in the performance of angle sensor 2.	Angle sensor 2 (Parking actuator)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(I) With CONSULT

1. Power switch ON and wait 2 seconds or more.

2. Perform "Self Diagnostic Results" in "SHIFT".

Is "P18A2" detected?

YES >> Go to TM-102, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631909

1.CHECK ANGLE SENSOR 2 POWER SUPPLY CIRCUIT

- 1. Power switch OFF.
- 2. Disconnect the parking actuator connector.
- 3. Check the voltage between parking actuator vehicle side harness connector terminal and ground.

Parking actuator vehicle side harness connector		side harness connector Ground		Voltage	
Connector	Connector Terminal		Condition	(Approx.)	
F6	20	Ground	Power switch ON	5 V	

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND PARKING ACTUATOR

- 1. Power switch OFF.
- 2. Disconnect the electric shift control module connector.
- 3. Check the continuity between electric shift control module vehicle side harness connector terminals and parking actuator vehicle side harness connector terminals.

Electric shift control module vehicle side harness connector		ess Parking actuator vehicle side harness connector		Continuity
Connector	Terminal	Connector Terminal		
M59	40	F6	18	Existed
WD9	49	1.0	19	LAISIEU

4. Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

P18A2 ANGLE SENSOR 2

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

		arness connector	Ground	Continuity
Connector		Terminal	Ground	Continuity
M59		40	Ground	Not existed
the increation require	t a cras ol 0	49		
2. If insp (parki NO >> Repair or	k intermittent inciden bection result is OK, i ing actuator). Refer to replace damaged pa	o <u>TM-19, "Removal an</u> irts.	ear due to malfunction d Installation".	-
CHECK HARNESS	BETWEEN ELECT	RIC SHIFT CONTROL	MODULE AND PARKI	NG ACTUATOR
Check the continu	ectric shift control mo	shift control module v	rehicle side harness co	nnector terminal and
	dule vehicle side harness nector	Parking actuator vehic	cle side harness connector	Continuity
Connector	Terminal	Connector	Terminal	
M59	39	F6	20	Existed
Connector		Terminal		
M59		39	Ground	Not existed
M59 the inspection result	t normal?	39	Ground	Not existed
the inspection result YES >> 1. Check 2. If insp and Ir	k intermittent inciden	t. Refer to <u>GI-51, "Inter</u> eplace the electric shif		
the inspection result (ES >> 1. Check 2. If insp and Ir	k intermittent inciden bection result is OK, r <u>nstallation"</u> .	t. Refer to <u>GI-51, "Inter</u> eplace the electric shif	mittent Incident".	
the inspection result YES >> 1. Check 2. If insp and Ir	k intermittent inciden bection result is OK, r <u>nstallation"</u> .	t. Refer to <u>GI-51, "Inter</u> eplace the electric shif	mittent Incident".	
the inspection result (ES >> 1. Check 2. If insp and Ir	k intermittent inciden bection result is OK, r <u>nstallation"</u> .	t. Refer to <u>GI-51, "Inter</u> eplace the electric shif	mittent Incident".	
the inspection result (ES >> 1. Check 2. If insp and Ir	k intermittent inciden bection result is OK, r <u>nstallation"</u> .	t. Refer to <u>GI-51, "Inter</u> eplace the electric shif	mittent Incident".	
s the inspection result YES >> 1. Check 2. If insp and Ir	k intermittent inciden bection result is OK, r <u>nstallation"</u> .	t. Refer to <u>GI-51, "Inter</u> eplace the electric shif	mittent Incident".	

P18A3 CONTROL MODULE

< DTC/CIRCUIT DIAGNOSIS >

P18A3 CONTROL MODULE

DTC Logic

INFOID:000000007631910

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P18A3	Control Module (Program Manipulation) Error	A malfunction is detected in the elec- tric shift control module.	Electric shift control module

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(D)With CONSULT

1. Power switch OFF to ON and wait for 2 seconds or more.

2. Check DTC.

Is "P18A3" detected?

YES >> Go to <u>TM-104</u>, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1.REPLACE ELECTRIC SHIFT CONTROL MODULE

Replace the electric shift control module. Refer to TM-130, "Removal and Installation".

>> END

INFOID:000000007631911

P18A4 CONTROL MODULE

< DTC/CIRCUIT DIAGNOSIS >

P18A4 CONTROL MODULE

DTC Logic

[ELECTRIC SHIFT]

INFOID:000000007631912

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DTC DETECTION LOGIC

DTC DET	ECTION LOGIC			E
DTC	Trouble diagnosis name	DTC detection condition	Possible cause	
P18A4	Control Module (CPU) Error	A malfunction is detected in the electric shift control module.	Electric shift control module	С
DTC CON	FIRMATION PROCEDU	RE		ΤM
1.PREPA	RATION BEFORE WORK			
	DTC CONFIRMATION PR s, then perform the next test	OCEDURE" occurs just before, power s t.	witch OFF and wait for at least	E
-	• GO TO 2.			_
2.PERFO	RM DTC CONFIRMATION	PROCEDURE		F
With CO 1. Power 2. Check Is "P18A4"	switch OFF to ON and wait DTC.	for 2 seconds or more.		G
YES >>	 Go to <u>TM-105, "Diagnosis</u> INSPECTION END 	Procedure".		ŀ
Diagnosi	s Procedure		INFOID:00000007631913	
1 .REPLAC	CE ELECTRIC SHIFT CON	TROL MODULE		1
Replace the	e electric shift control modu	le. Refer to TM-130, "Removal and Insta	allation".	J
>>	> END			
				K
				L
				N

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P18A6 WAKE UP SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

P18A6 WAKE UP SIGNAL

DTC Logic

INFOID:000000007631914

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P18A6	Wake Up Signal Circuit	No wake-up signal is transmitted from BCM when the power switch is ON.	 BCM Harness or connectors (Each circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

()With CONSULT

1. Power switch ON and wait for 4 minutes or more.

2. Check DTC.

Is "P18A6" detected?

YES >> Go to TM-106, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631915

1.CHECK WAKE UP SIGNAL

Check the voltage between electric shift control module vehicle side harness connector terminal and ground.

Electric shift control module vehicle side harness connector Connector Terminal		Ground	Condition	Voltage
M58	20	Ground	Power switch ON	9 – 16 V

Is the inspection result normal?

- >> 1. Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.
 - 2. If inspection result is OK, replace the electric shift control module. Refer to <u>TM-130</u>, "<u>Removal</u> and <u>Installation</u>".

NO >> GO TO 2.

YES

2.CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND BCM

- 1. Power switch OFF.
- 2. Disconnect the electric shift control module connector.
- 3. Disconnect the BCM connector.
- 4. Check the continuity between electric shift control module vehicle side harness connector terminal and BCM vehicle side harness connector terminal.

Electric shift control module vehicle side harness connector		BCM vehicle side	Continuity			
Connector	Terminal	Connector	Terminal			
M58	20	M70	104	Existed		

5. Check the continuity between electric shift control module vehicle side harness connector terminal and ground.

TM-106

P18A6 WAKE UP SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift control module v	Ground	Continuity	A		
Connector	Terminal	Ground	Continuity		
M58	20	Ground	Not existed	_	
<u>s the inspection result normal?</u> YES >> Check the BCM. Refer to <u>BCS-34, "Reference Value"</u> . NO >> Repair or replace damaged parts.					

