

TM

SECTION

TRANSAXLE & TRANSMISSION

A

B

C

TM

CONTENTS

E

REDUCTION GEAR

PRECAUTION 4

PRECAUTIONS 4

Precaution for Technicians Using Medical Electric.....4

Point to Be Checked Before Starting Maintenance

Work4

Precaution for Supplemental Restraint System

(SRS) "AIR BAG" and "SEAT BELT PRE-TEN-

SIONER"4

Precaution for Procedure without Cowl Top Cover.....5

High Voltage Precautions5

Precautions for Removing Battery Terminal8

PREPARATION 9

PREPARATION 9

Commercial Service Tools9

SYSTEM DESCRIPTION11

STRUCTURE AND OPERATION11

Sectional View 11

Power Transfer Diagram 12

PERIODIC MAINTENANCE13

REDUCTION GEAR OIL13

Inspection 13

Draining and Refilling 13

REMOVAL AND INSTALLATION14

EARTH BRUSH14

Exploded View 14

Removal and Installation 14

Inspection 16

BREATHER HOSE17

Exploded View 17

Removal and Installation 17

UNIT REMOVAL AND INSTALLATION19

REDUCTION GEAR19

Exploded View19

Removal and Installation19

Adjustment22

SERVICE DATA AND SPECIFICATIONS (SDS)23

SERVICE DATA AND SPECIFICATIONS (SDS)23

General Specifications23

Earth Brush23

ELECTRIC SHIFT

PRECAUTION24

PRECAUTIONS24

Precaution for Technicians Using Medical Electric...24

Point to Be Checked Before Starting Maintenance

Work24

Precaution for Supplemental Restraint System

(SRS) "AIR BAG" and "SEAT BELT PRE-TEN-

SIONER"24

Precaution for Procedure without Cowl Top Cover...25

Precautions for Removing Battery Terminal25

General Precautions26

SYSTEM DESCRIPTION27

DESCRIPTION27

Description27

COMPONENT PARTS28

Component Parts Location28

Electric Shift Control Module29

Parking Actuator29

Electric Shift Warning Lamp30

Electric Shift Selector30

Electric Shift Sensor31

P Position Switch31

F

G

H

I

J

K

L

M

N

O

P

Selector Indicator	32	P1722 VEHICLE SPEED	67
Shift Position Indicator	32	DTC Logic	67
STRUCTURE AND OPERATION	33	Diagnosis Procedure	67
Operating Principle	33	P1802 CONTROL MODULE	68
SYSTEM	34	DTC Logic	68
System Description	34	Diagnosis Procedure	68
Circuit Diagram	35	P1803 CONTROL MODULE	69
Fail-Safe	36	DTC Logic	69
Protection Control	37	Diagnosis Procedure	69
DIAGNOSIS SYSTEM (ELECTRIC SHIFT)	38	P1804 CONTROL MODULE	70
DIAGNOSIS DESCRIPTION	38	DTC Logic	70
DIAGNOSIS DESCRIPTION : System Description	38	Diagnosis Procedure	70
DIAGNOSIS DESCRIPTION : DTC	38	P1811 ELECTRIC SHIFT POWER SUPPLY RELAY	71
DIAGNOSIS DESCRIPTION : Counter System	38	DTC Logic	71
CONSULT Function	38	Diagnosis Procedure	71
ECU DIAGNOSIS INFORMATION	41	Component Inspection (Electric Shift Power Supply Relay)	72
ELECTRIC SHIFT CONTROL MODULE	41	P1895 MOTOR SPEED	74
Reference Value	41	DTC Logic	74
Fail-Safe	45	Diagnosis Procedure	74
Protection Control	46	P1896 SHIFT POWER SUPPLY	75
DTC Inspection Priority Chart	47	DTC Logic	75
DTC Index	47	Diagnosis Procedure	75
WIRING DIAGRAM	50	P1897 ENCODER ERROR	79
ELECTRIC SHIFT SYSTEM	50	DTC Logic	79
Wiring Diagram	50	Diagnosis Procedure	79
BASIC INSPECTION	54	P1899 MOTOR A	81
DIAGNOSIS AND REPAIR WORK FLOW	54	DTC Logic	81
Diagnosis Flow	54	Diagnosis Procedure	81
Question sheet	55	Component Inspection (Motor Coil A)	82
P POSITION LEARNING VALUE CLEAR	57	P189A MOTOR A	83
Description	57	DTC Logic	83
Work Procedure	57	Diagnosis Procedure	83
DTC/CIRCUIT DIAGNOSIS	58	Component Inspection (Parking Actuator Relay A)	85
P0571 BRAKE SWITCH A	58	Component Inspection (Motor Coil A)	85
DTC Logic	58	P189B MOTOR B	87
Diagnosis Procedure	58	DTC Logic	87
P0705 TRANSMISSION RANGE SENSOR A... 60	60	Diagnosis Procedure	87
DTC Logic	60	Component Inspection (Motor Coil B)	88
Diagnosis Procedure	60	P189C MOTOR B	89
P0706 TRANSMISSION RANGE SENSOR A... 63	63	DTC Logic	89
DTC Logic	63	Diagnosis Procedure	89
Diagnosis Procedure	63	Component Inspection (Parking Actuator Relay B)	91
P0780 SHIFT ERROR	66	Component Inspection (Motor Coil B)	91
DTC Logic	66	P189D BACK UP VOLTAGE	93
Diagnosis Procedure	66	DTC Logic	93
		Diagnosis Procedure	93

P189E ACTUATOR LOCK	95	Component Inspection (Parking Actuator Relay A)	..119	A
DTC Logic	95			
Diagnosis Procedure	95			
P189F ANGLE SENSOR 1	96	P18AD PARKING ACTUATOR RELAY B	120	B
DTC Logic	96	DTC Logic	120	
Diagnosis Procedure	96	Diagnosis Procedure	120	
P18A0 ANGLE SENSOR 2	98	Component Inspection (Parking Actuator Relay B)	..121	C
DTC Logic	98			
Diagnosis Procedure	98	P18AE STUCK IN SHIFT	122	
P18A1 ANGLE SENSOR 1	100	DTC Logic	122	
DTC Logic	100	Diagnosis Procedure	122	TM
Diagnosis Procedure	100	U1000 CAN COMM CIRCUIT	123	
P18A2 ANGLE SENSOR 2	102	DTC Logic	123	E
DTC Logic	102	Diagnosis Procedure	123	
Diagnosis Procedure	102	U1010 CONTROL UNIT (CAN)	124	F
P18A3 CONTROL MODULE	104	DTC Logic	124	
DTC Logic	104	Diagnosis Procedure	124	
Diagnosis Procedure	104	U1086 CAN ERROR	125	G
P18A4 CONTROL MODULE	105	DTC Logic	125	
DTC Logic	105	Diagnosis Procedure	125	
Diagnosis Procedure	105	SELECTOR INDICATOR CIRCUIT	126	H
P18A6 WAKE UP SIGNAL	106	Component Function Check	126	
DTC Logic	106	Diagnosis Procedure	126	
Diagnosis Procedure	106	SHIFT POSITION INDICATOR CIRCUIT	128	I
P18A7 SHIFT SIGNAL OFF	108	Component Function Check	128	
DTC Logic	108	Diagnosis Procedure	128	
Diagnosis Procedure	108	ELECTRIC SHIFT WARNING LAMP	129	J
P18A8 P POSITION SWITCH	112	Component Function Check	129	
DTC Logic	112	Diagnosis Procedure	129	
Diagnosis Procedure	112	REMOVAL AND INSTALLATION	130	K
Component Inspection (P Position Switch)	113	ELECTRIC SHIFT CONTROL MODULE	130	L
P18A9 PARKING ACTUATOR FUNCTION	114	Exploded View	130	
DTC Logic	114	Removal and Installation	130	
Diagnosis Procedure	114	Adjustment	130	M
P18AA P POSITION LEARNING ERROR	115	ELECTRIC SHIFT SELECTOR	131	
DTC Logic	115	Exploded View	131	
Diagnosis Procedure	115	Removal and Installation	131	N
P18AB IGNITION SWITCH	116	Disassembly and Assembly	132	
DTC Logic	116	Inspection	133	
Diagnosis Procedure	116	SELECTOR INDICATOR	134	O
P18AC PARKING ACTUATOR RELAY A	118	Exploded View	134	
DTC Logic	118	Removal and Installation	134	
Diagnosis Procedure	118	Inspection	134	P

PRECAUTION

PRECAUTIONS

Precaution for Technicians Using Medical Electric

INFOID:000000007631800

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

INFOID:000000007631801

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"

INFOID:000000007631802

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

PRECAUTIONS

< 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:

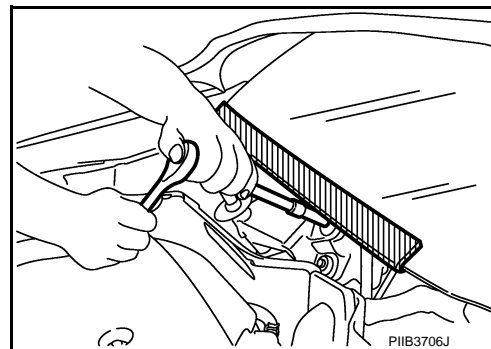
Always observe the following items for preventing accidental activation.

- 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

INFOID:000000007631803

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

INFOID:000000007631804

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.

PRECAUTIONS

< PRECAUTION >

[REDUCTION GEAR]

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 pace-maker 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

< PRECAUTION >

[REDUCTION GEAR]

Indicate "HIGH VOLTAGE. DO NOT TOUCH" on the vehicle under repair/inspection to call attention to other workers.

**DANGER:
HIGH VOLTAGE
REPAIR IN PROGRESS.
DO NOT TOUCH!**

Person in charge:

**DANGER:
HIGH VOLTAGE
REPAIR IN PROGRESS.
DO NOT TOUCH!**

Person in charge:_____

Copy this page and put it after folding on the roof of the vehicle in service.

JSAIA1600GB

Precautions for Removing Battery Terminal

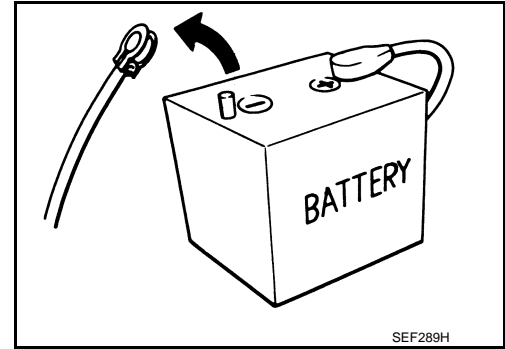
INFOID:000000007631805

- 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 → ON → 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 → ON → 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 → 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:

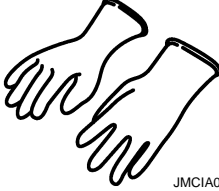
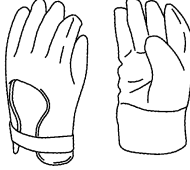

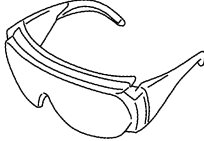
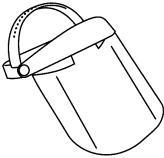
The removal of 12V battery may cause a DTC detection error.

PREPARATION

PREPARATION

Commercial Service Tools

INFOID:000000007631806

Tool name		Description
Insulated gloves [Guaranteed insulation performance for 1000V/300A]	 JMCIA0149ZZ	Removing and installing high voltage components
Leather gloves [Use leather gloves that can fasten the wrist tight]	 JPCIA0066ZZ	<ul style="list-style-type: none"> • Removing and installing high voltage components • Protect insulated gloves
Insulated safety shoes	 JPCIA0011ZZ	Removing and installing high voltage components
Safety glasses [ANSI Z87.1]	 JPCIA0012ZZ	<ul style="list-style-type: none"> • Removing and installing high voltage components • To protect eye from the spatter on the work to electric line
Face shield	 JPCIA0167ZZ	<ul style="list-style-type: none"> • Removing and installing high voltage components • To protect face from the spatter on the work to electric line

A

B

C

TM

E

F

G

H

I

J

K

L

M

N

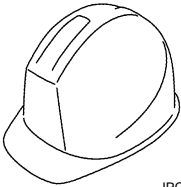
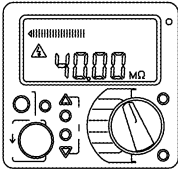
O

P

PREPARATION

< PREPARATION >

[REDUCTION GEAR]

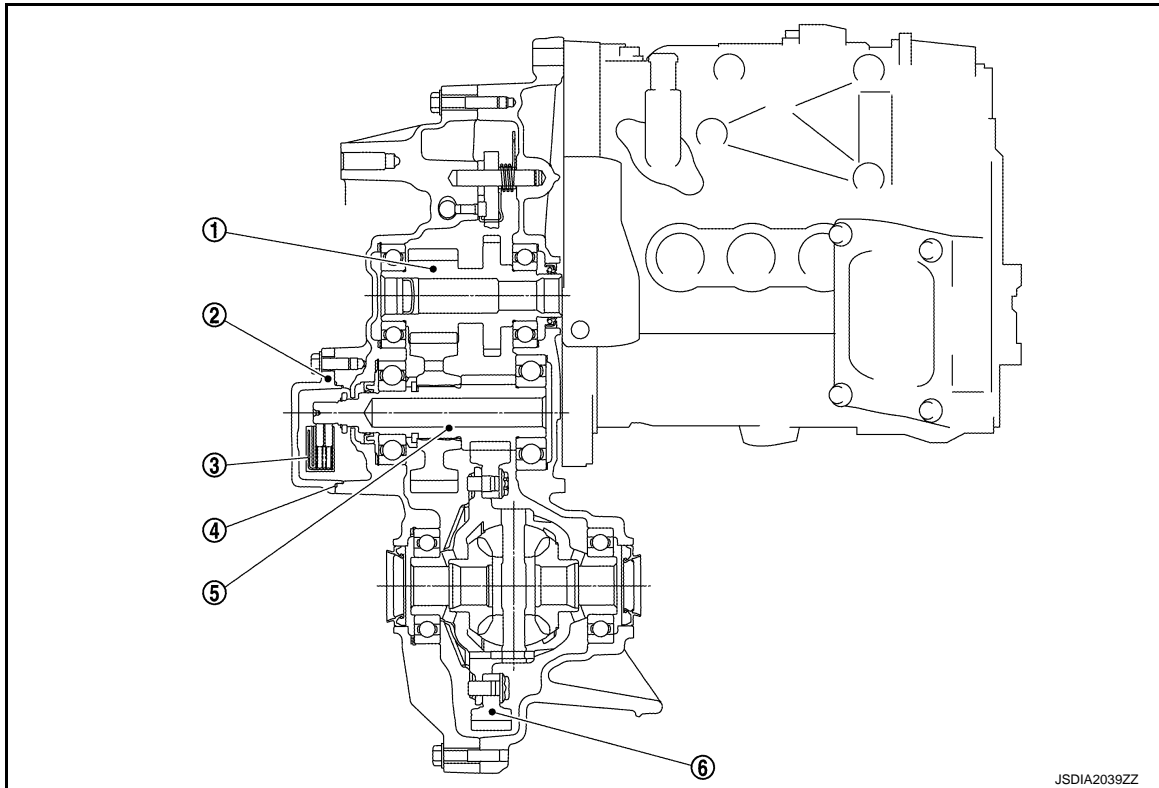
Tool name	Description
<div>Insulated helmet</div> <div><p>JPCIA0013ZZ</p></div>	<div>Removing and installing high voltage components</div>
<div>Insulation resistance tester (Multi tester)</div> <div><p>JPCIA0014ZZ</p></div>	<div>Measuring insulation resistance, voltage, and resistance</div>

SYSTEM DESCRIPTION

STRUCTURE AND OPERATION

Sectional View

INFOID:000000007631807



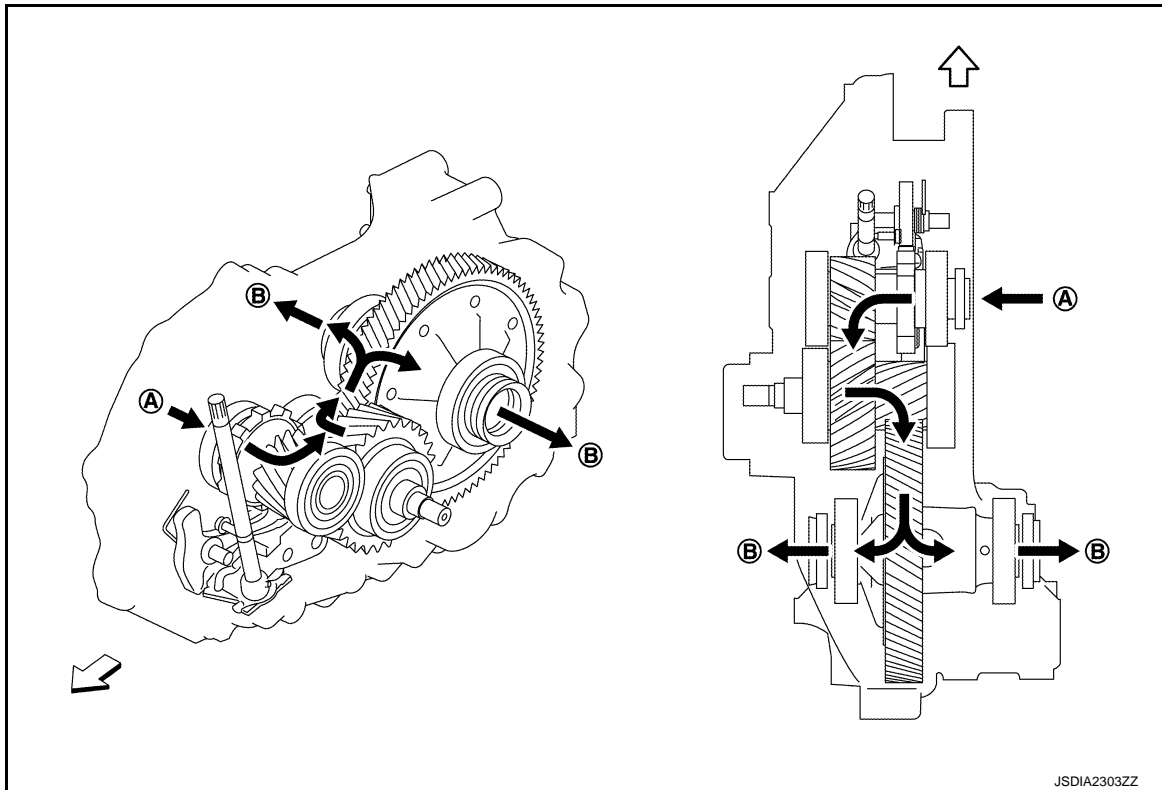
- 1. Input gear
- 4. O-ring

- 2. Brush cover
- 5. Main shaft

- 3. Earth brush
- 6. Final gear

Power Transfer Diagram

INFOID:000000007631808



A. From traction motor

B. To drive shaft

↖ : Vehicle front

PERIODIC MAINTENANCE

REDUCTION GEAR OIL

Inspection

INFOID:000000007631809

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.