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P18A7 SHIFT SIGNAL OFF

< DTC/CIRCUIT DIAGNOSIS >

P18A7 SHIFT SIGNAL OFF

DTC Logic

INFOID:000000007631916

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause	
P18A7	Electric Shift Sensor Circuit	It is detected that the states of all electric shift sensors No. 1 to No. 6 are OFF.	 Electric shift sensor Electric shift control module Harness or connectors (Each circuit is open or shorted.) 	

Position Pattern Table

Electric shift control module recognition position	Selector lever position	Electric shift sensor					
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Н	Н	OFF	OFF	ON	OFF	OFF	ON
Р	Н	OFF	OFF	ON	OFF	OFF	ON
R	R	ON	ON	OFF	OFF	OFF	OFF
Ν	Ν	OFF	ON	ON	ON	OFF	OFF
D	D	OFF	OFF	OFF	ON	ON	OFF

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(I) With CONSULT

1. Set the vehicle to READY and wait for 5 seconds or more.

2. Check DTC.

Is "P18A7" detected?

YES >> Go to TM-108, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631917

1.CHECK ELECTRIC SHIFT SENSOR INPUT SIGNAL

(D) With CONSULT

- 1. Set the vehicle to READY.
- 2. Select "Data Monitor" in "SHIFT".
- 3. Select "SHIFT SENSOR 1", "SHIFT SENSOR 2", "SHIFT SENSOR 3", "SHIFT SENSOR 4", "SHIFT SENSOR 5", and "SHIFT SENSOR 6".
- 4. Operate the selector lever to identify a electric shift sensor of which value does not change.

Monitor item	Condition	Value / Status
SHIFT SENSOR 1	Selector lever is held in R position	ON
SHIFT SENSOR I	Other than the above	OFF
SHIFT SENSOR 2	Selector lever is held in R and N positions	ON
SHIFT SENSOR 2	Other than the above	OFF
SHIFT SENSOR 3	Selector lever is held in H (Home) and N positions	ON
SHIFT SENSOR S	Other than the above	OFF

P18A7 SHIFT SIGNAL OFF

< DTC/CIRCUIT DIAGNOSIS >

Monitor item	Condition	Value / Status	^
SHIFT SENSOR 4	Selector lever is held in N and D positions	ON	A
SHIFT SENSOR 4	Other than the above	OFF	
SHIFT SENSOR 5	Selector lever is held in D position	ON	В
SHILL SENSOR 3	Other than the above	OFF	
SHIFT SENSOR 6	Selector lever in H (Home) position	ON	
SHIFT SENSUR D	Other than the above	OFF	С

Without CONSULT

1. Set the vehicle to READY.

- 2. Operate the selector lever.
- 3. Check the voltage between electric shift control module vehicle side harness connector terminal and ground.

		Electric shift control module vehicle side harness connector		Condition	Voltage	
sor	Connector	terminal			(Approx.)	
4		24		Selector lever is held in R position	0 V	
I		34		Other than the above	5 V	
0		35		Selector lever is held in R and N positions	0 V	
2		35		Other than the above	5 V	
3	3	36		Selector lever is held in H (Home) and N positions	0 V	
	M59		Ground	Other than the above	5 V	
4		27		Selector lever is held in N and D position	0 V	
4		37		Other than the above	5 V	
F		44		Selector lever is held in D position	0 V	
5		44		Other than the above	5 V	
6		45		Selector lever in H (Home) position	0 V	
6		45		Other than the above	5 V	

>> GO TO 2.

2.CHECK ELECTRIC SHIFT SENSOR POWER SUPPLY CIRCUIT

1. Power switch OFF.

2. Disconnect the electric shift sensor connector.

3. Power switch ON.

4. Check the power circuit of the malfunctioning electric shift sensor identified at Step 1.

5. Check the voltage between electric shift sensor vehicle side harness connector terminal and ground.

Electric shift sensor	Electric shift sensor vehic	cle side harness connector	Ground	Voltage	-
	Connector	Terminal	Giodila	(Approx.)	
1, 3, 5	M57	1	Ground	5 V	0
2, 4, 6	VI07	7	Gibunu	5 V	_

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

$\mathbf{3}.$ Check harness between electric shift control module and electric shift sensor

1. Power switch OFF.

2. Disconnect the electric shift control module connector.

Revision: 2014 June

TM-109

[ELECTRIC SHIFT]

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P18A7 SHIFT SIGNAL OFF

< DTC/CIRCUIT DIAGNOSIS >

 Check the continuity between electric shift control module vehicle side harness connector terminal and electric shift sensor vehicle side harness connector terminal.

Electric shift sensor		odule vehicle side har- onnector	Electric shift sensor conr	Continuity	
	Connector	Terminal	Connector	Terminal	
1, 3, 5	M58	19	M57 1 7		Evicted
2, 4, 6	M59	48			Existed

4. Check the continuity between electric shift control module vehicle side harness connector terminal and ground.

Electric shift sensor		ehicle side harness connector	Ground	Continuity	
	Connector	Terminal	Gibana	Continuity	
1, 3, 5	M58	19	Ground	Not existed	
2, 4, 6	M59	48	Ground	NOT EXISTED	

Is the inspection result normal?

- YES >> 1. Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.
 - 2. If inspection result is OK, replace the electric shift control module. Refer to <u>TM-130, "Removal</u> <u>and Installation"</u>.
- NO >> Repair or replace damaged parts.

4.CHECK ELECTRIC SHIFT SENSOR GROUND CIRCUIT

- 1. Power switch OFF.
- 2. Disconnect the electric shift control module connector.
- 3. Check the continuity between electric shift control module vehicle side harness connector terminal and electric shift sensor vehicle side harness connector terminal.

Electric shift sensor		odule vehicle side har- onnector	Electric shift sensor conr	Continuity		
	Connector	Terminal	Connector	Terminal		
1, 3, 5	M59	41	M57	6		
2, 4, 6	WD9	50	10137	12	Existed	

4. Check the continuity between electric shift control module vehicle side harness connector terminal and ground.

Electric shift sensor		ehicle side harness connector	Ground	Continuity	
	Connector	Terminal	Glound	Continuity	
1, 3, 5	M59	41	Ground	Not existed	
2, 4, 6	10139	50	Glound	NOT EXISTED	

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

5.CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND ELECTRIC SHIFT SENSOR

1. Check the continuity between electric shift control module vehicle side harness connector terminal and electric shift sensor vehicle side harness connector terminal.

P18A7 SHIFT SIGNAL OFF

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift sensor		Electric shift control module vehicle side harness connector connector				1
	Connector	Terminal	Connector	Terminal	-	
1	M59	34		11		- 1
2		35		5		
3		36		10	Existed	
4	M59	37	M57	3		
5		44	-	9		
6		45		4		Т

Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

Electric shift sensor	Electric shift control module vehicle side harness con- nector		Ground	Continuity	
	Connector	Terminal			
1		34	Ground		
2	M59	35			
3		36		Not evicted	
4	IND9	37		Not existed	
5		44			
6		45			

Is the inspection result normal?

YES >> 1. Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.
2. If inspection result is OK, replace the electric shift sensor. Refer to <u>TM-131, "Exploded View"</u>.

NO >> Repair or replace damaged parts.

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< DTC/CIRCUIT DIAGNOSIS >

P18A8 P POSITION SWITCH

DTC Logic

[ELECTRIC SHIFT]

INFOID:000000007631918

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P18A8 P Position Switch Error	P position switches No. 7 and No. 8 are stuck at OFF.	P position switch	
	P position switch No. 7 is stuck at ON and P position switch No. 8 is stuck at OFF.	 Harness (Each circuit is open or shorte 	

P Positior	n Switch	Pattern	Table

Electric shift control	Selector lever P position		Electric shift sensor					P position SW		
module recognition position	position	SW	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
Н	Н	No push	OFF	OFF	ON	OFF	OFF	ON	OFF	ON
Р	Н	Push	OFF	OFF	ON	OFF	OFF	ON	ON	OFF
R	R	No push	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
N	Ν	No push	OFF	ON	ON	ON	OFF	OFF	OFF	ON
D	D	No push	OFF	OFF	OFF	ON	ON	OFF	OFF	ON

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

()With CONSULT

- 1. Set the vehicle to READY.
- Press the P position switch to shift to P position and wait for 5 seconds or more. (Be sure to press the P position switch for 1 second or more.)
- 3. Shift the selector lever to N position and wait for 5 minutes or more.
- 4. Check DTC.

Is "P18A8" detected?

- YES >> Go to TM-112, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631919

$1. {\sf check\ harness\ between\ electric\ shift\ control\ module\ and\ electric\ shift\ sensor$

- 1. Power switch OFF.
- 2. Disconnect the electric shift control module connector.
- 3. Disconnect the electric shift sensor connector.
- 4. Check the continuity between electric shift control module vehicle side harness connector terminals and electric shift sensor vehicle side harness connector terminals.

	e vehicle side harness con- ctor	Electric shift sensor vehic	cle side harness connector	Continuity
Connector	Terminal	Connector	Terminal	
M59	46	M57	2	Existed
10139	47	IVIJ7	8	LAISIEU

P18A8 P POSITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

5. Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

Electric shift control module vel	nicle side harness connector	- ·		
Connector	Terminal	Ground	Continuity	В
M59	46	Ground	Not existed	
1033	47	Ground	Not existed	
Is the inspection result normal?				С
YES >> GO TO 2.				
NO >> Repair or replace da	0			ТМ
2. CHECK P POSITION SWITC	Н			
Check the P position switch. Ref	er to TM-113, "Component Ins	pection (P Position Switch)	•	
Is the inspection result normal?			-	Ε
YES >> Replace the electric	shift sensor. Refer to TM-131,	"Exploded View".		
	r lever knob due to malfunction	on in the P position switch	. Refer to <u>TM-131,</u>	
"Removal and Instal	lation".			F
Component Inspection (P	Position Switch)		INFOID:000000007631920	
1				G
1. CHECK P POSITION SWITC	Н			0
1. Disconnect the P position su				
Check the continuity betwee	n P position swiitch connector	terminal.		Н

P position s	vitch connector	Condition	Continuity
Tei	minal	Condition	Continuity
1	2	When P position switch is depressed	Existed
Ι	2	When P position switch is released	Not existed
	2	When P position switch is depressed	Not existed
I	3	When P position switch is released	Existed

Is the inspection result normal?

YES >> INSPECTION END

- NO >> Replace the selector lever knob due to malfunction in the P position switch. Refer to <u>TM-131</u>, <u>"Removal and Installation"</u>.
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[ELECTRIC SHIFT]

P18A9 PARKING ACTUATOR FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

P18A9 PARKING ACTUATOR FUNCTION

DTC Logic

INFOID:000000007631921

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P18A9	Parking Actuator Function	It is detected that the output of the parking actuator does not stop.	Parking actuator

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

()With CONSULT

- 1. Set the vehicle to READY.
- Shift the selector lever to N position and wait for 10 seconds or more. 2.
- Press the P position switch to shift to P position and wait for 10 seconds or more. 3.
- Check DTC. 4.

Is "P18A9" detected?

- >> Go to <u>TM-114, "Diagnosis Procedure"</u>. >> INSPECTION END YES
- NO

Diagnosis Procedure

1.P POSITION LEARNING

Perform P position learning. Refer to TM-57, "Work Procedure".

>> GO TO 2.

2.SELF DIADNOSTIC

Perform "DTC CONFIRMATION PROCEDURE". Refer to TM-114, "DTC Logic".

Is "P18A9" detected?

- YES >> Replace the reduction gear due to malfunction in the parking actuator. Refer to TM-19, "Removal and Installation".
- NO >> INSPECTION END

INFOID:000000007631922

P18AA P POSITION LEARNING ERROR

< DTC/CIRCUIT DIAGNOSIS >

P18AA P POSITION LEARNING ERROR

DTC Logic

INFOID:000000007631923

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DTC DETECTION LOGIC В DTC Trouble diagnosis name DTC detection condition Possible cause Voltage of angle sensor is out of the specified P18AA P Position Learning Error Parking actuator value while learning P position. DTC CONFIRMATION PROCEDURE ТΜ **1.**PREPARATION BEFORE WORK If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least Ε 10 seconds, then perform the next test. >> GO TO 2. F 2. PERFORM DTC CONFIRMATION PROCEDURE (P)With CONSULT Perform P position learning. Refer to <u>TM-57, "Work Procedure"</u>. 2. Check DTC. Is "P18AA" detected? YES >> Go to TM-115, "Diagnosis Procedure". Н >> INSPECTION END NO **Diagnosis** Procedure INFOID:000000007631924 **1.**REPLACE REDUCTION GEAR Replace the reduction gear due to malfunction in the parking actuator. Refer to TM-19, "Removal and Installa-J tion". >> END Κ L Μ Ν

P18AB IGNITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

P18AB IGNITION SWITCH

DTC Logic

INFOID:000000007631925

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P18AB	IGN switch Circuit	It is detected that the power switch input terminal values from the 2 lines do not match each other.	 Power switch Harness, fuse, or connectors (Each circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(I) With CONSULT

1. Power switch ON and wait for 5 seconds or more.

2. Check DTC.

Is "P18AB" detected?

YES >> Go to TM-116, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631926

1. CHECK ELECTRIC SHIFT CONTROL MODULE POWER SUPPLY CIRCUIT

- 1. Power switch OFF.
- 2. Disconnect the electric shift control module connector.
- 3. Check the voltage between electric shift control module vehicle side harness connector terminals and ground.

Electric shift control module vehicle side harness connector		Ground	Condition	Voltage
Connector	Terminal	Giodila	Condition	(Approx.)
M58	0		Power switch ON	9 – 16 V
OCIVI	9	Cround	Power switch OFF	0 V
M59	42	Ground	Power switch ON	9 – 16 V
10129	42		Power switch OFF	0 V

Which terminal value is abnormal?

Terminal 9>>GO TO 2. Terminal 42>>GO TO 4.

2.CHECK HARNESS BETWEEN IPDM E/R AND ELECTRIC SHIFT CONTROL MODULE

- 1. Disconnect the IPDM E/R connector.
- 2. Check the continuity between IPDM E/R vehicle side harness connector terminal and electric shift control module vehicle side harness connector terminal.