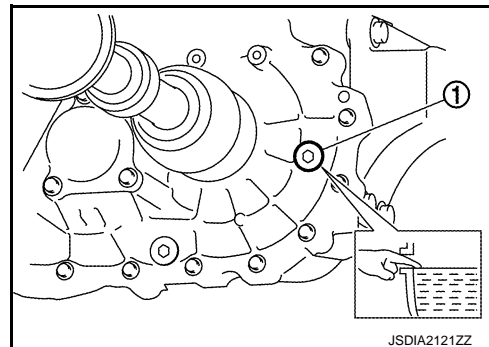
CAUTION:

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 [TM-19, "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.



JSDIA2121ZZ

Draining and Refilling

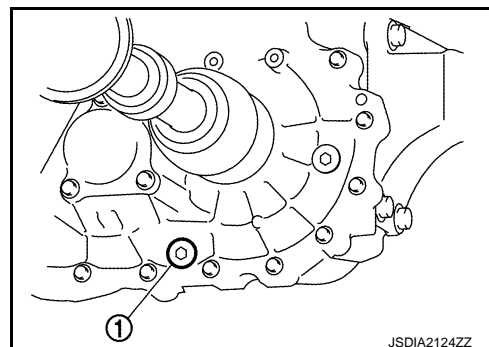
INFOID:000000007631810

DRAINING

- Turn the power switch OFF.
- Remove filler plug.
- 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 [TM-19, "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.



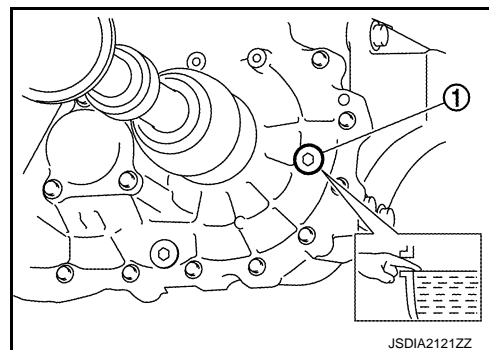
JSDIA2124ZZ

REFILLING

- 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, "General Specifications"](#).



JSDIA2121ZZ

- After refilling oil, check oil level. Set a gasket on filler plug, then install it to reduction gear. Refer to [TM-19, "Exploded View"](#).

CAUTION:

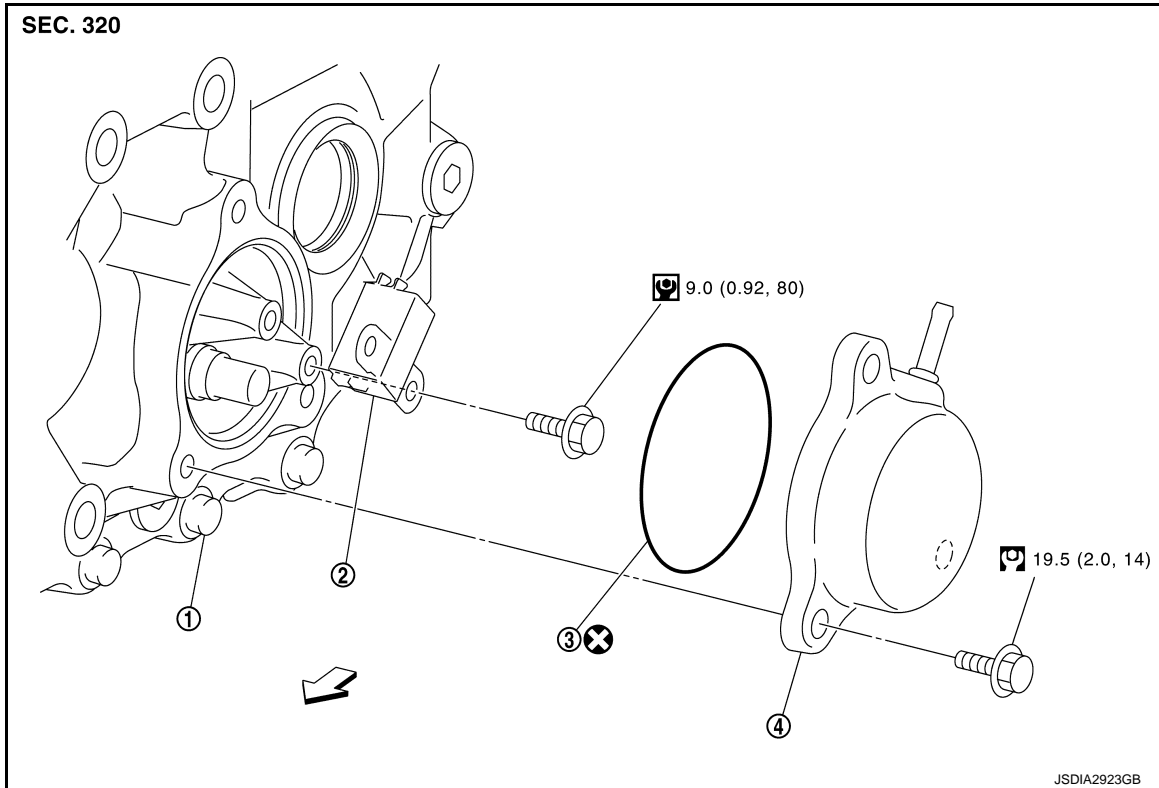
- Never reuse gasket.
- If foreign matter, such as gear abrasion powder, is on the magnet of the filler plug, wipe it free of adherents before installation.

REMOVAL AND INSTALLATION

EARTH BRUSH

Exploded View

INFOID:000000007631811



1. Reduction gear

2. Earth brush

3. O-ring

4. Brush cover

⇐ : Vehicle front

⊗ : Always replace after every disassembly.

⌚ : N·m (kg-m, in-lb)

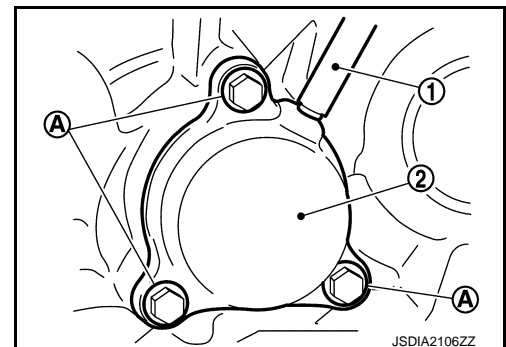
⌚ : N·m (kg-m, ft-lb)

Removal and Installation

INFOID:000000007631812

REMOVAL

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.



EARTH BRUSH

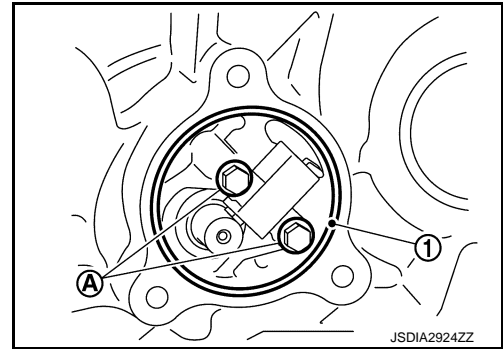
< REMOVAL AND INSTALLATION >

[REDUCTION GEAR]

3. 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.

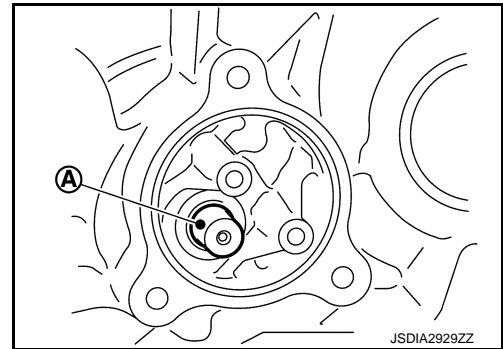


INSTALLATION

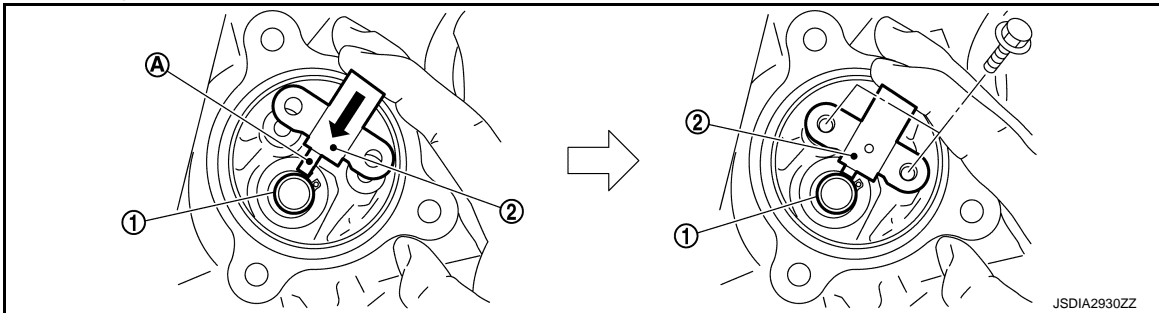
Note the following, and install in the reverse order of removal.

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.

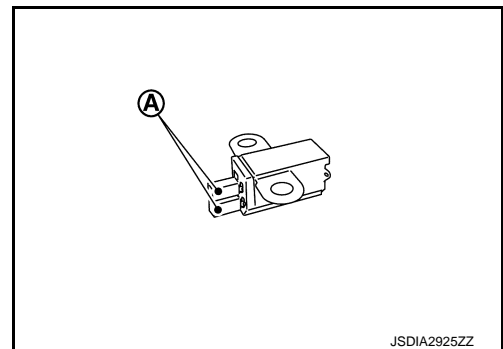


- When assembling earth brush, do not touch brush area (A), press earth brush (2) onto shaft (1) and fasten with brush fixing bolt.



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.

EARTH BRUSH

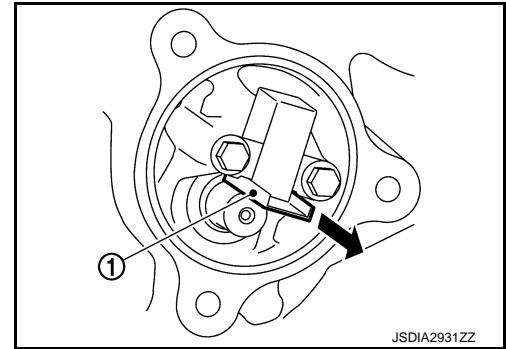
< REMOVAL AND INSTALLATION >

[REDUCTION GEAR]

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.



INFOID:000000007631813

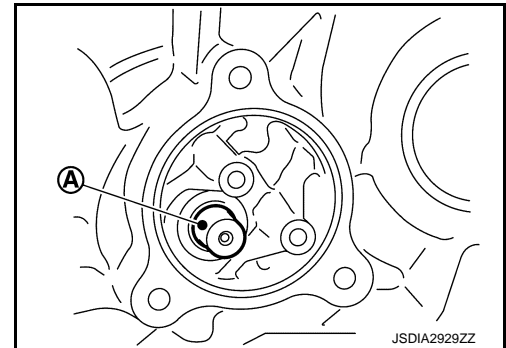
Inspection

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.

CAUTION:

- 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.



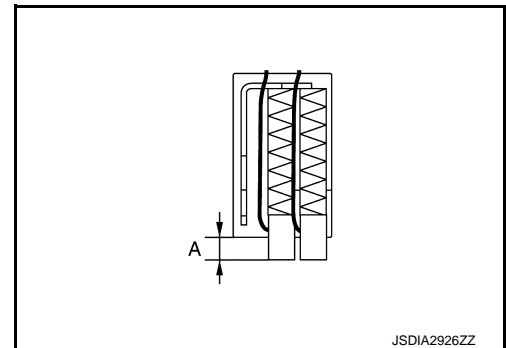
INSPECTION FOR BRUSH WEAR

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 [TM-14, "Removal and Installation"](#).



BREATHER HOSE

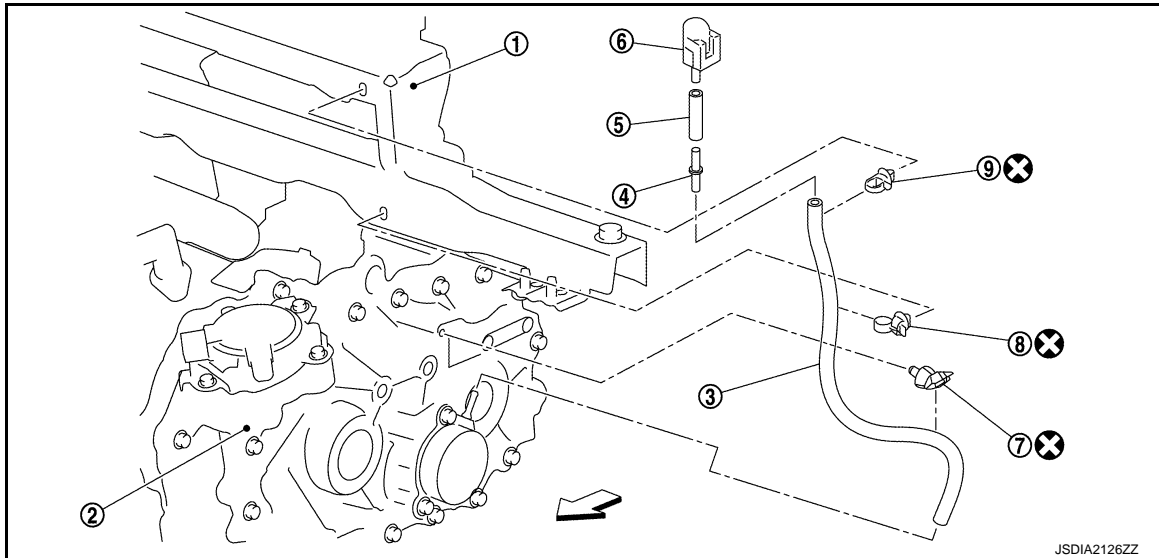
< REMOVAL AND INSTALLATION >

[REDUCTION GEAR]

BREATHER HOSE

Exploded View

INFOID:000000007631814



- | | | |
|--------------------|-------------------|------------------|
| 1. Inverter member | 2. Reduction gear | 3. Breather hose |
| 4. Connector | 5. Breather hose | 6. Breather |
| 7. Clip | 8. Clip | 9. Clip |

⇐ : Vehicle front

⊗ : Always replace after every disassembly.

Removal and Installation

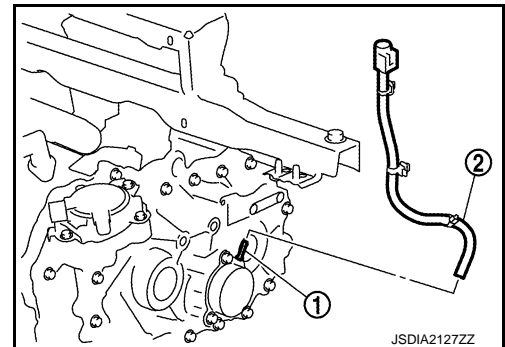
INFOID:000000007631815

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.



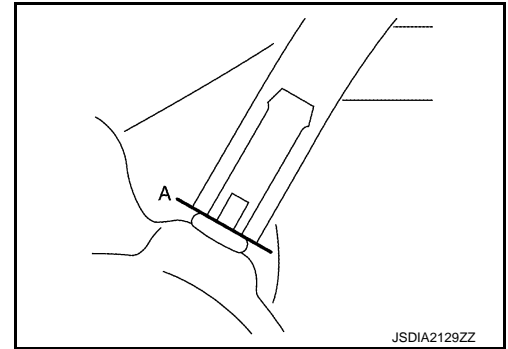
NOTE:

BREATHER HOSE

< REMOVAL AND INSTALLATION >

[REDUCTION GEAR]

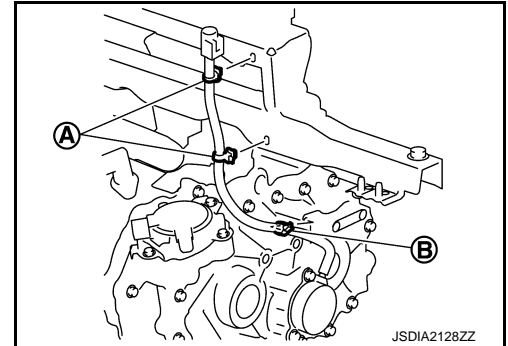
As shown in figure, fit breather hose onto brush cover tube part all the way to its base (A).



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

CAUTION:

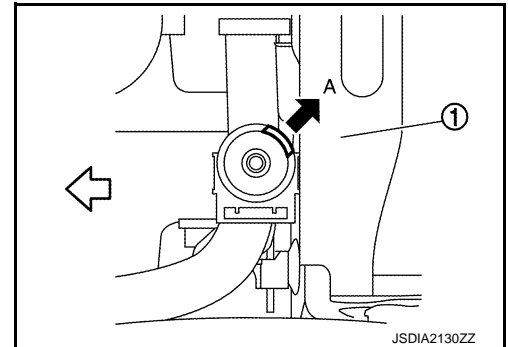
Never reuse resin clip (hose clip).



3. Face breather opening in direction (A) shown in figure.

(1) : Inverter member

← : Vehicle front



REDUCTION GEAR

< UNIT REMOVAL AND INSTALLATION >

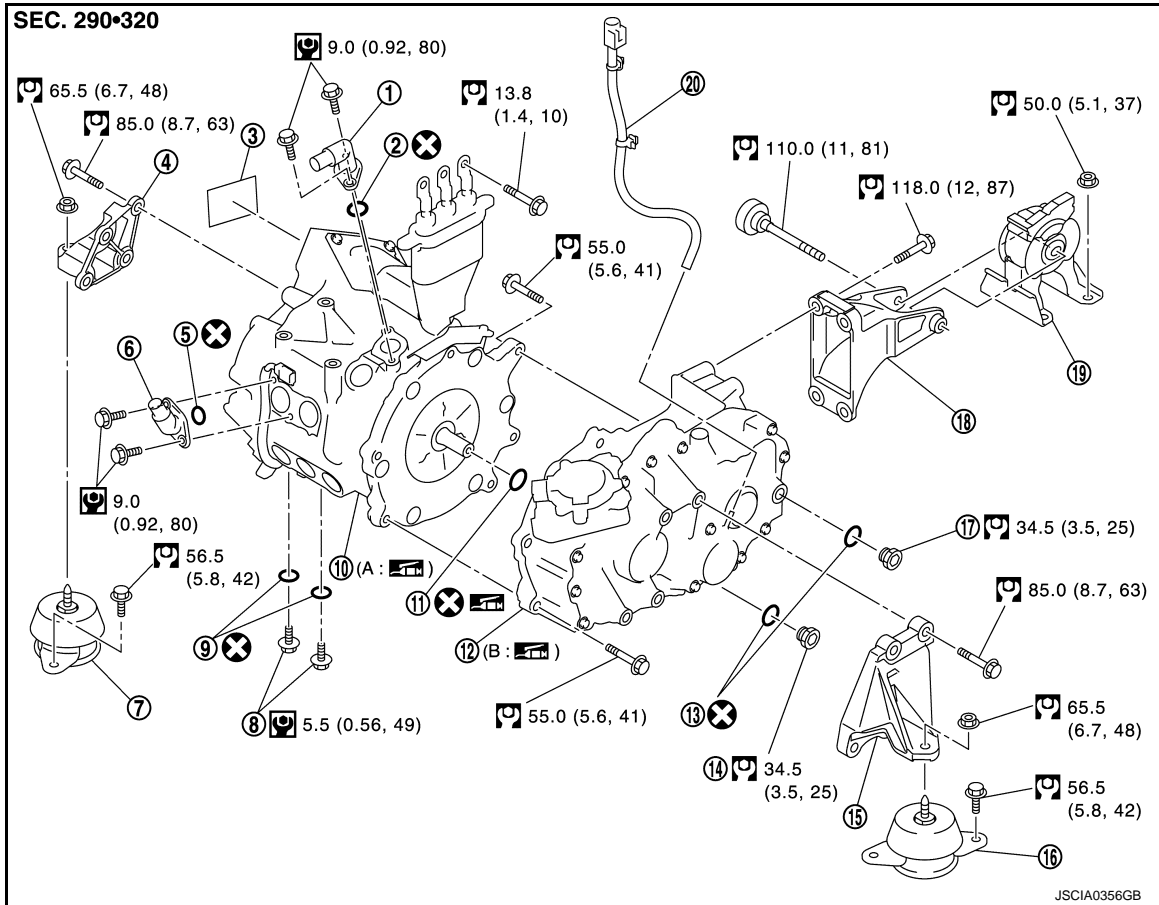
[REDUCTION GEAR]

UNIT REMOVAL AND INSTALLATION


REDUCTION GEAR


Exploded View


INFOID:000000007631816




- | | | |
|------------------------------|---|---------------------------------|
| 1. Water outlet | 2. O-ring | 3. High voltage warning label |
| 4. Motor mounting RH bracket | 5. O-ring | 6. Water inlet |
| 7. Motor mounting RH | 8. Drain bolt | 9. Gasket |
| 10. Traction motor | 11. O-ring | 12. Reduction gear |
| 13. Gasket | 14. Drain plug | 15. Motor mounting LH bracket |
| 16. Motor mounting LH | 17. Filler plug | 18. Motor mounting rear bracket |
| 19. Motor mounting rear | 20. Breather hose | |
| A. Shaft spline | B. Inside of input shaft (Inner part of spline) | |

 : Always replace after every disassembly.

 : N·m (kg-m, in-lb)

 : N·m (kg-m, ft-lb)

 : Apply lithium-based grease including molybdenum disulphide.

Removal and Installation

INFOID:000000007631817

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-

REDUCTION GEAR

< UNIT REMOVAL AND INSTALLATION >

[REDUCTION GEAR]

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 [GI-31, "How to Disconnect High Voltage"](#).

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 [EVB-161, "Exploded View"](#) (TYPE 1), [EVB-377, "Exploded View"](#) (TYPE 2), [EVB-597, "Exploded View"](#) (TYPE 3), or [EVB-829, "Exploded View"](#) (TYPE 4). To identify vehicle type, refer to [EVB-14, "How to Check Vehicle Type"](#).
 - b. Disconnect high voltage harness connector from front side of Li-ion battery. Refer to [EVB-161, "Removal and Installation"](#) (TYPE 1), [EVB-377, "Removal and Installation"](#) (TYPE 2), [EVB-597, "Removal and Installation"](#) (TYPE 3), or [EVB-829, "Removal and Installation"](#) (TYPE 4). To identify vehicle type, refer to [EVB-14, "How to Check Vehicle Type"](#).
 - c. Measure voltage between high voltage harness connector terminals.

DANGER:

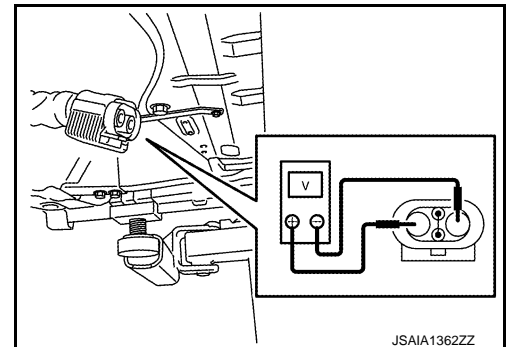


Touching high voltage components without using the appropriate protective equipment will cause electrocution.



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 [TMS-115, "Removal and Installation"](#).
4. Drain reduction gear oil from reduction gear. Refer to [TM-13, "Draining and Refilling"](#).
5. Remove traction motor and reduction gear from vehicle together as suspension member assembly. Refer to [FSU-22, "Removal and Installation"](#).
6. Remove right and left front drive shafts. Refer to [FAX-21, "RIGHT SIDE : Removal and Installation"](#) (RH) and [FAX-20, "LEFT SIDE : Removal and Installation"](#) (LH).
7. 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:

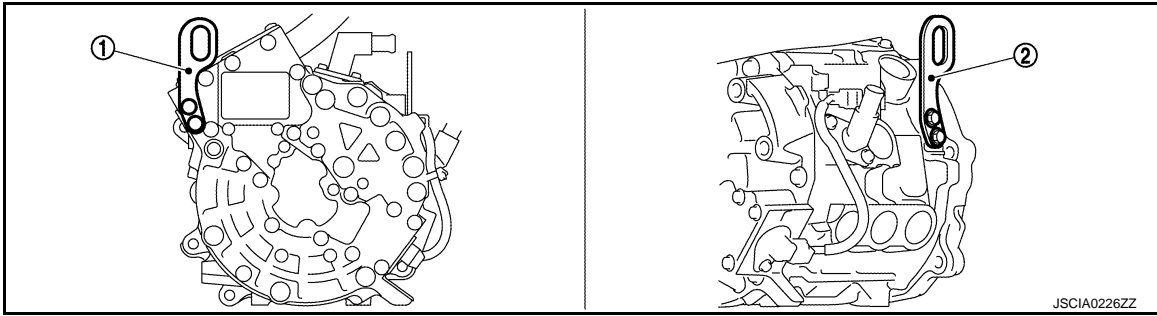


To prevent electric shock hazards, be sure to put on insulating protective gear.

REDUCTION GEAR

< UNIT REMOVAL AND INSTALLATION >

[REDUCTION GEAR]



- 1 : Motor slinger (rear)
2 : Motor slinger (front)

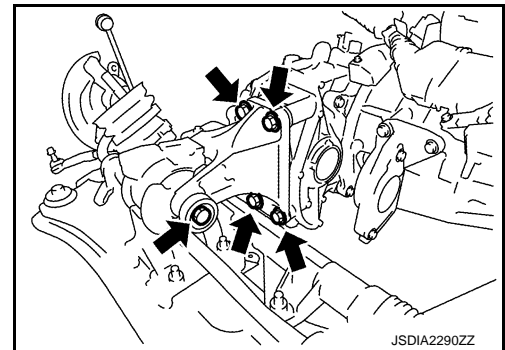
Tightening torque for mounting bolts : 28.0 N·m (2.9 kg-m, 21 ft-lb)

8. Remove motor mounting rear bracket.

WARNING:



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

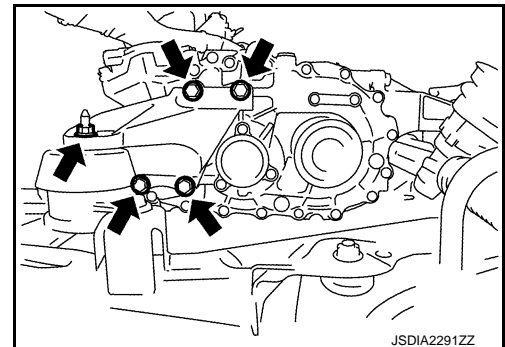


9. Remove motor mounting LH bracket.

WARNING:



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



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.



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.



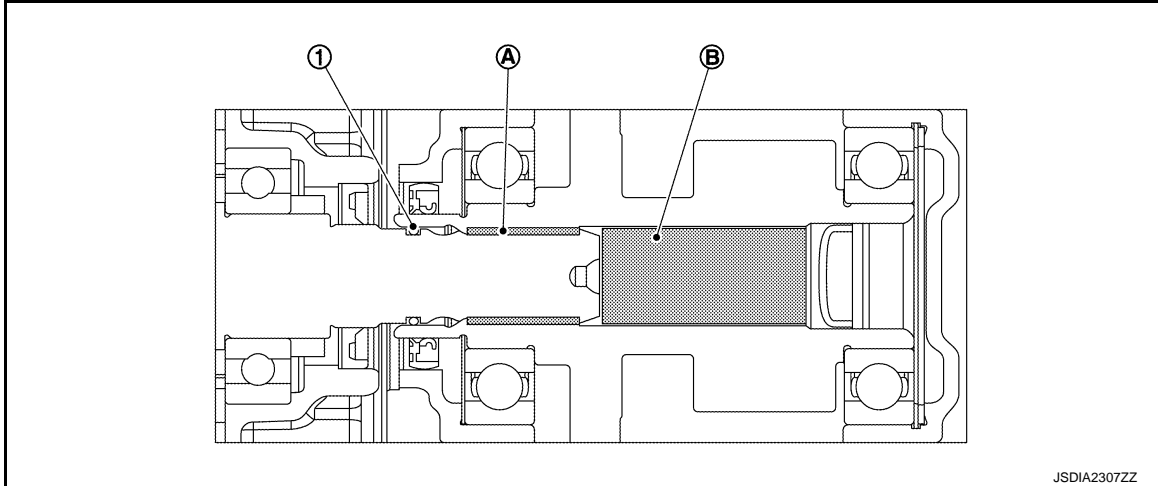
CAUTION:

REDUCTION GEAR

< UNIT REMOVAL AND INSTALLATION >

[REDUCTION GEAR]

- 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 [HCO-11, "Draining and Refilling"](#).
- 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 [HA-50, "Inspection"](#). (Electric compressor)
 - Refer to [TMS-121, "Inspection and Adjustment"](#). (Traction motor inverter)

Adjustment

INFOID:0000000007631818

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 [TM-57, "Work Procedure"](#).

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[REDUCTION GEAR]

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000007631819

Reduction gear model		RE1F61A
Gear ratio		7.937
Number of teeth	Input gear	17
	Main gear (IN / OUT)	31 / 17
	Final gear	74
Oil capacity (Approx.)		ℓ (US pt, Imp pt) 1.1 (2-3/8, 1-7/8)

Earth Brush

INFOID:0000000007631820

Unit: mm (in)

Item	Limit
Brush wear amount	4.0 (0.157)

PRECAUTION

PRECAUTIONS

Precaution for Technicians Using Medical Electric

INFOID:000000007631821

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

INFOID:000000007631822

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"

INFOID:000000007631823

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

PRECAUTIONS

< PRECAUTION >

[ELECTRIC SHIFT]

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:

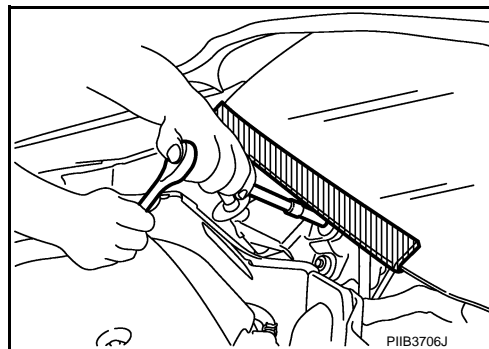
Always observe the following items for preventing accidental activation.

- 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

INFOID:000000007631824

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



Precautions for Removing Battery Terminal

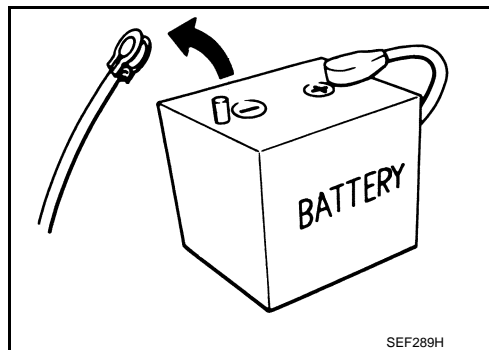
INFOID:000000007631825

- 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 → ON → OFF. Get out of the vehicle. Close all doors (including back door).

PRECAUTIONS

< PRECAUTION >

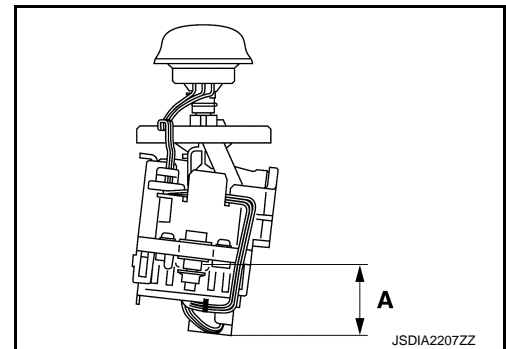
[ELECTRIC SHIFT]

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 → ON → 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 → 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

INFOID:000000007631826

- 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.



SYSTEM DESCRIPTION

DESCRIPTION

Description

INFOID:0000000007631827

- 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.

A
B
C
TM
E
F
G
H
I
J
K
L
M
N
O
P

COMPONENT PARTS

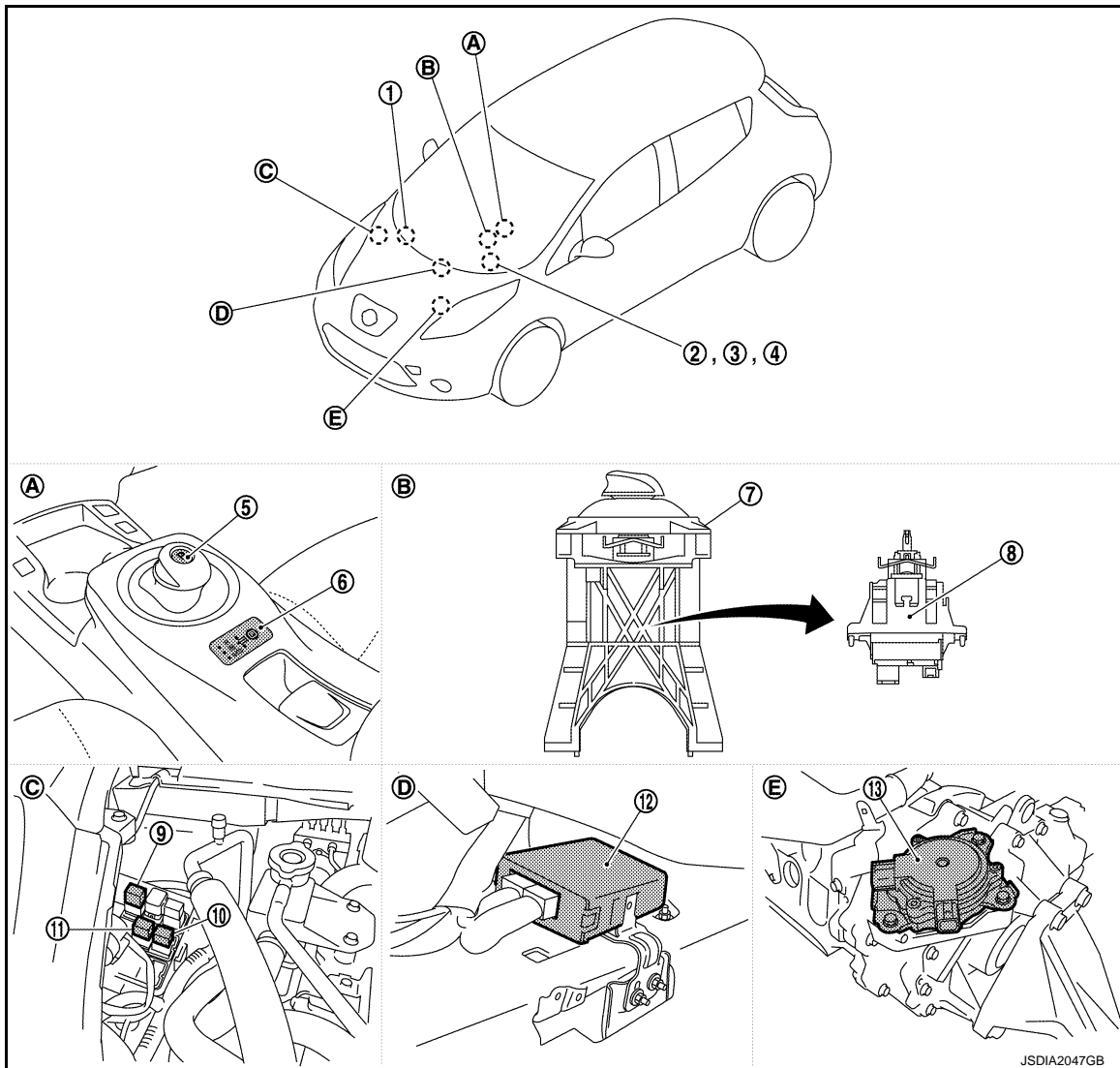
< SYSTEM DESCRIPTION >

[ELECTRIC SHIFT]