Electric shift control module vehicle side harness connector		IPDM E/R vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M58	9	E15	61	Existed

P18AB IGNITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift control module ve	ehicle side harness connector		
Connector	Terminal	Ground	Continuity
M58	9	Ground	Not existed
<u>s the inspection result normal?</u> YES >> GO TO 3. NO >> Repair or replace dan CDETECT MALFUNCTION ITE	U		
Check the following items. Harness for short or open betwee Power switch Ignition relay 15A fuse (# 61, IPDM E/R) IPDM E/R s the inspection result normal? YES >> Check intermittent inco NO >> Repair or replace dan	cident. Refer to <u>GI-51, "Intermitt</u>		
1. DETECT MALFUNCTION ITEI	0		
Check the following items.			
 Harness for short or open between ector terminal 42. Power switch Ignition relay 15A fuse (# 6) 	een power switch and electric s	hift control module ver	nicle side harness cor
Harness for short or open between nector terminal 42. Power switch Ignition relay 15A fuse (# 6)	een power switch and electric s	hift control module veh	nicle side harness cor
 Harness for short or open between ector terminal 42. Power switch Ignition relay 15A fuse (# 6) s the inspection result normal? 	cident. Refer to <u>GI-51, "Intermitt</u>		nicle side harness cor
 Harness for short or open between ector terminal 42. Power switch Ignition relay 15A fuse (# 6) s the inspection result normal? YES >> Check intermittent incompared to the second seco	cident. Refer to <u>GI-51, "Intermitt</u>		nicle side harness cor
Harness for short or open between nector terminal 42. Power switch Ignition relay 15A fuse (# 6) s the inspection result normal? YES >> Check intermittent inc	cident. Refer to <u>GI-51, "Intermitt</u>		nicle side harness cor
 Harness for short or open between ector terminal 42. Power switch Ignition relay 15A fuse (# 6) s the inspection result normal? YES >> Check intermittent incompared to the second seco	cident. Refer to <u>GI-51, "Intermitt</u>		nicle side harness cor
 Harness for short or open between ector terminal 42. Power switch Ignition relay 15A fuse (# 6) s the inspection result normal? YES >> Check intermittent incompared to the second seco	cident. Refer to <u>GI-51, "Intermitt</u>		nicle side harness cor
Harness for short or open between nector terminal 42. Power switch Ignition relay 15A fuse (# 6) s the inspection result normal? YES >> Check intermittent inc	cident. Refer to <u>GI-51, "Intermitt</u>		nicle side harness cor

P18AC PARKING ACTUATOR RELAY A

< DTC/CIRCUIT DIAGNOSIS >

P18AC PARKING ACTUATOR RELAY A

DTC Logic

INFOID:000000007631927

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P18AC	Parking Actuator Relay A Circuit	In spite of the parking actuator relay A OFF, voltage is detected from the U phase, V phase and W phase of motor coil A.	 Parking actuator relay A (ON stuck) Electric shift control module Harness (Ground short)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(I) With CONSULT

- 1. Power switch ON and wait for 2 seconds or more.
- 2. Check DTC.

Is "P18AC" detected?

- YES >> Go to TM-118, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631928

$1. {\sf check harness between electric shift control module and parking actuator relay a}$

- 1. Disconnect the electric shift control module connector.
- 2. Disconnect the parking actuator relay A.
- 3. Check the continuity between parking actuator relay A vehicle side harness connector terminal and ground.

Parking actuator relay A ve	hicle side harness connector	Ground	Continuity
Connector	Terminal	Giouna	Continuity
E54	2	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2. Check harness between parking actuator and parking actuator relay a

- 1. Disconnect the parking actuator connector.
- 2. Check the voltage between parking actuator vehicle side harness connector terminal and ground.

Parking actuator vehicle	e side harness connector	Ground	Voltage
Connector	Terminal	Croana	(Approx.)
F4	4	Ground	0 V

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

 ${f 3.}$ CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND PARKING ACTUATOR

P18AC PARKING ACTUATOR RELAY A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift	control module veh	icle side harness connector	Voltage
Connector		Ground Terminal	(Approx.)
		1	
M58		2 Ground	0 V
		5	
s the inspection re			
YES >> GO TO NO >> Repair		aged parts	
1. CHECK PARKIN	or replace dam	•	
	-	. Refer to TM-119, "Component Inspection (Parking Act	uator Relay A)".
<u>s the inspection re</u> YES >> Replac		nift control module. Refer to TM-130, "Removal and Insta	allation"
		ctuator relay A. Refer to <u>TM-28, "Component Parts Loca</u>	
Component Ins	spection (Pa	rking Actuator Relay A)	INFOID:000000007631929
	•	č	
CHECK PARKIN	NG ACTUATOR	RELAY A	
		or relay A. Refer to TM-28, "Component Parts Location".	
	ect current betw	een parking actuator relay A terminals 1 and 2.	
CAUTION:			
	the terminals	short	
 Never make 	the terminals		
Never makeConnect the	fuse between	short. the terminals when applying the voltage. parking actuator relay A terminals 3 and 5.	
Never make Connect the Check the cont	tinuity between	the terminals when applying the voltage.	
Never make Connect the Check the cont Parking actual	tinuity between ator relay A	the terminals when applying the voltage.	Continuity
Never make Connect the Check the cont	tinuity between ator relay A	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5.	-
Never make Connect the Check the cont Parking actual	tinuity between ator relay A	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5. Condition Apply 12 V direct current between terminals 1 and 2.	Continuity Existed Not existed
Never make Connect the Concet the Check the cont Parking actua Term 3	ator relay A inal	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5.	Existed
Never make Connect the Check the cont Parking actua Term 3 s the inspection re	ator relay A inal 5 sult normal?	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5. Condition Apply 12 V direct current between terminals 1 and 2.	Existed
Never make Connect the Connect the Check the cont Parking actua Term 3 s the inspection res YES >> INSPE	ator relay A inal 5 sult normal? CTION END	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5. Condition Apply 12 V direct current between terminals 1 and 2. Does not apply 12 V direct current between terminals 1 and 2.	Existed
Never make Connect the Connect the Check the cont Parking actua Term 3 s the inspection res YES >> INSPE	ator relay A inal 5 sult normal?	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5. Condition Apply 12 V direct current between terminals 1 and 2. Does not apply 12 V direct current between terminals 1 and 2.	Existed
Never make Connect the Connect the Check the cont Parking actua Term 3 s the inspection res YES >> INSPE	ator relay A inal 5 sult normal? CTION END	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5. Condition Apply 12 V direct current between terminals 1 and 2. Does not apply 12 V direct current between terminals 1 and 2.	Existed
Never make Connect the Connect the Check the cont Parking actua Term 3 s the inspection res YES >> INSPE	ator relay A inal 5 sult normal? CTION END	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5. Condition Apply 12 V direct current between terminals 1 and 2. Does not apply 12 V direct current between terminals 1 and 2.	Existed
Never make Connect the Connect the Check the cont Parking actua Term 3 s the inspection res YES >> INSPE	ator relay A inal 5 sult normal? CTION END	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5. Condition Apply 12 V direct current between terminals 1 and 2. Does not apply 12 V direct current between terminals 1 and 2.	Existed
Never make Connect the Connect the Connect the Parking actual Term 3 s the inspection res YES >> INSPE	ator relay A inal 5 sult normal? CTION END	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5. Condition Apply 12 V direct current between terminals 1 and 2. Does not apply 12 V direct current between terminals 1 and 2.	Existed
Never make Connect the Connect the Connect the Parking actual Term 3 s the inspection res YES >> INSPE	ator relay A inal 5 sult normal? CTION END	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5. Condition Apply 12 V direct current between terminals 1 and 2. Does not apply 12 V direct current between terminals 1 and 2.	Existed
Never make Connect the Connect the Check the cont Parking actua Term 3 s the inspection res YES >> INSPE	ator relay A inal 5 sult normal? CTION END	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5. Condition Apply 12 V direct current between terminals 1 and 2. Does not apply 12 V direct current between terminals 1 and 2.	Existed
Never make Connect the Connect the Connect the Parking actual Term 3 s the inspection res YES >> INSPE	ator relay A inal 5 sult normal? CTION END	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5. Condition Apply 12 V direct current between terminals 1 and 2. Does not apply 12 V direct current between terminals 1 and 2.	Existed
Never make Connect the Connect the Connect the Parking actual Term 3 s the inspection res YES >> INSPE	ator relay A inal 5 sult normal? CTION END	the terminals when applying the voltage. parking actuator relay A terminals 3 and 5. Condition Apply 12 V direct current between terminals 1 and 2. Does not apply 12 V direct current between terminals 1 and 2.	Existed