COMPONENT PARTS

Component Parts Location

INFOID:000000007631828



- | | | |
|--------------------------|----------------------------|---------------|
| A. Finisher | B. Electric shift selector | C. Motor room |
| D. Center console, under | E. Reduction gear, upper | |

COMPONENT DESCRIPTION

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 >

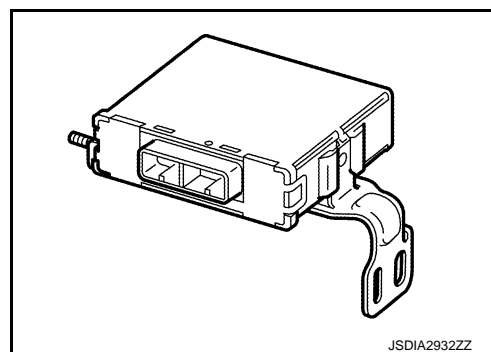
[ELECTRIC SHIFT]

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.
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.
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.
12	Electric shift control module	TM-29. "Electric Shift Control Module"
13	Parking actuator	TM-29. "Parking Actuator"

Electric Shift Control Module

INFOID:000000007631829

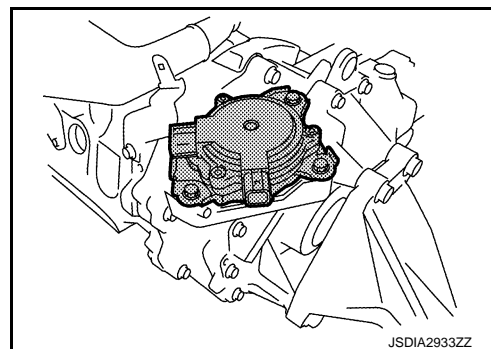
- The electric shift control module is started by the power switch signal and wake-up signal transmitted from BCM.
- The electric shift control module determines the shift position based on the shift position data (ON/OFF signal) from the electric shift sensor, and transmits the shift position data to 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

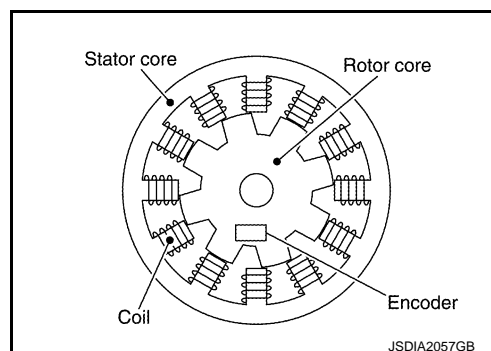
INFOID:000000007631830

- 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.

ANGLE SENSOR

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

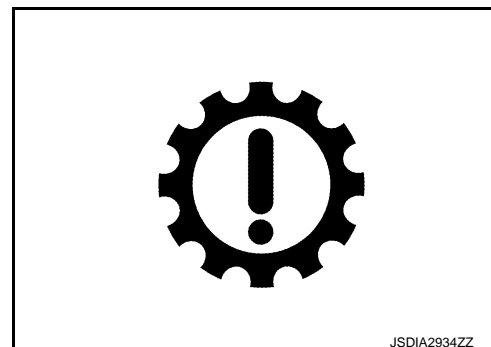
ACTUATOR REDUCTION GEAR

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

INFOID:000000007631834

- 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

INFOID:000000007631835

The electric shift selector consists of the selector lever, electric shift sensor, P position switch and others.

Shift position	Operation/Function	
H (Home position)	The selector lever automatically moves back to the home position after it is operated.	<p>JSDIA2053ZZ</p>
P (P position switch)	Completely stop the vehicle and push the P position switch on the top of the selector lever while depressing the brake pedal.	
R	While depressing the brake pedal, slide the selector lever forward along the gate.	
N	While depressing the brake pedal, slide the selector lever to the left and hold it for approx. 1 second.	
D/ECO	<ul style="list-style-type: none"> • 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.

COMPONENT PARTS

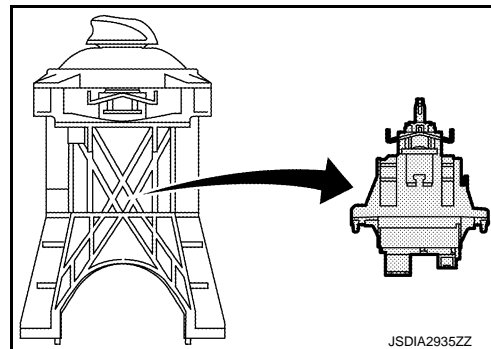
< SYSTEM DESCRIPTION >

[ELECTRIC SHIFT]

INFOID:000000007631836

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.



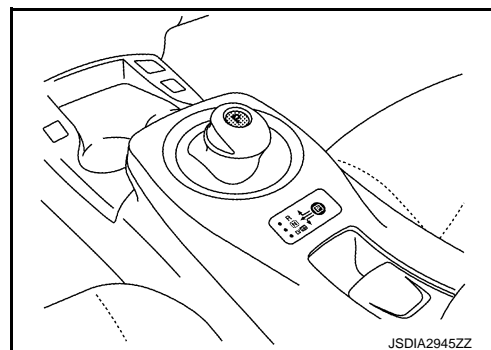
- The electric shift control module determines the shift position from the combination of the ON/OFF signals.

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

INFOID:000000007631837

- 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.

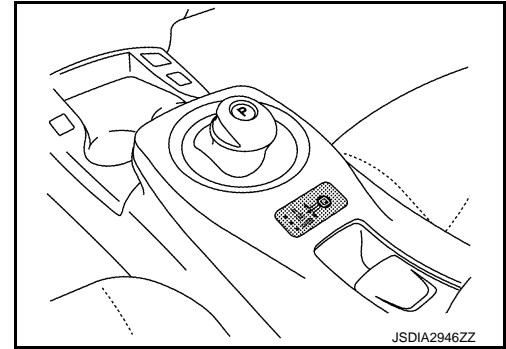


Electric shift control module recognition position	Selector lever position	P position SW	Electric shift sensor						P position SW	
			No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
H	H	No push	OFF	OFF	ON	OFF	OFF	ON	OFF	ON
P	H	Push	OFF	OFF	ON	OFF	OFF	ON	ON	OFF
R	R	No push	ON	ON	OFF	OFF	OFF	OFF	OFF	ON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

Selector Indicator

INFOID:000000007631838

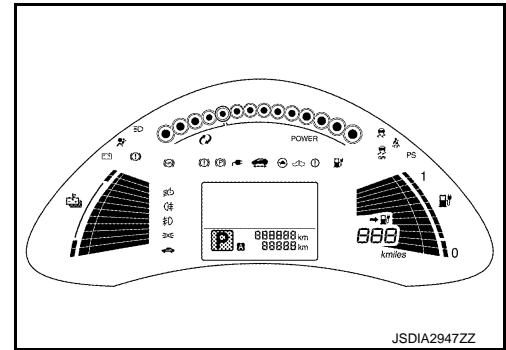
The selector indicator is located in the finisher area and the lamp for the currently selected shift position illuminates.



Shift Position Indicator

INFOID:000000007631839

- 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.



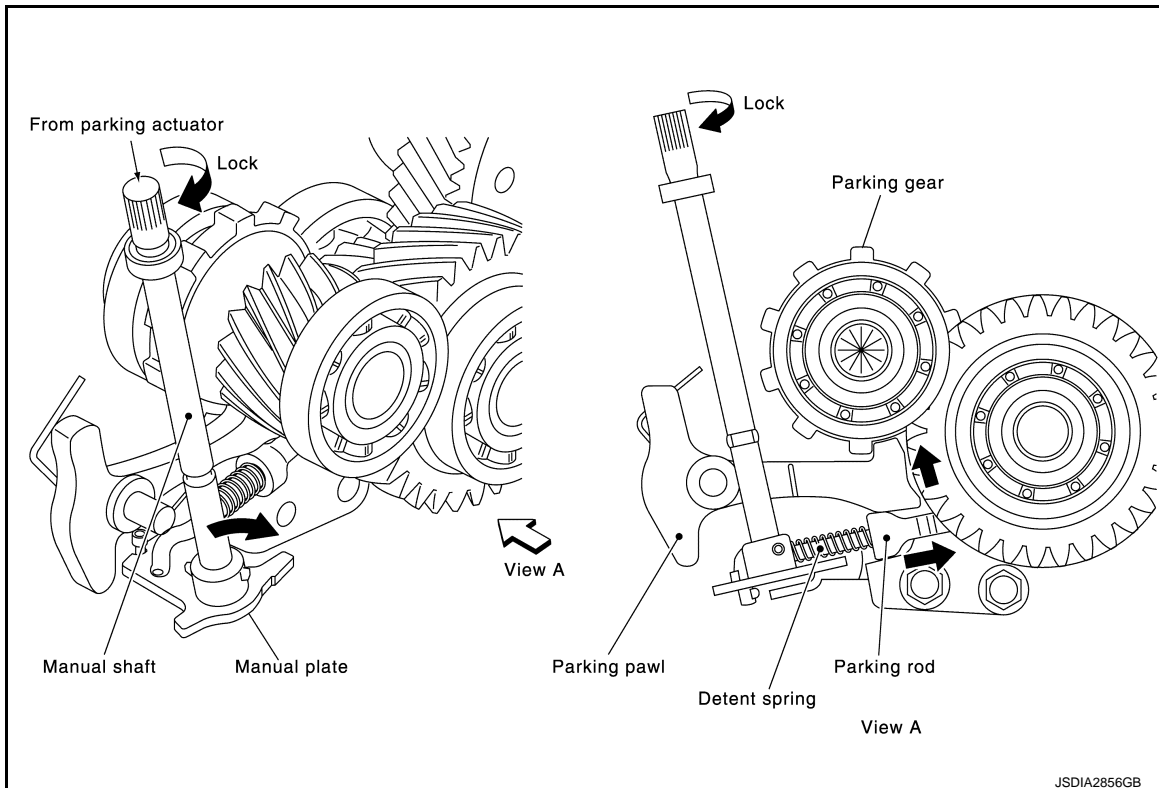
STRUCTURE AND OPERATION

Operating Principle

INFOID:000000007631840

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.



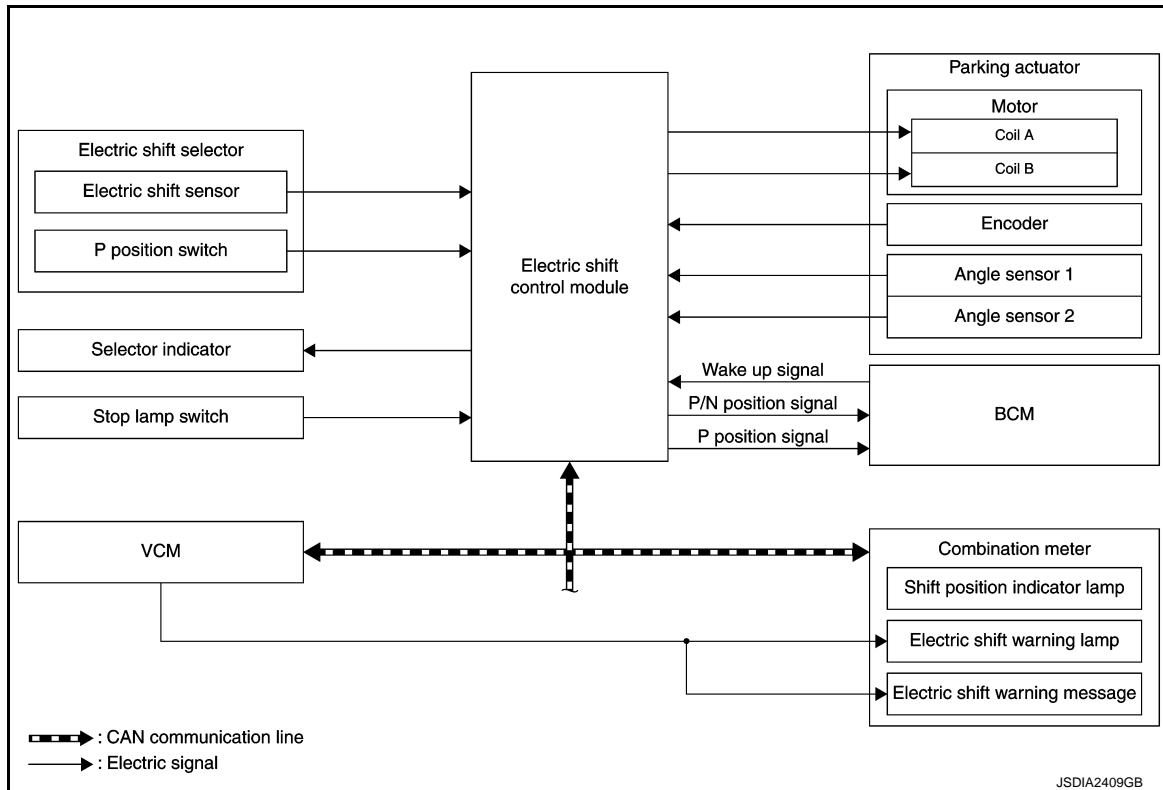
SYSTEM

System Description

INFOID:000000007631841

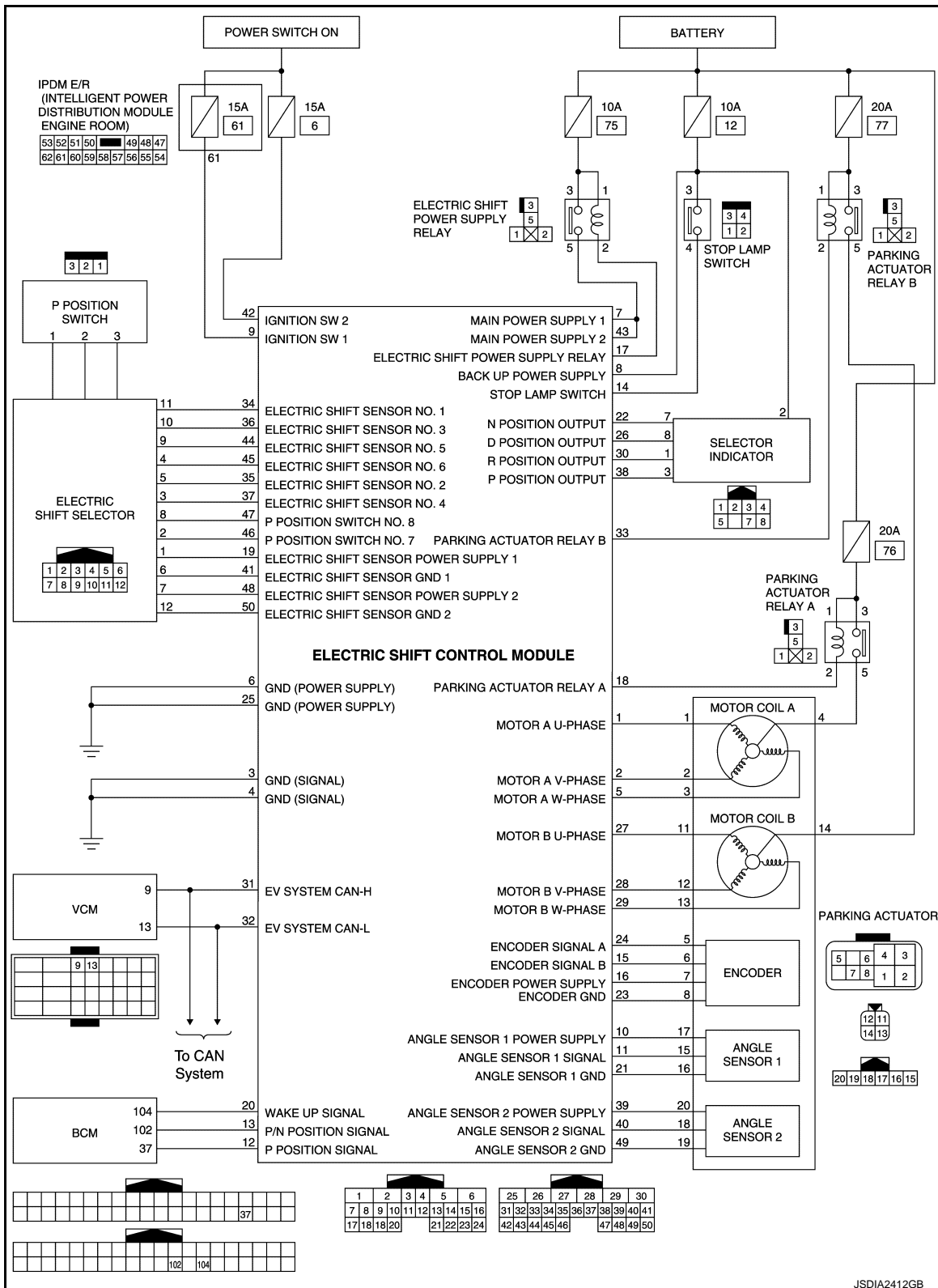
- The electric shift system detects each shift position electrically. In addition, in P position, the electric shift system activates the parking actuator, according to electrical signals received from the P position switch and brings the vehicle into the parking state.
- In the event of a malfunction 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 [TM-45, "Fail-Safe"](#).