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P18AD PARKING ACTUATOR RELAY B

< DTC/CIRCUIT DIAGNOSIS >

P18AD PARKING ACTUATOR RELAY B

DTC Logic

INFOID:000000007631930

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P18AD	Parking Actuator Relay B Circuit	In spite of the parking actuator relay B OFF, voltage is detected from the U phase, V phase and W phase of motor coil B.	 Parking actuator relay B (ON stuck) Electric shift control module Harness (Ground short)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(I) With CONSULT

- 1. Power switch ON and wait for 2 seconds or more.
- 2. Check DTC.

Is "P18AD" detected?

- YES >> Go to TM-120, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631931

$1. {\sf CHECK} \text{ harness between electric shift control module and parking actuator relay b}$

- 1. Disconnect the electric shift control module connector.
- 2. Disconnect the parking actuator relay B.
- 3. Check the continuity between parking actuator relay B vehicle side harness connector terminal and ground.

Parking actuator relay B ve	hicle side harness connector	Ground	Continuity
Connector	Terminal	Ground	Continuity
E55	2	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2. CHECK HARNESS BETWEEN PARKING ACTUATOR AND PARKING ACTUATOR RELAY B

- 1. Disconnect the parking actuator connector.
- 2. Check the voltage between parking actuator vehicle side harness connector terminal and ground.

Parking actuator vehicle	e side harness connector	Ground	Voltage
Connector	Connector Terminal		(Approx.)
F5	14	Ground	0 V

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

 ${f 3.}$ CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND PARKING ACTUATOR

P18AD PARKING ACTUATOR RELAY B

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Connector Terminal		cle side harness connector	Ground	Voltage
	r	Terminal	Giouna	(Approx.)
		27		
M59		28	Ground	0 V
		29		
s the inspection re				
YES >> GO TO NO >> Repair		and north		
CHECK PARKI	or replace dama	• •		
		Refer to <u>IM-121, "Compon</u>	ent Inspection (Parking Actu	<u>uator Relay B)"</u> .
<u>s the inspection re</u> YES >> Replace		ft control modulo. Pofor to 1	M-130, "Removal and Insta	llation"
			28, "Component Parts Locat	
		king Actuator Relay B		
/omponent int	spection (i an	ning notaator notay D	/	INFOID:000000007631
			, ,	
.CHECK PARKI	NG ACTUATOR I	RELAY B	, ,	
. Disconnect the	e parking actuato	r relay B. Refer to <u>TM-28, "(</u>		
. Disconnect the . Apply 12 V dire	e parking actuato			
Disconnect the Apply 12 V dire	e parking actuato	r relay B. Refer to <u>TM-28, "(</u> en parking actuator relay B		
 Disconnect the Apply 12 V dire CAUTION: Never make Connect the 	e parking actuato ect current betwe the terminals s fuse between t	r relay B. Refer to <u>TM-28, "(</u> en parking actuator relay B hort. he terminals when applyir	terminals 1 and 2.	
 Disconnect the Apply 12 V dire CAUTION: Never make Connect the 	e parking actuato ect current betwe the terminals s fuse between t	r relay B. Refer to <u>TM-28, "(</u> en parking actuator relay B hort.	terminals 1 and 2.	
 Disconnect the Apply 12 V dire CAUTION: Never make Connect the 	e parking actuato ect current betwe the terminals s fuse between t tinuity between p	r relay B. Refer to <u>TM-28, "(</u> een parking actuator relay B hort. he terminals when applyir arking actuator relay B term	terminals 1 and 2. ng the voltage. ninals 3 and 5.	
 Disconnect the Apply 12 V dire CAUTION: Never make Connect the Check the con 	e parking actuator ect current betwe the terminals s fuse between t tinuity between p lator relay B	r relay B. Refer to <u>TM-28, "(</u> en parking actuator relay B hort. he terminals when applyir	terminals 1 and 2. ng the voltage. ninals 3 and 5.	Continuity
 Disconnect the Apply 12 V dire CAUTION: Never make Connect the Check the con Parking actu Term 	e parking actuator ect current betwe the terminals s fuse between t tinuity between p nator relay B	r relay B. Refer to <u>TM-28, "(</u> een parking actuator relay B hort. he terminals when applyir arking actuator relay B term	terminals 1 and 2. ng the voltage. Jinals 3 and 5.	Continuity Existed
 Disconnect the Apply 12 V dire CAUTION: Never make Connect the Connect the Check the con 	e parking actuator ect current betwe the terminals s fuse between t tinuity between p lator relay B	r relay B. Refer to <u>TM-28, "(</u> een parking actuator relay B hort. he terminals when applyin parking actuator relay B term Cond	terminals 1 and 2. ng the voltage. inals 3 and 5. lition en terminals 1 and 2.	
 Disconnect the Apply 12 V dire CAUTION: Never make Connect the Check the con Parking actu Term 	e parking actuato ect current betwe the terminals s fuse between t tinuity between p lator relay B hinal	r relay B. Refer to <u>TM-28, "C</u> een parking actuator relay B hort. he terminals when applyin arking actuator relay B term Conc Apply 12 V direct current betwe	terminals 1 and 2. ng the voltage. inals 3 and 5. lition en terminals 1 and 2.	Existed
Disconnect the Apply 12 V dire CAUTION: • Never make • Connect the Check the con Parking actu Term 3 • the inspection re	e parking actuato ect current betwe the terminals s fuse between t tinuity between p lator relay B hinal	r relay B. Refer to <u>TM-28, "C</u> een parking actuator relay B hort. he terminals when applyin arking actuator relay B term Conc Apply 12 V direct current betwe	terminals 1 and 2. ng the voltage. inals 3 and 5. lition en terminals 1 and 2.	Existed
 Disconnect the Apply 12 V direct CAUTION: Never make Connect the Connect the Connect the Check the con Parking acture Term 3 the inspection report of the Connect the Check th	e parking actuator ect current betwe the terminals s fuse between t tinuity between p ninal 5 esult normal?	r relay B. Refer to <u>TM-28, "C</u> een parking actuator relay B hort. he terminals when applyin parking actuator relay B term Conc Apply 12 V direct current betwe Does not apply 12 V direct curre	terminals 1 and 2. ng the voltage. inals 3 and 5. lition en terminals 1 and 2.	Existed