SYSTEM DIAGRAM



Circuit Diagram

INFOID:000000007631842



SYSTEM

< SYSTEM DESCRIPTION >

[ELECTRIC SHIFT]

Fail-Safe

INFOID:000000007631843

DTC	Vehicle behavior	
P0571	—	
P0705	When shifting to the R position and the D position, the reaction becomes slower and it takes approximately 1 second to complete shifting	
P0706	Shifting to the R position, N position and D position is prohibited	
P0780	Malfunction in P position	Shifting from the P position to another position is prohibited
	Malfunction in position other than P	Shifting to the P position is prohibited
P1722	—	
P1802	Malfunction in P position	Shifting from the P position to another position is prohibited
	Malfunction in position other than P	Shifting to the P position is prohibited
P1803	Malfunction in P position	Shifting from the P position to another position is prohibited
	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 D position, the reaction becomes slower and it takes approximately 1 second to complete shifting	
P1897	—	
P1899	—	
P189A	—	
P189B	—	
P189C	—	
P189D	—	
P189E	Malfunction in P position	Shifting from the P position to another position is prohibited
	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
	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
	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
	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 disabled	
P18AC	—	
P18AD	—	
P18AE	—	

SYSTEM

< SYSTEM DESCRIPTION >

[ELECTRIC SHIFT]

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

Protection Control

INFOID:000000007631844

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.

A
B
C
TM
E
F
G
H
I
J
K
L
M
N
O
P

DIAGNOSIS SYSTEM (ELECTRIC SHIFT)

DIAGNOSIS DESCRIPTION

DIAGNOSIS DESCRIPTION : System Description

INFOID:000000007631845

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

INFOID:000000007631846

- 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

INFOID:000000007631847

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

INFOID:000000007631848

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 CLEAR	Erase the P position stored in the electric shift control module. Refer to TM-57, "Work Procedure" .

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.

DIAGNOSIS SYSTEM (ELECTRIC SHIFT)

< SYSTEM DESCRIPTION >

[ELECTRIC SHIFT]

- 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 → 2 → 3...38 → 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
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
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
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
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 actuator relay A
PARKING ACTUATOR RELAY B	Displays the command value from the electric shift control module to parking actuator relay B
P/N POSITION CONDITION	Displays the P position and N position status recognized by the electric shift control module
NOT P POSITION CONDITION	Displays a status other than the P position recognized by the electric shift control module
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
P POSITION 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
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
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
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
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
ECO MODE REQUEST	Displays the ECO mode status recognized by the electric shift control module
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

DIAGNOSIS SYSTEM (ELECTRIC SHIFT)

< SYSTEM DESCRIPTION >

[ELECTRIC SHIFT]

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

ELECTRIC SHIFT CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[ELECTRIC SHIFT]

ECU DIAGNOSIS INFORMATION

ELECTRIC SHIFT CONTROL MODULE

Reference Value

INFOID:000000007631849

CONSULT DATA MONITOR STANDARD VALUE

Monitor item	Condition	Value / Status (Approx.)
SHIFT SENSOR 1	Selector lever is held in R position	ON
	Other than the above	OFF
SHIFT SENSOR 2	Selector lever is held in R and N positions	ON
	Other than the above	OFF
SHIFT SENSOR 3	Selector lever is held in H (Home) and N positions	ON
	Other than the above	OFF
SHIFT SENSOR 4	Selector lever is held in N and D positions	ON
	Other than the above	OFF
SHIFT SENSOR 5	Selector lever is held in D position	ON
	Other than the above	OFF
SHIFT SENSOR 6	Selector lever in H (Home) position	ON
	Other than the above	OFF
P POSITION SWITCH 1	P position switch is pushed	ON
	Other than the above	OFF
P POSITION SWITCH 2	P position switch is pushed	OFF
	Other than the above	ON
BRAKE SWITCH	Brake pedal is depressed	ON
	Brake pedal is released	OFF
PARKING ACTUATOR RELAY A	Power switch is ON	ON
PARKING ACTUATOR RELAY B	Power switch is ON	ON
P/N POSITION CONDITION	Selector lever in P and N positions	ON
	Other than the above	OFF
NOT P POSITION CONDITION	Selector lever in P position	OFF
	Other than the above	ON
IGNITION SWITCH	Power switch is ON	ON
BRAKE SWITCH (CAN)	Brake pedal is depressed	ON
	Brake pedal is released	OFF
P POSITION LEARNING STATUS	P position learning is completed	COMP
	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

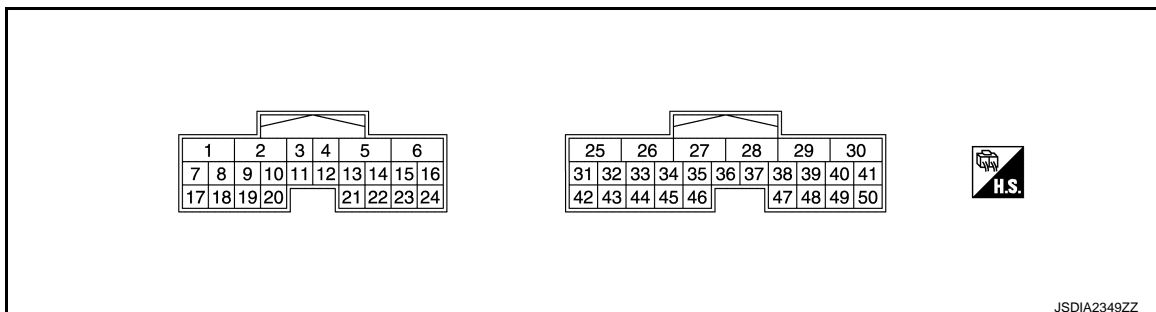
ELECTRIC SHIFT CONTROL MODULE

< 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
	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
	Other than the above (Manual plate: Not P position)	2.85 – 3.56 V
RANGE POSITION	Selector lever in P position	P
	Selector lever in R position	R
	Selector lever in N position	N
	Selector lever in D position	D
SHIFT POSITION JUDGMENT	Selector lever in P position	P
	Selector lever in R position	R
	Selector lever in N position	N
	Selector lever in D position	D
TARGET SHIFT POSITION	Selector lever in P position	P
	Selector lever in R position	R
	Selector lever in N position	N
	Selector lever in D position	D
ECO MODE REQUEST	During ECO mode driving	ECO
	Other than the above	NORML
ACTUAL P POSITION	Selector lever in P position	P
	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
E-SHIFT WARNING LAMP	Electric shift warning lamp: ON	ON
	Electric shift warning lamp: OFF	OFF
E-SHIFT WARNING MSG	Warning message is not displayed	—
	Warning message: “When Parked Apply Parking Brake”	MSG1
	Warning message: “T/M system malfunction visit dealer”	MSG2
	Warning message: “Check position of shift lever”	MSG3

TERMINAL LAYOUT



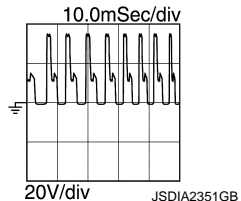
JSDIA2349ZZ

ELECTRIC SHIFT CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[ELECTRIC SHIFT]

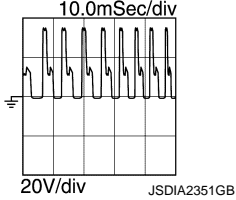
PHYSICAL VALUES

Terminal (Wire color)		Item		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
1 (L)	Ground	MOTOR COIL A U-PHASE	Output	Power switch ON		9 – 16 V
				Power switch OFF		0 V
2 (G)	Ground	MOTOR COIL A V-PHASE	Output	Power switch ON		9 – 16 V
				Power switch OFF		0 V
3 (B)	Ground	GND	—	Always		0 V
4 (B)	Ground	GND	—	Always		0 V
5 (Y)	Ground	MOTOR COIL A W-PHASE	Output	Power switch ON		9 – 16 V
				Power switch OFF		0 V
6 (B)	Ground	GND (MOTOR)	—	Always		0 V
7 (W)	Ground	MAIN POWER SUPPLY 1	Input	Power switch ON		9 – 16 V
				Power switch OFF		0 V
8 (R)	Ground	BACK UP POWER SUPPLY	Input	Always		9 – 16 V
9 (BR)	Ground	POWER SW 1	Input	Power switch ON		9 – 16 V
				Power switch OFF		0 V
10 (Y)	Ground	ANGLE SENSOR 1 POWER SUPPLY	—	Power switch ON		5 V
11 (L)	Ground	ANGLE SENSOR 1 SIGNAL	Input	READY	Selector lever is P position (Manual plate: P position)	1.42 – 2.20 V
					Other than the above (Manual plate: Not P position)	2.85 – 3.56 V
12 (W)	Ground	P POSITION SIGNAL	Output	READY	Selector lever is P position	0 V
					Other than the above	9 – 16 V
13 (R)	Ground	P/N POSITION SIGNAL	Output	READY	Selector lever is P and N positions	9 – 16 V
					Other than the above	0 V
14 (P)	Ground	STOP LAMP SWITCH	Input	Power switch ON	Brake pedal is depressed	9 – 16 V
					Brake pedal is released	0 V
15 (LG)	Ground	ENCODER SIGNAL B	Input	Parking actuator is operated		
16 (R)	Ground	ENCODER POWER SUPPLY	—	Power switch ON		5 V
17 (V)	Ground	ELECTRIC SHIFT POWER SUPPLY RELAY	Output	Power switch ON		0 V
				Power switch OFF		9 – 16 V
18 (SB)	Ground	PARKING ACTUATOR RELAY A	—	Power switch ON		0 V
				Power switch OFF		9 – 16 V

ELECTRIC SHIFT CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[ELECTRIC SHIFT]

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

ELECTRIC SHIFT CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[ELECTRIC SHIFT]

Terminal (Wire color)		Item		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
37 (Y)	Ground	ELECTRIC SHIFT SEN- SOR NO. 4	Input	READY	Selector lever is held in N and D position	0 V
					Other than the above	5 V
38 (B)	Ground	P POSITION OUTPUT (SELECTOR INDICA- TOR)	Output	READY	Selector lever is P position	1 V or less
					Other than the above	9 – 16 V
39 (LG)	Ground	ANGLE SENSOR 2 POWER SUPPLY	—	Power switch ON		5 V
40 (P)	Ground	ANGLE SENSOR 2 SIGNAL	Input	READY	Selector lever is P position (Manual plate: P position)	1.42 – 2.20 V
					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
42 (G)	Ground	POWER SW 2	Input	Power switch ON		9 – 16 V
				Power switch OFF		0 V
43 (W)	Ground	MAIN POWER SUPPLY 2	Input	Power switch ON		9 – 16 V
				Power switch OFF		0 V
44 (SB)	Ground	ELECTRIC SHIFT SEN- SOR NO. 5	Input	READY	Selector lever is held in D po- sition	0 V
					Other than the above	5 V
45 (BR)	Ground	ELECTRIC SHIFT SEN- SOR NO. 6	Input	READY	Selector lever in H (Home) po- sition	0 V
					Other than the above	5 V
46 (R)	Ground	P POSITION SWITCH NO. 7	Input	READY	P position switch is pushed	5 V
					Other than the above	0 V
47 (B)	Ground	P POSITION SWITCH NO. 8	Input	READY	P position switch is pushed	0 V
					Other than the above	5 V
48 (SB)	Ground	ELECTRIC SHIFT SEN- SOR POWER SUPPLY 2	—	Power switch ON		5 V
49 (G)	Ground	ANGLE SENSOR 2 GND	—	Always		0 V
50 (LG)	Ground	ELECTRIC SHIFT SEN- SOR GND 2	—	Always		0 V

Fail-Safe

INFOID:000000007631850

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	
P0780	Malfunction in P position	Shifting from the P position to another position is prohibited
	Malfunction in position other than P	Shifting to the P position is prohibited
P1722	—	

ELECTRIC SHIFT CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[ELECTRIC SHIFT]

DTC	Vehicle behavior	
P1802	Malfunction in P position	Shifting from the P position to another position is prohibited
	Malfunction in position other than P	Shifting to the P position is prohibited
P1803	Malfunction in P position	Shifting from the P position to another position is prohibited
	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 D position, the reaction becomes slower and it takes approximately 1 second to complete shifting	
P1897	—	
P1899	—	
P189A	—	
P189B	—	
P189C	—	
P189D	—	
P189E	Malfunction in P position	Shifting from the P position to another position is prohibited
	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
	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
	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
	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 disabled	
P18AC	—	
P18AD	—	
P18AE	—	
U1000	EV system CAN with VCM blocked	Shifting to the R position and the D position is prohibited
	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.

ELECTRIC SHIFT CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[ELECTRIC SHIFT]

DTC Inspection Priority Chart

INFOID:000000007631852

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

DTC Index

INFOID:000000007631853

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 [TM-47, "DTC Inspection Priority Chart"](#).

ELECTRIC SHIFT CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[ELECTRIC SHIFT]

O: ON

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

ELECTRIC SHIFT CONTROL MODULE

< ECU DIAGNOSIS INFORMATION >

[ELECTRIC SHIFT]

DTC*	Item name (CONSULT screen terms)	Electric shift warning lamp	Master warning		Reference
			Yellow	Red	
P18AB	IGNITION SWITCH	○ (Vehicle stopped)	○ (During driving)	○ (After stop)	TM-116
P18AC	PARKING ACTUATOR RELAY A	—	○	—	TM-118
P18AD	PARKING ACTUATOR RELAY B	—	○	—	TM-120
P18AE	STUCK IN SHIFT	—	○	—	TM-122
U1000	CAN COMM CIRC	—	○	—	TM-123
U1010	CONTROL UNIT (CAN)	—	○	—	TM-124
U1086	CAN ERROR	—	○	—	TM-125

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


A
B
C
TM
E
F
G
H
I
J
K
L
M
N
O
P

WIRING DIAGRAM

ELECTRIC SHIFT SYSTEM

Wiring Diagram

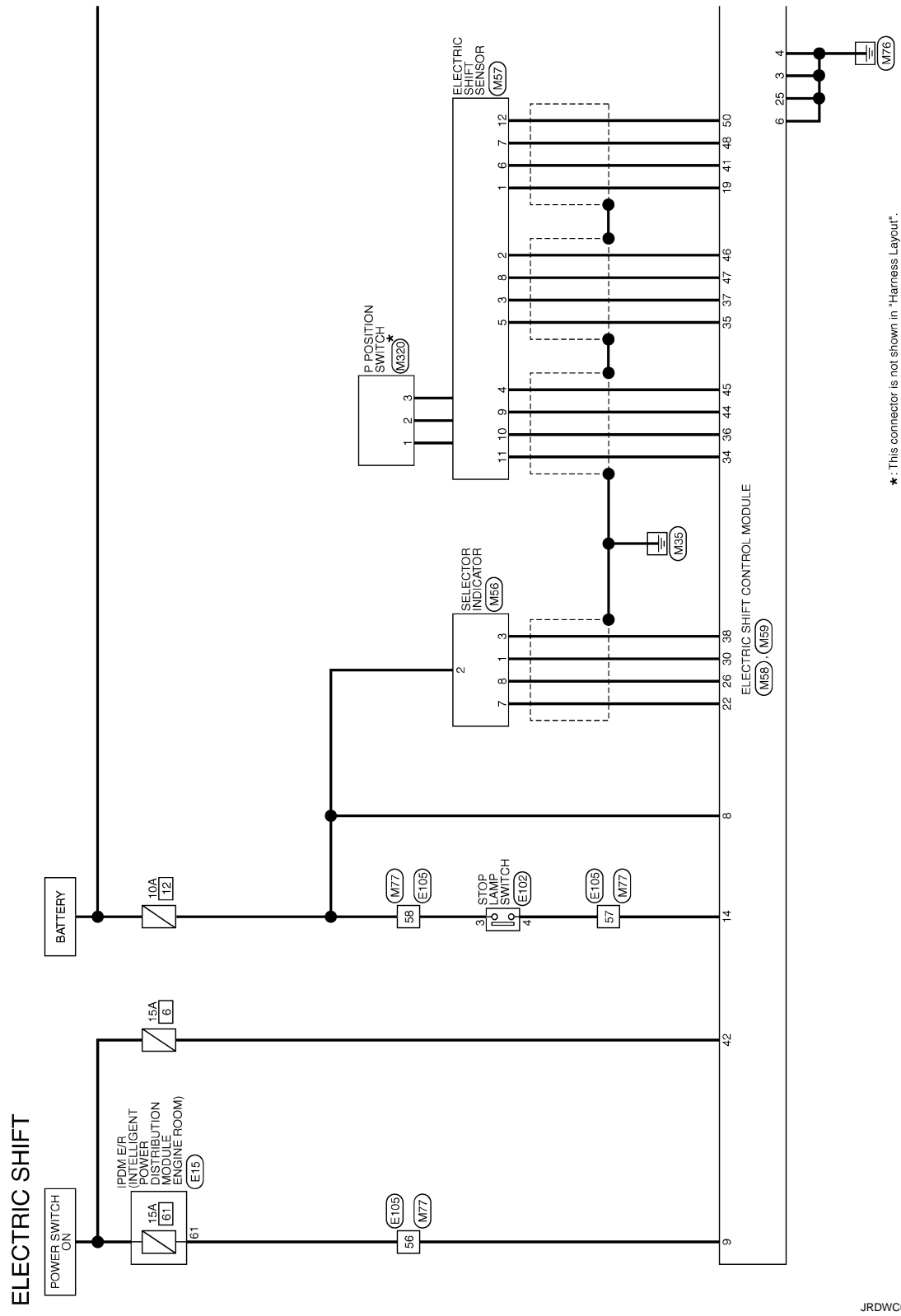
INFOID:000000007631854

For connector terminal arrangements, harness layouts, and alphabets in a  (option abbreviation; if not described in wiring diagram), refer to [GI-12, "Connector Information"](#).