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P18AE STUCK IN SHIFT

< DTC/CIRCUIT DIAGNOSIS >

P18AE STUCK IN SHIFT

DTC Logic

INFOID:000000007631933

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P18AE	Medium Stuck In Shift	It is detected that the parking actuator does not move at the midpoint of the manual plate after the parking actuator stops the operation.	Parking actuator (Parking mechanism)

DTC CONFIRMATION PROCEDURE

CAUTION:

"<u>TM-122, "Diagnosis Procedure"</u>" must be performed before starting "DTC CONFIRMATION PROCE-DURE".

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

- 1. Set the vehicle to READY.
- 2. Select "Data Monitor" in "SHIFT".
- 3. Select "RANGE POSITION".
- 4. Shift the selector lever as follows.
- $P \rightarrow N \rightarrow P$
- 5. Repeat step 4 five more times.
- 6. Check DTC.

Is "P18AE" detected?

- YES >> Go to TM-122, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631934

1.REPLACE REDUCTION GEAR

Replace the reduction gear due to malfunction in the parking actuator. Refer to <u>TM-19</u>, "<u>Removal and Installa-</u> tion".

>> END

U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

U1000 CAN COMM CIRCUIT

DTC Logic

INFOID:000000007631935

[ELECTRIC SHIFT]

DTC	Trouble diagnosis name	DTC detection condition	Possible cause	
U1000	CAN communication line	Electric shift control module cannot transmit or receive CAN communication signals when the power switch is ON.	Harness or connectors (CAN communication line is open or shorted.)	
TC CON	FIRMATION PROCED	DURE		1
.PREPAR	RATION BEFORE WOR	К		
		PROCEDURE" occurs just before, power switc	ch OFF and wait for at least	
0 seconds	s, then perform the next	test.		
>>	• GO TO 2.			
	GO TO 2. RM DTC CONFIRMATIC	ON PROCEDURE		
2.PERFO	RM DTC CONFIRMATIC			
.PERFO	RM DTC CONFIRMATIC NSULT switch ON and wait for {			
With CO With CO Power Check	RM DTC CONFIRMATIC NSULT switch ON and wait for {			
With CO With CO Power Check Check W1000" YES >>	RM DTC CONFIRMATIONSULT switch ON and wait for to DTC. detected? Go to TM-123, "Diagno	5 seconds or more.		
With CO Power Check (U1000) YES >> NO >>	RM DTC CONFIRMATIONSULT switch ON and wait for some DTC. detected? Go to <u>TM-123, "Diagno</u> NSPECTION END	5 seconds or more.		
With CO With CO Ower Check (U1000) YES NO S	RM DTC CONFIRMATIONSULT switch ON and wait for to DTC. detected? Go to TM-123, "Diagno	5 seconds or more.	INF0ID:00000007631936	

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U1010 CONTROL UNIT (CAN)

< DTC/CIRCUIT DIAGNOSIS >

U1010 CONTROL UNIT (CAN)

DTC Logic

INFOID:000000007631937

[ELECTRIC SHIFT]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
U1010	Control Module Malfunction	Malfunction is detected in the CAN communication initial diagnosis (control module malfunction).	Electric shift control module

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT

1. Power switch OFF to ON and wait for 5 seconds or more.

2. Check DTC.

Is "U1010" detected?

YES >> Go to <u>TM-124, "Diagnosis Procedure"</u>. NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631938

1.REPLACE ELECTRIC SHIFT CONTROL MODULE

Replace the electric shift control module. Refer to TM-130, "Removal and Installation".

>> END

U1086 CAN ERROR

< DTC/CIRCUIT DIAGNOSIS >

U1086 CAN ERROR

DTC Logic

[ELECTRIC SHIFT]

INFOID:000000007631939

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
U1086	Control Module Malfunction	The inability to transmit or receive data is de- tected after the power switch is turned OFF.	Electric shift control module
TC DETE	CTION LOGIC		
.PREPAR	ATION BEFORE WORK		
	DTC CONFIRMATION PRO	DCEDURE" occurs just before, power s	witch OFF and wait for at least
0 3600103,	then perform the next test		
	GO TO 2.		
2.PERFOR	M DTC CONFIRMATION	PROCEDURE	
With CON	ISULT switch OFF to ON and wait	for 5 seconds or more	
2. Check [DTC.		
<u>s "U1086" c</u> YES >>	<u>letected?</u> Go to <u>TM-125, "Diagnosis</u>	Procedure"	
	INSPECTION END	<u>riocedure</u> .	
Diagnosis	s Procedure		INFOID:00000007631940
Go to <u>LAN-1</u>	15, "Trouble Diagnosis Flow	<u>v Chart"</u> .	

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SELECTOR INDICATOR CIRCUIT

Component Function Check

1.CHECK SELECTOR INDICATOR

1. Set the vehicle to READY.

- 2. Shift the selector lever.
- 3. Check that the illuminated position of the selector indicator in the finisher area corresponds to the selected shift position.

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> Go to TM-126, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:000000007631942

1.CHECK SELECTOR INDICATOR POWER SUPPLY CIRCUIT

1. Disconnect the selector indicator connector.

2. Check the voltage between selector indicator vehicle side harness connector terminal and ground.

Selector indicator vehicle	e side harness connector	Ground	Voltage
Connector	Terminal	Ground	voltage
M56	2	Ground	9 – 16 V

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

2. DETECT MALFUNCTIONING ITEM

Check the following.

• Harness for short or open between selector indicator vehicle side harness connector and 12V battery.

- 12V battery
- 10A fuse (# 12)

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.

NO >> Repair or replace damaged parts.

3. CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND SELECTOR INDICATOR

1. Disconnect the electric shift control module connector.

2. Check the continuity between electric shift control module vehicle side harness connector terminals and selector indicator vehicle side harness connector terminals.

	le vehicle side harness con- ctor	Selector indicator vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M58	22		7	
	26	M56	8	Eviated
M59	30	OCIVI	1	Existed
	38		3	

3. Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

INFOID:000000007631941

SELECTOR INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift control module	Electric shift control module vehicle side harness connector		Continuity	А
Connector	Terminal	- Ground	Continuity	
M58	22			_
	26	Ground	Not existed	В
M59	30	Ground	NOT EXISTED	
	38]		С

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4.CHECK GROUND CIRCUIT

Check the continuity between electric shift control module vehicle side harness connector terminals and ground.

Electric shift control module v	Electric shift control module vehicle side harness connector			_
Connector	Terminal	Ground Continuity		-
 M58	3	Ground	Existed	
10136	4	Giouna	Existed	G

Is the inspection result normal?