ELECTRIC SHIFT SYSTEM

< WIRING DIAGRAM >

[ELECTRIC SHIFT]



2011/07/29

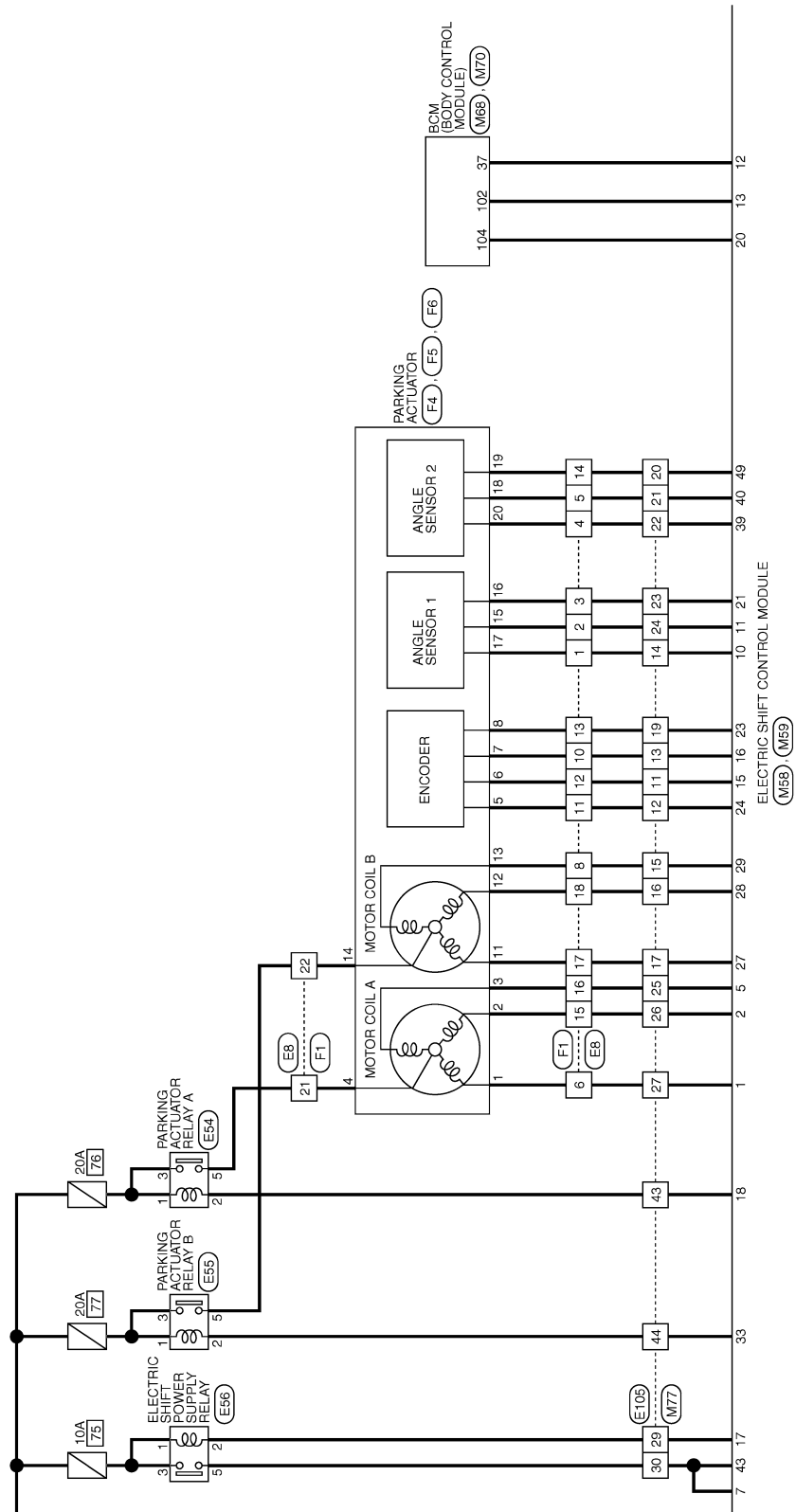
JRDWC0209GB

A
B
C
TM
E
F
G
H
I
J
K
L
M
N
O
P

ELECTRIC SHIFT SYSTEM

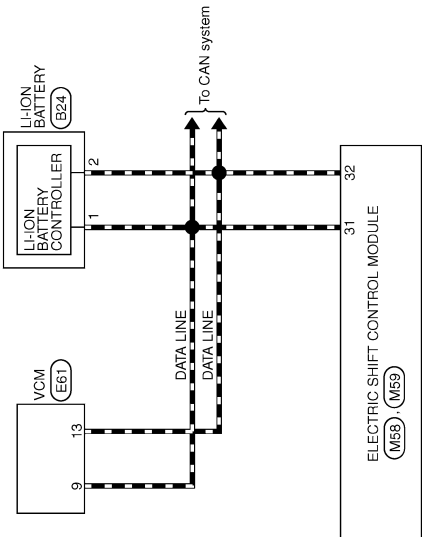
< WIRING DIAGRAM >

[ELECTRIC SHIFT]



JRDWC0210GB

A
B
C
TM
E
F
G
H
I
J
K
L
M
N
O
P



JRDWC0211GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Diagnosis Flow

INFOID:000000007631855

1.OBTAIN INFORMATION ABOUT SYMPTOM

Refer to [TM-55, "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 [TM-55, "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 [TM-45, "Fail-Safe"](#).

When a malfunction symptom is reproduced, the question sheet is effective. Refer to [TM-55, "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 [TM-47, "DTC Inspection Priority Chart"](#) 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.

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[ELECTRIC SHIFT]

Is any DTC detected?

YES >> GO TO 7.

NO >> Check according to [GI-51, "Intermittent Incident"](#).

7. REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the detected malfunctioning parts.

Reconnect parts or connector after repairing or replacing, and then erase DTC if necessary.

>> GO TO 8.

8. FINAL CHECK

Perform "DTC CONFIRMATION PROCEDURE" again to make sure that the repair is correctly performed.

Check that malfunctions are not reproduced when obtaining the malfunction information from the customer, referring to the symptom inspection result in step 4 or 5.

Is DTC or malfunction symptom reproduced?

YES >> GO TO 2.

NO >> Before delivering the vehicle to the customer, make sure that DTC is erased.

Question sheet

INFOID:000000007631856

DESCRIPTION

By understanding those conditions properly, a quick and exact diagnosis can be achieved.

In general, customers have their own criteria for a problem. Therefore, it is important to understand the symptom and status well enough by asking the customer about the concerns carefully. In order to systemize all the information for the diagnosis, prepare the question sheet referring to the question points.

KEY POINTS

WHAT Vehicle & engine model
WHEN Date, Frequencies
WHERE Road conditions
HOW Operating conditions,
 Weather conditions,
 Symptoms

SEF907L

WORKSHEET SAMPLE

Question Sheet					
Customer name	MR/MS	Motor No.		Manuf. Date	
		Incident Date		VIN	
		Model & Year		In Service Date	
		Mileage	km / Mile		
Symptoms		<input type="checkbox"/> Vehicle does not move (<input type="checkbox"/> Any position <input type="checkbox"/> Particular position)			
		<input type="checkbox"/> Does not shift P position			
		<input type="checkbox"/> Does not shift R, N and D positions			
		<input type="checkbox"/> Others			
Frequency		<input type="checkbox"/> All the time <input type="checkbox"/> Under certain conditions <input type="checkbox"/> Sometimes (times a day)			
Weather conditions		<input type="checkbox"/> Not affected			
	Weather	<input type="checkbox"/> Fine	<input type="checkbox"/> Clouding	<input type="checkbox"/> Raining	<input type="checkbox"/> Snowing <input type="checkbox"/> Other ()
	Temp.	<input type="checkbox"/> Hot	<input type="checkbox"/> Warm	<input type="checkbox"/> Cool	<input type="checkbox"/> Cold <input type="checkbox"/> Temp. [Approx. °C (°F)]
Humidity		<input type="checkbox"/> High	<input type="checkbox"/> Middle	<input type="checkbox"/> Low	
Road conditions		<input type="checkbox"/> Not affected			
		<input type="checkbox"/> In town	<input type="checkbox"/> In suburbs	<input type="checkbox"/> Freeway	<input type="checkbox"/> Off road (Up / Down)

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[ELECTRIC SHIFT]

Question Sheet

Driving conditions	<input type="checkbox"/> Not affected
	<input type="checkbox"/> At starting <input type="checkbox"/> While idling <input type="checkbox"/> While engine racing <input type="checkbox"/> At racing <input type="checkbox"/> While cruising
	<input type="checkbox"/> While accelerating <input type="checkbox"/> While decelerating <input type="checkbox"/> While turning (Right / Left)
	<input type="checkbox"/> Vehicle speed [km/h (MPH)]
Other conditions	

P POSITION LEARNING VALUE CLEAR

< BASIC INSPECTION >

[ELECTRIC SHIFT]

P POSITION LEARNING VALUE CLEAR

Description

INFOID:000000007631857

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

INFOID:000000007631858

1. P POSITION LEARNING VALUE CLEAR

④ With CONSULT

1. Power switch ON.
2. Press the P position switch to shift to P position.
3. Select "Work Support" in "SHIFT".
4. Select "P POSITION LEARNING VALUE CLEAR".
5. Touch "CLEAR".

>> GO TO 2.

2. P POSITION LEARNING

1. Power switch OFF.
2. Power switch ON.
3. Wait 5 seconds or more.
CAUTION:
Never shift change.
4. Check that the master warning is OFF and no warning message is displayed.

>> END

A

B

C

TM

E

F

G

H

I

J

K

L

M

N

O

P

DTC/CIRCUIT DIAGNOSIS**P0571 BRAKE SWITCH A****DTC Logic**

INFOID:000000007631859

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.	<ul style="list-style-type: none"> 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**④ With CONSULT**

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

Is "P0571" detected?

- YES >> Go to [TM-58, "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631860

1. CHECK STOP LAMP SWITCH SIGNAL**④ With CONSULT**

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

Condition	Item	
	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

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

P0571 BRAKE SWITCH A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Stop lamp switch vehicle side harness connector		Ground	Voltage
Connector	Terminal		
E102	3	Ground	9 – 16 V

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.DETECTION OF MALFUNCTION ITEMS

Check the following items:

- Harness open circuit or short circuit between the stop lamp switch 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 the malfunctioning parts.

4.CHECK STOP LAMP SWITCH SIGNAL INPUT CIRCUIT

1. Disconnect the electric shift control module connector.
2. Check the continuity between electric shift control module vehicle side harness connector terminal and stop lamp switch vehicle side harness connector terminal.

Electric shift control module vehicle side harness connector		Stop lamp switch vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M58	14	E102	4	Existed

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

Electric shift control module vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M58	14	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace the malfunctioning parts.

5.CHECK STOP LAMP SWITCH

Check the stop lamp switch. Refer to [BRC-93, "Component Inspection"](#).

Is the inspection result normal?

YES >> Replace the electric shift control module. Refer to [TM-130, "Removal and Installation"](#).

NO >> Replace the stop lamp switch. Refer to [BRC-10, "Component Parts Location"](#).

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P0705 TRANSMISSION RANGE SENSOR A

DTC Logic

INFOID:000000007631861

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P0705	Transmission Range Sensor "A" Circuit (PRNDL Input)	One of the electric shift sensors No. 1 to No. 6 is stuck at ON or OFF.	<ul style="list-style-type: none">Electric shift sensorHarness 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
H	H	OFF	OFF	ON	OFF	OFF	ON
P	H	OFF	OFF	ON	OFF	OFF	ON
R	R	ON	ON	OFF	OFF	OFF	OFF
N	N	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

Ⓔ With CONSULT

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

Is "P0705" detected?

YES >> Go to [TM-60. "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631862

1. CHECK ELECTRIC SHIFT SENSOR INPUT SIGNAL

Ⓔ With CONSULT

- Set the vehicle to READY.
- Select "Data Monitor" in "SHIFT".
- Select "SHIFT SENSOR 1", "SHIFT SENSOR 2", "SHIFT SENSOR 3", "SHIFT SENSOR 4", "SHIFT SENSOR 5", and "SHIFT SENSOR 6".
- 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 >

[ELECTRIC SHIFT]

Monitor item	Condition	Value / Status
SHIFT SENSOR 2	Selector lever is held in R and N positions	ON
	Other than the above	OFF
SHIFT SENSOR 3	Selector lever is held in H (Home) and N positions	ON
	Other than the above	OFF
SHIFT SENSOR 4	Selector lever is held in N and D positions	ON
	Other than the above	OFF
SHIFT SENSOR 5	Selector lever is held in D position	ON
	Other than the above	OFF
SHIFT SENSOR 6	Selector lever in H (Home) position	ON
	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 sensor	Electric shift control module vehicle side harness connector		Ground	Condition	Voltage (Approx.)
	Connector	terminal			
1	M59	34	Ground	Selector lever is held in R position	0 V
				Other than the above	5 V
2		35		Selector lever is held in R and N positions	0 V
				Other than the above	5 V
3		36		Selector lever is held in H (Home) and N positions	0 V
				Other than the above	5 V
4		37		Selector lever is held in N and D position	0 V
				Other than the above	5 V
5		44		Selector lever is held in D position	0 V
				Other than the above	5 V
6		45		Selector lever in H (Home) position	0 V
				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.
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.

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

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

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

Electric shift sensor	Electric shift control module vehicle side harness connector		Ground	Continuity
	Connector	terminal		
1	M59	34	Ground	Not existed
2		35		
3		36		
4		37		
5		44		
6		45		

Is the inspection result normal?

YES >> Replace the electric shift sensor. Refer to [TM-131, "Exploded View"](#).

NO >> Repair or replace damaged parts.

P0706 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P0706 TRANSMISSION RANGE SENSOR A

DTC Logic

INFOID:000000007631863

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P0706	Transmission range sensor "A" Circuit Range/Performance	Two or more sensors out of electric shift sensors No. 1 to No. 6 are stuck at ON or OFF.	<ul style="list-style-type: none">Electric shift sensorHarness 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
H	H	OFF	OFF	ON	OFF	OFF	ON
P	H	OFF	OFF	ON	OFF	OFF	ON
R	R	ON	ON	OFF	OFF	OFF	OFF
N	N	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

④ With CONSULT

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

Is "P0706" detected?

YES >> Go to [TM-63, "Diagnosis Procedure"](#).

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631864

1. CHECK ELECTRIC SHIFT SENSOR INPUT SIGNAL

④ With CONSULT

- Set the vehicle to READY.
- Select "Data Monitor" in "SHIFT".
- Select "SHIFT SENSOR 1", "SHIFT SENSOR 2", "SHIFT SENSOR 3", "SHIFT SENSOR 4", "SHIFT SENSOR 5", and "SHIFT SENSOR 6".
- 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

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
	Other than the above	OFF
SHIFT SENSOR 3	Selector lever is held in H (Home) and N positions	ON
	Other than the above	OFF
SHIFT SENSOR 4	Selector lever is held in N and D positions	ON
	Other than the above	OFF
SHIFT SENSOR 5	Selector lever is held in D position	ON
	Other than the above	OFF
SHIFT SENSOR 6	Selector lever in H (Home) position	ON
	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 sensor	Electric shift control module vehicle side harness connector		Ground	Condition	Voltage (Approx.)
	Connector	terminal			
1	M59	34	Ground	Selector lever is held in R position	0 V
				Other than the above	5 V
2		35		Selector lever is held in R and N positions	0 V
				Other than the above	5 V
3		36		Selector lever is held in H (Home) and N positions	0 V
				Other than the above	5 V
4		37		Selector lever is held in N and D position	0 V
				Other than the above	5 V
5		44		Selector lever is held in D position	0 V
				Other than the above	5 V
6		45		Selector lever in H (Home) position	0 V
				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.
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	Electric shift control module vehicle side harness connector		Electric shift sensor vehicle side harness connector		Continuity
	Connector	terminal	Connector	terminal	
1	M59	34	M57	11	Existed
2		35		5	
3		36		10	
4		37		3	
5		44		9	
6		45		4	

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

Electric shift sensor	Electric shift control module vehicle side harness connector		Ground	Continuity
	Connector	terminal		
1	M59	34	Ground	Not existed
2		35		
3		36		
4		37		
5		44		
6		45		

Is the inspection result normal?

- YES >> Replace the electric shift sensor. Refer to [TM-131. "Exploded View"](#).
 NO >> Repair or replace damaged parts.

P0780 SHIFT ERROR

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P0780 SHIFT ERROR

DTC Logic

INFOID:000000007631865

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 module, 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 [TM-19, "Removal and Installation"](#).

>> END

P1722 VEHICLE SPEED

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P1722 VEHICLE SPEED

DTC Logic

INFOID:000000007631867

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P1722	Vehicle Speed Signal Circuit	<ul style="list-style-type: none">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.	<ul style="list-style-type: none">ABS actuator and electric unit (control unit)VCMElectric shift control moduleHarness or connectors (Each circuit 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, power switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

④ With CONSULT

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

Is "P1722" detected?

- YES >> Go to [TM-67, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631868

1. CHECK DTC OF ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

④ With CONSULT

- Power switch ON.
- Perform "Self Diagnostic Results" in "ABS".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [BRC-50, "DTC Index"](#).
NO >> GO TO 2.

2. CHECK DTC OF VCM

④ With CONSULT

- Power switch ON.
- 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 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.

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

INFOID:000000007631870

1. REPLACE ELECTRIC SHIFT CONTROL MODULE

Replace the electric shift control module. Refer to [TM-130, "Removal and Installation"](#).

>> END

P1803 CONTROL MODULE

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P1803 CONTROL MODULE

DTC Logic

INFOID:000000007631871

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P1803	Control Module (ROM)	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 "P1803" detected?

- YES >> Go to [TM-69, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631872

1. REPLACE ELECTRIC SHIFT CONTROL MODULE

Replace the electric shift control module. Refer to [TM-130, "Removal and Installation"](#).

>> END

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

INFOID:000000007631874

1. REPLACE ELECTRIC SHIFT CONTROL MODULE

Replace the electric shift control module. Refer to [TM-130, "Removal and Installation"](#).

>> END

P1811 ELECTRIC SHIFT POWER SUPPLY RELAY

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P1811 ELECTRIC SHIFT POWER SUPPLY RELAY

DTC Logic

INFOID:000000007631875

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P1811	Electric Shift Power Supply Relay Circuit	Battery voltage from the electric shift power supply relay is less than the specified value.	<ul style="list-style-type: none">Electric shift power supply relay (OFF stuck)Harness or fuse (Open)
		It is detected that the voltage from the electric shift power supply relay does not lower even though the electric shift power supply relay is OFF.	<ul style="list-style-type: none">Electric shift power supply relay (ON stuck)Harness<ul style="list-style-type: none">12V battery short (Switch side)Ground short (Coil side)

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

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

Is "P1811" detected?

- YES >> Go to [TM-71, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631876

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

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

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

- 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 connector		Continuity
Connector	Terminal	Connector	Terminal	
E56	2	M58	17	Existed
	5		7	
			M59	

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

P1811 ELECTRIC SHIFT POWER SUPPLY RELAY

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

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

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		
M58	3	Ground	Existed
	4		

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 [TM-72, "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 [GI-51, "Intermittent Incident"](#).

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

Is the inspection result normal?

YES >> INSPECTION END

P1811 ELECTRIC SHIFT POWER SUPPLY RELAY

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

NO >> Replace the electric shift power supply relay.

A
B
C
TM
E
F
G
H
I
J
K
L
M
N
O
P

P1895 MOTOR SPEED

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P1895 MOTOR SPEED

DTC Logic

INFOID:000000007631878

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.	<ul style="list-style-type: none">• 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

INFOID:000000007631879

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 [TMS-36, "DTC Index"](#).
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.

P1896 SHIFT POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P1896 SHIFT POWER SUPPLY

DTC Logic

INFOID:000000007631880

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P1896	Electric Shift Sensor Power Supply	It is detected that electric shift sensors No. 1, 3, and 5 are stuck at OFF.	<ul style="list-style-type: none">Electric shift sensorElectric shift control moduleHarness or connectors (Each circuit is open or shorted.)
		It is detected that electric shift sensors No. 2, 4, and 6 are stuck at OFF.	

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
H	H	OFF	OFF	ON	OFF	OFF	ON
P	H	OFF	OFF	ON	OFF	OFF	ON
R	R	ON	ON	OFF	OFF	OFF	OFF
N	N	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

 With CONSULT

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


Is "P1896" detected?

- YES >> Go to [TM-75, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631881

1. CHECK ELECTRIC SHIFT SENSOR INPUT SIGNAL

 With CONSULT

- Set the vehicle to READY.
- Select "Data Monitor" in "SHIFT".
- Select "SHIFT SENSOR 1", "SHIFT SENSOR 2", "SHIFT SENSOR 3", "SHIFT SENSOR 4", "SHIFT SENSOR 5", and "SHIFT SENSOR 6".
- 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

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
	Other than the above	OFF
SHIFT SENSOR 3	Selector lever is held in H (Home) and N positions	ON
	Other than the above	OFF
SHIFT SENSOR 4	Selector lever is held in N and D positions	ON
	Other than the above	OFF
SHIFT SENSOR 5	Selector lever is held in D position	ON
	Other than the above	OFF
SHIFT SENSOR 6	Selector lever in H (Home) position	ON
	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 sensor	Electric shift control module vehicle side harness connector		Ground	Condition	Voltage (Approx.)
	Connector	terminal			
1	M59	34	Ground	Selector lever is held in R position	0 V
				Other than the above	5 V
2		35		Selector lever is held in R and N positions	0 V
				Other than the above	5 V
3		36		Selector lever is held in H (Home) and N positions	0 V
				Other than the above	5 V
4		37		Selector lever is held in N and D position	0 V
				Other than the above	5 V
5		44		Selector lever is held in D position	0 V
				Other than the above	5 V
6		45		Selector lever in H (Home) position	0 V
				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 vehicle side harness connector		Ground	Voltage (Approx.)
	Connector	Terminal		
1, 3, 5	M57	1	Ground	5 V
2, 4, 6		7		

Is the inspection result normal?

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

P1896 SHIFT POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

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

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	Electric shift control module vehicle side harness connector		Electric shift sensor vehicle side harness connector		Continuity
	Connector	Terminal	Connector	Terminal	
1, 3, 5	M58	19	M57	1	Existed
2, 4, 6	M59	48		7	

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

Electric shift sensor	Electric shift control module vehicle side harness connector		Ground	Continuity
	Connector	Terminal		
1, 3, 5	M58	19	Ground	Not existed
2, 4, 6	M59	48		

Is the inspection result normal?

- YES >> 1. Check intermittent incident. Refer to [GI-51, "Intermittent Incident"](#).
2. If inspection result is OK, replace the electric shift control module. Refer to [TM-130, "Removal and Installation"](#).
- 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	Electric shift control module vehicle side harness connector		Electric shift sensor vehicle side harness connector		Continuity
	Connector	Terminal	Connector	Terminal	
1, 3, 5	M59	41	M57	6	Existed
2, 4, 6		50		12	

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

Electric shift sensor	Electric shift control module vehicle side harness connector		Ground	Continuity
	Connector	Terminal		
1, 3, 5	M59	41	Ground	Not existed
2, 4, 6		50		

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.

P1896 SHIFT POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift sensor	Electric shift control module vehicle side harness connector		Electric shift sensor vehicle side harness connector		Continuity
	Connector	Terminal	Connector	Terminal	
1	M59	34	M57	11	Existed
2		35		5	
3		36		10	
4		37		3	
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 connector		Ground	Continuity
	Connector	Terminal		
1	M59	34	Ground	Not existed
2		35		
3		36		
4		37		
5		44		
6		45		

Is the inspection result normal?

- YES >> 1. Check intermittent incident. Refer to [GI-51, "Intermittent Incident"](#).
 2. If inspection result is OK, replace the electric shift sensor. Refer to [TM-131, "Exploded View"](#).
 NO >> Repair or replace damaged parts.

P1897 ENCODER ERROR

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P1897 ENCODER ERROR

DTC Logic

INFOID:000000007631882

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P1897	Encoder Error	Encoder signals are not transmitted despite the actuation of parking actuator by the electric shift control module.	<ul style="list-style-type: none">Encoder (Parking actuator)Harness or connectors (Each circuit 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, 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

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

Is "P1897" detected?

- YES >> Go to [TM-79, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631883

1. CHECK ENCODER POWER SUPPLY CIRCUIT

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

Parking actuator vehicle side harness connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
F4	7	Ground	Power switch ON	5 V

Is the inspection result normal?

- YES >> GO TO 2.
NO >> GO TO 4.

2. CHECK HARNESS BETWEEN ELECTRIC SHIFT CONTROL MODULE AND ENCODER

- Power switch OFF.
- 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.

P1897 ENCODER ERROR

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift control module vehicle side harness connector		Parking actuator vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M58	15	F4	6	Existed
	23		8	
	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	Terminal		
M58	15	Ground	Not existed
	23		
	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 [TM-19, "Removal and Installation"](#).

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 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 vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M58	16	Ground	Not existed

Is the inspection result normal?

YES >> Check intermittent incident. Refer to [GI-51, "Intermittent Incident"](#).

NO >> Repair or replace damaged parts.

P1899 MOTOR A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P1899 MOTOR A

DTC Logic

INFOID:000000007631884

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P1899	Motor "A" Circuit High	When the power switch is ON, either of two energized phases is in the non-energized state. NOTE: Energized: Approx. 0 V, Non-energized: 9 – 16 V	<ul style="list-style-type: none">Electric shift control moduleMotor coil A (Parking actuator)Harness (12V battery 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

With CONSULT

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

Is "P1899" detected?

- YES >> Go to [TM-81, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631885

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

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

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

- Check the continuity 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	1	F4	1	Existed
	2		2	
	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 >

[ELECTRIC SHIFT]

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)

INFOID:000000007631886

1. CHECK MOTOR COIL A

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

Parking actuator connector		Resistance
Terminal		
4	1	2.3 – 2.8 Ω
	2	
	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"](#).

P189A MOTOR A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P189A MOTOR A

DTC Logic

INFOID:000000007631887

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P189A	Motor "A" Circuit Low	When the power switch is ON, one of the phases is in the energized state even though motor coil A all phases are not energized. NOTE: Energized: Approx. 0 V, Non-energized: 9 – 16 V	<ul style="list-style-type: none">• Parking actuator relay A (OFF stuck)• Motor coil A (Parking actuator)• Electric shift control module• Harness or connectors (Each circuit is open or ground shorted.)

DTC CONFIRMATION PROCEDURE

1. PREPARATION BEFORE WORK

If another "DTC CONFIRMATION PROCEDURE" occurs just before, key 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 2 seconds or more.
2. Check DTC.

Is "P189A" detected?

- YES >> Go to [TM-83, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631888

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.
4. Check the continuity 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	1	F4	1	Existed
	2		2	
	5		3	

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

Electric shift control module vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M58	1	Ground	Not existed
	2		
	5		

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repair or replace damaged parts.

P189A MOTOR A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

2.CHECK GROUND CIRCUIT

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

Electric shift control module vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M58	6	Ground	Existed
	25		

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 [TM-85, "Component Inspection \(Parking Actuator Relay A\)"](#).

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace the parking actuator relay A. Refer to [TM-28, "Component Parts Location"](#).

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 vehicle side harness connector		Ground	Voltage
Connector	Terminal		
E54	1	Ground	9 – 16 V
	3		

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 [GI-51, "Intermittent Incident"](#).

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 side harness connector		Parking actuator relay A vehicle side harness connector		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]

Electric shift control module vehicle side harness connector		Parking actuator relay A vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M58	18	E54	2	Existed

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

Electric shift control module vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M58	18	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace damaged parts.

8.CHECK MOTOR COIL A

Check the motor coil A (parking actuator). Refer to [TM-85, "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 (Parking Actuator Relay A)

INFOID:000000007631889

1.CHECK PARKING ACTUATOR RELAY A

1. Disconnect the parking actuator relay A. Refer to [TM-28, "Component Parts Location"](#).

2. Apply 12 V direct current between parking actuator relay A 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 parking actuator relay A terminals 3 and 5.

Parking actuator relay A		Condition	Continuity
Terminal			
3	5	Apply 12 V direct current between terminals 1 and 2.	Existed
		Does not apply 12 V direct current between terminals 1 and 2.	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the parking actuator relay A.

Component Inspection (Motor Coil A)

INFOID:000000007631890

1.CHECK MOTOR COIL A

1. Disconnect the parking actuator connector.

2. Check the resistance between parking actuator connector terminals.

Parking actuator connector		Resistance
Terminal		
4	1	2.3 – 2.8 Ω
	2	
	3	

Is the inspection result normal?

YES >> INSPECTION END

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 [TM-19, "Removal and Installation"](#).

P189B MOTOR B

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P189B MOTOR B

DTC Logic

INFOID:000000007631891

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P189B	Motor "B" Circuit High	When the power switch is ON, either of two energized phases is in the non-energized state. NOTE: Energized: Approx. 0 V, Non-energized: 9 – 16 V	<ul style="list-style-type: none">Electric shift control moduleMotor coil B (Parking actuator)Harness (12V battery 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

With CONSULT

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

Is "P189B" detected?

- YES >> Go to [TM-87, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631892

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

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

Electric shift control module vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
M59	27	Ground	0 V
	28		
	29		

- Check the continuity 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	
M59	27	F5	11	Existed
	28		12	
	29		13	

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repaire or replace damaged parts.

2. CHECK MOTOR COIL B

P189B MOTOR B

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

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 [GI-51, "Intermittent Incident"](#).

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

Component Inspection (Motor Coil B)

INFOID:000000007631893

1. CHECK MOTOR COIL B

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

Parking actuator connector		Resistance
Terminal		
14	11	2.3 – 2.8 Ω
	12	
	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 [TM-19, "Removal and Installation"](#).

P189C MOTOR B

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P189C MOTOR B

DTC Logic

INFOID:000000007631894

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P189C	Motor "B" Circuit Low	When the power switch is ON, one of the phases is in the energized state even though motor coil B all phases are not energized. NOTE: Energized: Approx. 0 V, Non-energized: 9 – 16 V	<ul style="list-style-type: none">• Parking actuator relay B (OFF stuck)• Motor coil B (Parking actuator)• Electric shift control module• Harness or connectors (Each circuit is open or ground 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 2 seconds or more.
2. Check DTC.

Is "P189C" detected?

- YES >> Go to [TM-89, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631895

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

1. Power switch OFF.
2. Disconnect the electric shift control module connector.
3. Disconnect the parking actuator connector.
4. Check the continuity 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	
M59	27	F5	11	Existed
	28		12	
	29		13	

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

Electric shift control module vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M59	27	Ground	Not existed
	28		
	29		

Is the inspection result normal?

- YES >> GO TO 2.
NO >> Repair or replace damaged parts.

P189C MOTOR B

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

2.CHECK GROUND CIRCUIT

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

Electric shift control module vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M58	6	Ground	Existed
	25		

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 [TM-91, "Component Inspection \(Parking Actuator Relay B\)"](#).

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace the parking actuator relay B. Refer to [TM-28, "Component Parts Location"](#).

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 vehicle side harness connector		Ground	Voltage
Connector	Terminal		
E55	1	Ground	9 – 16 V
	3		

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 [GI-51, "Intermittent Incident"](#).

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 side harness connector		Parking actuator relay B vehicle side harness connector		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

1. 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 harness connector		Parking actuator relay A vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M59	33	E55	2	Existed

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

Electric shift control module vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M59	33	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace damaged parts.

8.CHECK MOTOR COIL B

Check the motor coil B (parking actuator). Refer to [TM-91, "Component Inspection \(Motor Coil B\)"](#).

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 B (parking actuator). Refer to [TM-19, "Removal and Installation"](#).

Component Inspection (Parking Actuator Relay B)

INFOID:000000007631896

1.CHECK PARKING ACTUATOR RELAY B

1. Disconnect the parking actuator relay B. Refer to [TM-28, "Component Parts Location"](#).

2. Apply 12 V direct current between parking actuator relay B 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 parking actuator relay B terminals 3 and 5.

Parking actuator relay B		Condition	Continuity
Terminal			
3	5	Apply 12 V direct current between terminals 1 and 2.	Existed
		Does not apply 12 V direct current between terminals 1 and 2.	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the parking actuator relay B.

Component Inspection (Motor Coil B)

INFOID:000000007631897

1.CHECK MOTOR COIL B

1. Disconnect the parking actuator connector.

2. Check the resistance between parking actuator connector terminals.

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

Is the inspection result normal?

YES >> INSPECTION END

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 [TM-19, "Removal and Installation"](#).

P189D BACK UP VOLTAGE

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P189D BACK UP VOLTAGE

DTC Logic

INFOID:000000007631898

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P189D	Memory Back Up Power Supply	It is detected that the memory backup power supply voltage is specified value or less.	<ul style="list-style-type: none">Electric shift control moduleHarness, 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

 With CONSULT

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

Is "P189D" detected?

- YES >> Go to [TM-93, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631899

1. CHECK MEMORY BACK UP POWER SUPPLY CIRCUIT

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

Electric shift control module vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
M58	8	Ground	9 – 16 V

Is the inspection result normal?

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

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		
M58	3	Ground	Existed
	4		

Is the inspection result normal?

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

P189D BACK UP VOLTAGE

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

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 >

[ELECTRIC SHIFT]

P189E ACTUATOR LOCK

DTC Logic

INFOID:000000007631900

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P189E	Parking Actuator Lock	The parking actuator has a mechanical malfunction.	Parking Actuator (Parking mechanism)

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. Press the P position switch to shift to P position and wait for 5 seconds or more.
3. Shift the selector lever to N position and wait for 5 seconds or more.
4. Check DTC.

Is "P189E" detected?

- YES >> Go to [TM-95, "Diagnosis Procedure"](#).
NO >> INSPECTION END

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"](#).

>> END

P189F ANGLE SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P189F ANGLE SENSOR 1

DTC Logic

INFOID:000000007631902

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 specified value.	<ul style="list-style-type: none">• 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

Ⓐ 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.

Electric shift control module vehicle side harness connector		Ground	Condition	Voltage
Connector	Terminal			
M58	11	Ground	Selector lever in P position (Manual plate: P position)	1.42 – 2.20 V
			Other than the above (Manual plate: Not P position)	2.85 – 3.56 V

Is the inspection result normal?

YES >> 1. Check intermittent incident. Refer to [GI-51, "Intermittent Incident"](#).
2. If inspection result is OK, replace the electric shift control module. Refer to [TM-130, "Removal and Installation"](#).
NO >> GO TO 2.

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 (Approx.)
Connector	Terminal			
F6	17	Ground	Power switch ON	5 V

Is the inspection result normal?

P189F ANGLE SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

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

3. 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
	21		16	

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	Terminal		
M58	11	Ground	Not existed
	21		

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 [TM-19, "Removal and Installation"](#).
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.

Electric shift control module vehicle side harness connector		Parking actuator vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M58	10	F6	17	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
Connector	Terminal		
M58	10	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 electric shift control module. Refer to [TM-130, "Removal and Installation"](#).
NO >> Repair or replace damaged parts.

P18A0 ANGLE SENSOR 2

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P18A0 ANGLE SENSOR 2

DTC Logic

INFOID:000000007631904

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 specified value	<ul style="list-style-type: none">Angle sensor 2 (Parking actuator)Electric shift control moduleHarness (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

Ⓔ With CONSULT

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

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

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

Is the inspection result normal?

YES >> 1. Check intermittent incident. Refer to [GI-51, "Intermittent Incident"](#).
2. If inspection result is OK, replace the electric shift control module. Refer to [TM-130, "Removal and Installation"](#).
NO >> GO TO 2.