YES >> 1. Check intermittent incident. Refer to <u>GI-51, "Intermittent Incident"</u>.

- 2. If inspection result is OK, replace the selector indicator. Refer to <u>TM-134</u>, "<u>Removal and</u> H <u>Installation</u>".
- NO >> Repair or replace damaged parts.

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SHIFT POSITION INDICATOR CIRCUIT

Component Function Check

1. CHECK SHIFT POSITION INDICATOR

1. Set the vehicle to READY.

- Shift the selector lever. 2.
- Check that the indication of the shift position indicator in the combination meter corresponds to the 3. selected shift position.

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> Go to TM-128, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:000000007631944

1. CHECK DTC OF ELECTRIC SHIFT CONTROL MODULE

With CONSULT

- 1. Power switch ON.
- Perform "Self Diagnostic Results" in "SHIFT". 2.

Is any DTC detected?

- YES >> Check DTC detected item. Refer to TM-47, "DTC Index".
- NO >> GO TO 2.

2.check dtc of vcm

With CONSULT

- 1 Power switch ON.
- 2. Perform "Self Diagnostic Results" in "EV/HEV".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to EVC-84, "DTC Index".
- NO >> GO TO 3.
- 3.CHECK DTC OF COMBINATION METER

(P)With CONSULT

- Power switch ON. 1.
- Perform "Self Diagnostic Results" in "METER". 2.

Is any DTC detected?

- YES >> Check DTC detected item. Refer to MWI-68, "DTC Index". NO
 - >> 1. Check intermittent incident. Refer to GI-51, "Intermittent Incident".
 - If inspection result is OK, replace the combination meter. Refer to MWI-96, "Removal and 2. Installation".

INFOID:000000007631943

ELECTRIC SHIFT WARNING LAMP

		SHIFI WARNI		
COTC/CIRCUIT DIAGNOSIS				[ELECTRIC SHIFT]
	_			
Component Function C	heck		INFOID:000000007631945	
1.CHECK ELECTRIC SHIFT WARNING LAMP				
Check that electric shift warnii	ng lamp turns C	N for approx. 2 seco	onds after power swit	ch is ON.
s the inspection result normal				
YES >> INSPECTION EN NO >> Go to TM-129, "D		<u>dure"</u> .		
Diagnosis Procedure				INFOID:000000007631946
.CHECK DTC OF ELECTR	IC SHIFT CON	TROL MODULE		
With CONSULT				
. Power switch ON. . Perform "Self Diagnostic I	Results" in "SHI	FT".		
any DTC detected?				
YES >> Check DTC detec NO >> GO TO 2.	ted item. Refer	to TM-47, "DTC Ind	<u>ex"</u> .	
CHECK DTC OF VCM				
With CONSULT				
Power switch ON. Perform "Self Diagnostic I	Results" in "FV/	HEV"		
any DTC detected?				
YES >> Check DTC detect	ted item. Refer	to EVC-84, "DTC Ir	ndex".	
NO >> 1. Check input/c			C-66, "Reference Valu	<u>ıe"</u> .
2. If inspection r CHECK DTC OF COMBIN.	ESULT IS OK, GC	0 10 3.		
With CONSULT . Power switch ON.				
. Perform "Self Diagnostic I	Results" in "ME	TER".		
<u>s any DTC detected?</u> YES >> Check DTC detec	tod itom Pofor		dox"	
NO >> 1. Check input/c				eference Value".
	esult is OK, GC			
CHECK HARNESS BETW	EEN VCM AND	COMBINATION ME	ETER	
. Disconnect the combination		ctor.		
 Disconnect the VCM conr Check the continuity betw 		on meter vehicle side	e harness connector t	terminal and VCM vehi-
cle side harness connecto				
Combination motor vahials side ha)/CM ushisle side	hornood connector	
Combination meter vehicle side ha	Terminal Connector		harness connector	- Continuity
M34	7	E63	91	Existed
. Check the continuity betw	-		-	
Combination meter vehicle	Combination meter vehicle side harness connector			
Connector	Termi	nal	Ground	Continuity
M34	7		Ground	Not existed
			Croana	NUL EXISIEU

YES >> INSPECTION END

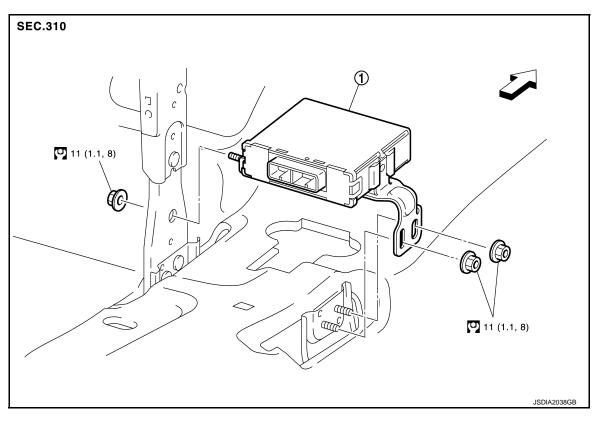
NO >> Repair or replace damaged parts.

REMOVAL AND INSTALLATION ELECTRIC SHIFT CONTROL MODULE

Exploded View

INFOID:000000007631947

[ELECTRIC SHIFT]



- 1. Electric shift control module
- ∠ : Vehicle front
- : N·m (kg-m, ft-lb)

Removal and Installation

CAUTION:

Never subject the electric shift control module to impact or load.

REMOVAL

- 1. Disconnect the negative cable from 12V battery. Refer to <u>TM-25</u>, "Precautions for Removing Battery Terminal".
- 2. Remove the console body assembly. Refer to IP-27, "Exploded View".
- 3. Disconnect the electric shift control module connector.
- 4. Remove the electric shift control module with bracket from the vehicle.

INSTALLATION

Installation is the reverse order of removal.

Adjustment

INFOID:000000007631949

INFOID:000000007631948

It is necessary to clear the P position learning value and perform the relearning of the P position after the electric shift control module is removed and installed or replaced. Refer to <u>TM-57</u>, "Work Procedure".

TM-130

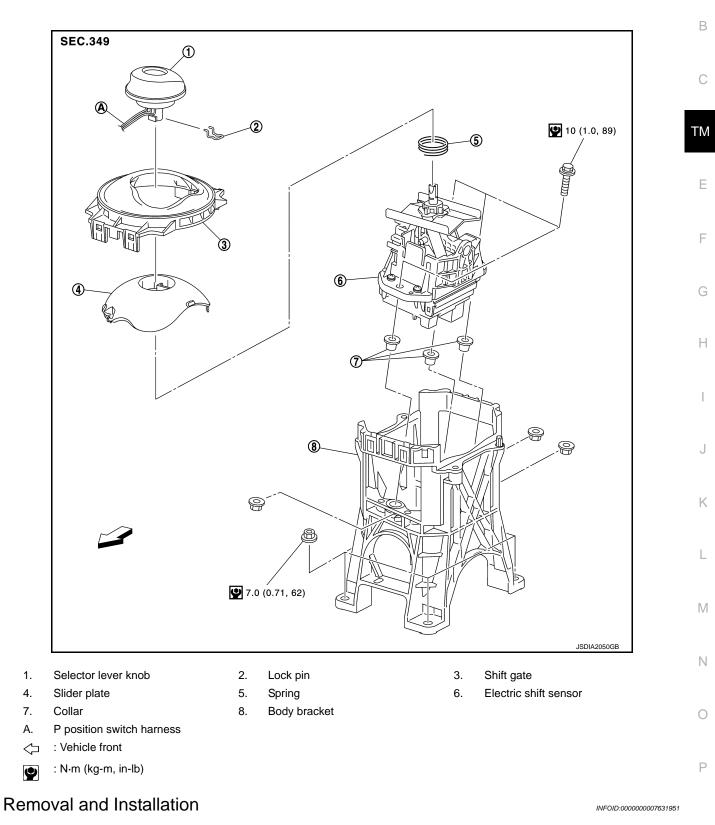
< REMOVAL AND INSTALLATION >

ELECTRIC SHIFT SELECTOR

Exploded View

INFOID:000000007631950

А

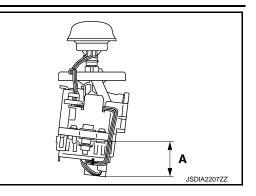


CAUTION:

ELECTRIC SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

- As part A in the figure contains a strong magnet, persons with an electro-medical apparatus should keep it away from his/her body. Otherwise it may cause the electro-medical apparatus to malfunction.
- Keep it away from magnetic objects such as magnetic cards and metal products (e.g. watches).
- Never subject the electric shift selector to impact by dropping or hitting, water splash or high humidity.



[ELECTRIC SHIFT]

REMOVAL

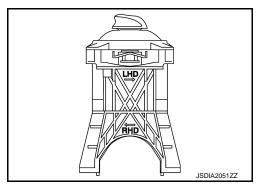
- 1. Disconnect the negative cable from 12V battery. Refer to <u>TM-25, "Precautions for Removing Battery Ter-</u> minal".
- 2. Remove the console finisher assembly. Refer to IP-27, "Exploded View".
- 3. Disconnect the selector indicator connector.
- 4. Disconnect the electric parking brake connector.
- 5. Remove the console body assembly. Refer to IP-27, "Exploded View".
- 6. Remove body harness clip from electric shift selector.
- 7. Remove electric shift selector fix bolts.
- 8. Disconnect the electric shift sensor connector. CAUTION:

Never disconnect the P position switch connector.

9. Remove the electric shift selector from the vehicle.

INSTALLATION

Note the following, and install in the reverse order of removal. Check the orientation instruction on the side of the body bracket and install the part so that the direction of the arrow points toward the vehicle front.



INFOID:000000007631952

Disassembly and Assembly

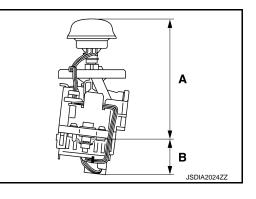
CAUTION:

- As part B in the figure contains a strong magnet, persons with an electro-medical apparatus should keep it away from his/her body. Otherwise it may cause the electro-medical apparatus to malfunction.
- Keep it away from magnetic objects such as magnetic cards and metal products (e.g. watches).
- When holding the electric shift sensor, hold part A in the figure.
- Never disassemble parts A or B shown in the figure.
- Never subject the electric shift sensor to impact by dropping or hitting, water splash or high humidity.

DISASSEMBLY

1. Put a mark at the hook position of the P position switch harness. CAUTION:

Memorize how the P position switch harness is routed.



ELECTRIC SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

- 2. Disconnect the P position switch connector.
- 3. Pull the lock pin out of the selector lever using long-nose pliers. **NOTE:**

Tilting of the selector lever knob in the N position direction allows easier work.

- 4. Remove P position switch harness from hook.
- 5. Pull the selector lever knob upward out of the vehicle.
- 6. Remove the shift gate from body bracket. CAUTION:

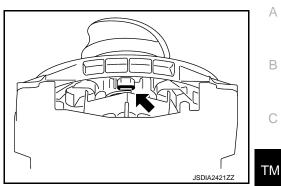
Be careful not to damage the joint (pawl).

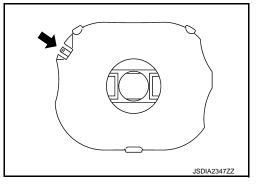
- 7. Remove the slider plate.
- 8. Remove the spring.
- 9. Remove electric shift sensor fix bolts.
- 10. Remove the electric shift sensor from body bracket.

ASSEMBLY

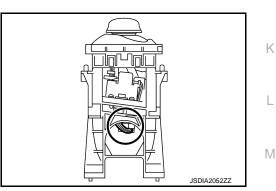
Note the following, and install in the reverse order of removal.

- Install the lock pin to the selector knob before assembly.
- Check that lock pin is securely installed.
- To install slide plate, face the arrow (harness hook) shown in the figure toward the front of the vehicle.
- Hook the P position switch harness at the marked position.





 Adjust the redundant part of the P position switch harness in the position shown in the figure.



Inspection

INSPECTION AFTER INSTALLATION

- Pull the selector lever knob upward to check that it does not come off.
- Shift the selector lever and check that the indication of the selector indicator (in the finisher area) and the shift position indicator (in the combination meter) correspond to the actual shift position.
- Check that a buzzer sounds and shifting is not possible when an attempt is made to shift the selector lever from the P position to another position with the pwer switch ON and the brake pedal not depressed. **NOTE:**

If the brake pedal is depressed, the gear shifts to the N position irrespective of the position to which the lever is shifted.

 Check that a buzzer sounds and that shifting is not possible when an attempt is made to shift the selector lever from the P position to another position in the READY status, and with the brake pedal not depressed.
 NOTE:

Shifting is possible if the brake pedal is depressed.

TM-133

INFOID:000000007631953

[ELECTRIC SHIFT]

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P

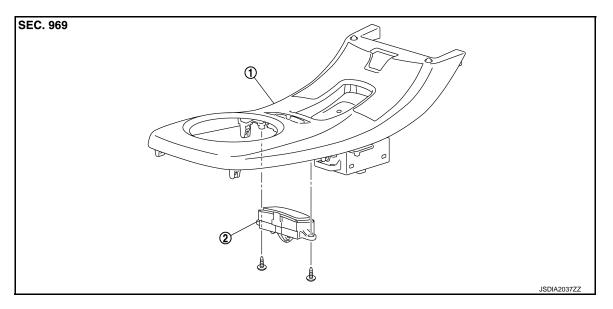
< REMOVAL AND INSTALLATION >

SELECTOR INDICATOR

Exploded View

INFOID:000000007631954

[ELECTRIC SHIFT]



1. Console finisher assembly 2. Selector indicator

Removal and Installation

REMOVAL

- 1. Remove the console finisher assembly. Refer to IP-27. "Exploded View".
- 2. Disconnect the selector indicator connector.
- 3. Disconnect the electric parking brake connector.
- 4. Remove the selector indicator from the console finisher assembly.

INSTALLATION

Installation is the reverse order of removal.

Inspection

INFOID:000000007631956

INFOID:000000007631955

INSPECTION AFTER INSTALLATION

Shift the selector lever and check that the light position of the selector indicator corresponds to the actual shift position.