2. CHECK ANGLE SENSOR 2 POWER SUPPLY CIRCUIT

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

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

Is the inspection result normal?

P18A0 ANGLE SENSOR 2

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

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

3. 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	
M59	40	F6	18	Existed
	49		19	

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	Terminal		
M59	40	Ground	Not existed
	49		

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 [TM-19, "Removal and Installation"](#).
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.

Electric shift control module vehicle side harness connector		Parking actuator vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M59	39	F6	20	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
Connector	Terminal		
M59	39	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 electric shift control module. Refer to [TM-130, "Removal and Installation"](#).
NO >> Repair or replace damaged parts.

P18A1 ANGLE SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P18A1 ANGLE SENSOR 1

DTC Logic

INFOID:000000007631906

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.	<ul style="list-style-type: none">Angle sensor 1 (Parking actuator)Electric shift control moduleHarness (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

Ⓔ With CONSULT

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

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

Parking actuator vehicle side harness connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
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

- Power switch OFF.
- 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	
M58	11	F6	15	Existed
	21		16	

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

P18A1 ANGLE SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift control module vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M58	11	Ground	Not existed
	21		

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 [TM-19, "Removal and Installation"](#).
 NO >> Repair or replace damaged parts.

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

- Power switch OFF.
- Disconnect the electric shift control module connector.
- 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 side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
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		
M58	10	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 electric shift control module. Refer to [TM-130, "Removal and Installation"](#).
 NO >> Repair or replace damaged parts.

P18A2 ANGLE SENSOR 2

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P18A2 ANGLE SENSOR 2

DTC Logic

INFOID:000000007631908

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

Ⓔ 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		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
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		Parking actuator vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M59	40	F6	18	Existed
	49		19	

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]

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

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 [TM-19, "Removal and Installation"](#).
 NO >> Repair or replace damaged parts.

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

- Power switch OFF.
- Disconnect the electric shift control module connector.
- 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 side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
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		
M59	39	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 electric shift control module. Refer to [TM-130, "Removal and Installation"](#).
 NO >> Repair or replace damaged parts.

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 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 "P18A3" detected?

- YES >> Go to [TM-104, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631911

1.REPLACE ELECTRIC SHIFT CONTROL MODULE

Replace the electric shift control module. Refer to [TM-130, "Removal and Installation"](#).

>> END

P18A4 CONTROL MODULE

DTC Logic

INFOID:000000007631912

DTC DETECTION LOGIC

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

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 "P18A4" detected?

- YES >> Go to [TM-105, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631913

1. REPLACE ELECTRIC SHIFT CONTROL MODULE

Replace the electric shift control module. Refer to [TM-130, "Removal and Installation"](#).

>> END

P18A6 WAKE UP SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P18A6 WAKE UP SIGNAL

DTC Logic

INFOID:000000007631914

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.	<ul style="list-style-type: none">• 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		Ground	Condition	Voltage
Connector	Terminal			
M58	20	Ground	Power switch ON	9 – 16 V

Is the inspection result normal?

- YES >> 1. Check intermittent incident. Refer to [GI-51, "Intermittent Incident"](#).
2. If inspection result is OK, replace the electric shift control module. Refer to [TM-130, "Removal and Installation"](#).
NO >> GO TO 2.

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 harness connector		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.

P18A6 WAKE UP SIGNAL

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift control module vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M58	20	Ground	Not existed

Is the inspection result normal?

- YES >> Check the BCM. Refer to [BCS-34, "Reference Value"](#).
NO >> Repair or replace damaged parts.

A

B

C

TM

E

F

G

H

I

J

K

L

M

N

O

P

P18A7 SHIFT SIGNAL OFF

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P18A7 SHIFT SIGNAL OFF

DTC Logic

INFOID:000000007631916

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.	<ul style="list-style-type: none">• 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
H	H	OFF	OFF	ON	OFF	OFF	ON
P	H	OFF	OFF	ON	OFF	OFF	ON
R	R	ON	ON	OFF	OFF	OFF	OFF
N	N	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

Ⓔ 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

Ⓔ 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
SHIFT SENSOR 2	Selector lever is held in R and N positions	ON
	Other than the above	OFF
SHIFT SENSOR 3	Selector lever is held in H (Home) and N positions	ON
	Other than the above	OFF

P18A7 SHIFT SIGNAL OFF

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Monitor item	Condition	Value / Status
SHIFT SENSOR 4	Selector lever is held in N and D positions	ON
	Other than the above	OFF
SHIFT SENSOR 5	Selector lever is held in D position	ON
	Other than the above	OFF
SHIFT SENSOR 6	Selector lever in H (Home) position	ON
	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 sensor	Electric shift control module vehicle side harness connector		Ground	Condition	Voltage (Approx.)
	Connector	terminal			
1	M59	34	Ground	Selector lever is held in R position	0 V
				Other than the above	5 V
2		35		Selector lever is held in R and N positions	0 V
				Other than the above	5 V
3		36		Selector lever is held in H (Home) and N positions	0 V
				Other than the above	5 V
4		37		Selector lever is held in N and D position	0 V
				Other than the above	5 V
5		44		Selector lever is held in D position	0 V
				Other than the above	5 V
6		45		Selector lever in H (Home) position	0 V
				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 vehicle side harness connector		Ground	Voltage (Approx.)
	Connector	Terminal		
1, 3, 5	M57	1	Ground	5 V
2, 4, 6		7		

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

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

1. Power switch OFF.
2. Disconnect the electric shift control module connector.

P18A7 SHIFT SIGNAL OFF

[ELECTRIC SHIFT]

< DTC/CIRCUIT DIAGNOSIS >

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	Electric shift control module vehicle side harness connector		Electric shift sensor vehicle side harness connector		Continuity
	Connector	Terminal	Connector	Terminal	
1, 3, 5	M58	19	M57	1	Existed
2, 4, 6	M59	48		7	

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

Electric shift sensor	Electric shift control module vehicle side harness connector		Ground	Continuity
	Connector	Terminal		
1, 3, 5	M58	19	Ground	Not existed
2, 4, 6	M59	48		

Is the inspection result normal?

- YES >> 1. Check intermittent incident. Refer to [GI-51. "Intermittent Incident"](#).
 2. If inspection result is OK, replace the electric shift control module. Refer to [TM-130. "Removal and Installation"](#).
 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	Electric shift control module vehicle side harness connector		Electric shift sensor vehicle side harness connector		Continuity
	Connector	Terminal	Connector	Terminal	
1, 3, 5	M59	41	M57	6	Existed
2, 4, 6		50		12	

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

Electric shift sensor	Electric shift control module vehicle side harness connector		Ground	Continuity
	Connector	Terminal		
1, 3, 5	M59	41	Ground	Not existed
2, 4, 6		50		

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		Electric shift sensor vehicle side harness connector		Continuity
	Connector	Terminal	Connector	Terminal	
1	M59	34	M57	11	Existed
2		35		5	
3		36		10	
4		37		3	
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 connector		Ground	Continuity
	Connector	Terminal		
1	M59	34	Ground	Not existed
2		35		
3		36		
4		37		
5		44		
6		45		

Is the inspection result normal?

- YES >> 1. Check intermittent incident. Refer to [GI-51, "Intermittent Incident"](#).
 2. If inspection result is OK, replace the electric shift sensor. Refer to [TM-131, "Exploded View"](#).
 NO >> Repair or replace damaged parts.

P18A8 P POSITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P18A8 P POSITION SWITCH

DTC Logic

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.	<ul style="list-style-type: none">P position switchHarness (Each circuit is open or shorted.)
		P position switch No. 7 is stuck at ON and P position switch No. 8 is stuck at OFF.	

P Position Switch Pattern Table

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

- 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.)
- Shift the selector lever to N position and wait for 5 minutes or more.
- Check DTC.

Is "P18A8" detected?

- YES >> Go to [TM-112, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631919

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

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

Electric shift control module vehicle side harness connector		Electric shift sensor vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M59	46	M57	2	Existed
	47		8	

P18A8 P POSITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

5. 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		
M59	46	Ground	Not existed
	47		

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2.CHECK P POSITION SWITCH

Check the P position switch. Refer to [TM-113, "Component Inspection \(P Position Switch\)"](#).

Is the inspection result normal?

YES >> Replace the electric shift sensor. Refer to [TM-131, "Exploded View"](#).

NO >> Replace the selector lever knob due to malfunction in the P position switch. Refer to [TM-131, "Removal and Installation"](#).

Component Inspection (P Position Switch)

INFOID:000000007631920

1.CHECK P POSITION SWITCH

1. Disconnect the P position switch connector.
2. Check the continuity between P position switch connector terminal.

P position switch connector		Condition	Continuity
Terminal			
1	2	When P position switch is depressed	Existed
		When P position switch is released	Not existed
1	3	When P position switch is depressed	Not existed
		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 [TM-131, "Removal and Installation"](#).

P18A9 PARKING ACTUATOR FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P18A9 PARKING ACTUATOR FUNCTION

DTC Logic

INFOID:000000007631921

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.
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 "P18A9" detected?

- YES >> Go to [TM-114, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631922

1. P POSITION LEARNING

Perform P position learning. Refer to [TM-57, "Work Procedure"](#).

>> GO TO 2.

2. SELF DIAGNOSTIC

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

P18AA P POSITION LEARNING ERROR

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P18AA P POSITION LEARNING ERROR

DTC Logic

INFOID:0000000007631923

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
P18AA	P Position Learning Error	Voltage of angle sensor is out of the specified value while learning P 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. Perform P position learning. Refer to [TM-57, "Work Procedure"](#).
2. Check DTC.

Is "P18AA" detected?

- YES >> Go to [TM-115, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000007631924

1. REPLACE REDUCTION GEAR

Replace the reduction gear due to malfunction in the parking actuator. Refer to [TM-19, "Removal and Installation"](#).

>> END

P18AB IGNITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P18AB IGNITION SWITCH

DTC Logic

INFOID:000000007631925

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.	<ul style="list-style-type: none">Power switchHarness, 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

Ⓐ With CONSULT

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

- Power switch OFF.
- Disconnect the electric shift control module connector.
- 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 (Approx.)
Connector	Terminal			
M58	9	Ground	Power switch ON	9 – 16 V
			Power switch OFF	0 V
M59	42		Power switch ON	9 – 16 V
			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

- Disconnect the IPDM E/R connector.
- 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]

3. 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		
M58	9	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.DETECT MALFUNCTION ITEMS

Check the following items.

- Harness for short or open between power switch and IPDM E/R.
- Power switch
- Ignition relay
- 15A fuse (# 61, IPDM E/R)
- IPDM E/R

Is the inspection result normal?

YES >> Check intermittent incident. Refer to [GI-51. "Intermittent Incident"](#).

NO >> Repair or replace damaged parts.

4.DETECT MALFUNCTION ITEMS

Check the following items.

- Harness for short or open between power switch and electric shift control module vehicle side harness connector terminal 42.
- Power switch
- Ignition relay
- 15A fuse (# 6)

Is the inspection result normal?

YES >> Check intermittent incident. Refer to [GI-51. "Intermittent Incident"](#).

NO >> Repair or replace damaged parts.

P18AC PARKING ACTUATOR RELAY A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P18AC PARKING ACTUATOR RELAY A

DTC Logic

INFOID:000000007631927

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.	<ul style="list-style-type: none">• 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

 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. 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 vehicle side harness connector		Ground	Continuity
Connector	Terminal		
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 side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
F4	4	Ground	0 V

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

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

P18AC PARKING ACTUATOR RELAY A

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

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

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

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4.CHECK PARKING ACTUATOR RELAY A

Check the parking actuator relay A. Refer to [TM-119, "Component Inspection \(Parking Actuator Relay A\)"](#).

Is the inspection result normal?

YES >> Replace the electric shift control module. Refer to [TM-130, "Removal and Installation"](#).

NO >> Replace the parking actuator relay A. Refer to [TM-28, "Component Parts Location"](#).

Component Inspection (Parking Actuator Relay A)

INFOID:0000000007631929

1.CHECK PARKING ACTUATOR RELAY A

1. Disconnect the parking actuator relay A. Refer to [TM-28, "Component Parts Location"](#).
2. Apply 12 V direct current between parking actuator relay A 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 parking actuator relay A terminals 3 and 5.

Parking actuator relay A		Condition	Continuity
Terminal			
3	5	Apply 12 V direct current between terminals 1 and 2.	Existed
		Does not apply 12 V direct current between terminals 1 and 2.	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the parking actuator relay A.

P18AD PARKING ACTUATOR RELAY B

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

P18AD PARKING ACTUATOR RELAY B

DTC Logic

INFOID:000000007631930

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.	<ul style="list-style-type: none">• 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

 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. CHECK 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 vehicle side harness connector		Ground	Continuity
Connector	Terminal		
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 side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
F5	14	Ground	0 V

Is the inspection result normal?

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

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

P18AD PARKING ACTUATOR RELAY B

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

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

Electric shift control module vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
M59	27	Ground	0 V
	28		
	29		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4.CHECK PARKING ACTUATOR RELAY B

Check the parking actuator relay B. Refer to [TM-121, "Component Inspection \(Parking Actuator Relay B\)"](#).

Is the inspection result normal?

YES >> Replace the electric shift control module. Refer to [TM-130, "Removal and Installation"](#).

NO >> Replace the parking actuator relay B. Refer to [TM-28, "Component Parts Location"](#).

Component Inspection (Parking Actuator Relay B)

INFOID:0000000007631932

1.CHECK PARKING ACTUATOR RELAY B

1. Disconnect the parking actuator relay B. Refer to [TM-28, "Component Parts Location"](#).
2. Apply 12 V direct current between parking actuator relay B 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 parking actuator relay B terminals 3 and 5.

Parking actuator relay B		Condition	Continuity
Terminal			
3	5	Apply 12 V direct current between terminals 1 and 2.	Existed
		Does not apply 12 V direct current between terminals 1 and 2.	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the parking actuator relay B.

P18AE STUCK IN SHIFT

[ELECTRIC SHIFT]

< DTC/CIRCUIT DIAGNOSIS >

P18AE STUCK IN SHIFT

DTC Logic

INFOID:000000007631933

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:

"[TM-122, "Diagnosis Procedure"](#)" must be performed before starting "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

① 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 → N → 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 [TM-19, "Removal and Installation"](#).

>> END

U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

U1000 CAN COMM CIRCUIT

DTC Logic

INFOID:000000007631935

DTC DETECTION LOGIC

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.)

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 5 seconds or more.
2. Check DTC.

Is "U1000" detected?

- YES >> Go to [TM-123, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007631936

Go to [LAN-15, "Trouble Diagnosis Flow Chart"](#).

U1010 CONTROL UNIT (CAN)

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

U1010 CONTROL UNIT (CAN)

DTC Logic

INFOID:000000007631937

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

Ⓔ With CONSULT

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

Is "U1010" detected?

YES >> Go to [TM-124. "Diagnosis Procedure"](#).
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 >

[ELECTRIC SHIFT]

U1086 CAN ERROR

DTC Logic

INFOID:0000000007631939

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible cause
U1086	Control Module Malfunction	The inability to transmit or receive data is detected after the power switch is turned OFF.	Electric shift control module

DTC DETECTION LOGIC

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 5 seconds or more.
2. Check DTC.

Is "U1086" detected?

- YES >> Go to [TM-125, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000007631940

Go to [LAN-15, "Trouble Diagnosis Flow Chart"](#).

SELECTOR INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

SELECTOR INDICATOR CIRCUIT

Component Function Check

INFOID:000000007631941

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 side harness connector		Ground	Voltage
Connector	Terminal		
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 [GI-51, "Intermittent Incident"](#).
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.

Electric shift control module vehicle side harness connector		Selector indicator vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M58	22	M56	7	Existed
M59	26		8	
	30		1	
	38		3	

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

SELECTOR INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

Electric shift control module vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M58	22	Ground	Not existed
M59	26		
	30		
	38		

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 vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M58	3	Ground	Existed
	4		

Is the inspection result normal?

YES >> 1. Check intermittent incident. Refer to [GI-51, "Intermittent Incident"](#).

2. If inspection result is OK, replace the selector indicator. Refer to [TM-134, "Removal and Installation"](#).

NO >> Repair or replace damaged parts.

SHIFT POSITION INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

SHIFT POSITION INDICATOR CIRCUIT

Component Function Check

INFOID:000000007631943

1.CHECK SHIFT POSITION INDICATOR

1. Set the vehicle to READY.
2. Shift the selector lever.
3. Check that the indication of the shift position indicator in the combination meter corresponds to the 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.
2. Perform "Self Diagnostic Results" in "SHIFT".

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

ⓘ With CONSULT

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

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"](#).
2. If inspection result is OK, replace the combination meter. Refer to [MWI-96, "Removal and Installation"](#).

ELECTRIC SHIFT WARNING LAMP

< DTC/CIRCUIT DIAGNOSIS >

[ELECTRIC SHIFT]

ELECTRIC SHIFT WARNING LAMP

Component Function Check

INFOID:000000007631945

1.CHECK ELECTRIC SHIFT WARNING LAMP

Check that electric shift warning lamp turns ON for approx. 2 seconds after power switch is ON.

Is the inspection result normal?

- YES >> INSPECTION END
NO >> Go to [TM-129, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000007631946

1.CHECK DTC OF ELECTRIC SHIFT CONTROL MODULE

④With CONSULT

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

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [TM-47, "DTC Index"](#).
NO >> GO TO 2.

2.CHECK DTC OF VCM

④With 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 >> 1. Check input/output signals of VCM. Refer to [EVC-66, "Reference Value"](#).
2. If inspection result is OK, GO TO 3.

3.CHECK DTC OF COMBINATION METER

④With CONSULT

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

Is any DTC detected?

- YES >> Check DTC detected item. Refer to [MWI-68, "DTC Index"](#).
NO >> 1. Check input/output signals of combination meter. Refer to [MWI-56, "Reference Value"](#).
2. If inspection result is OK, GO TO 4.

4.CHECK HARNESS BETWEEN VCM AND COMBINATION METER

1. Disconnect the combination meter connector.
2. Disconnect the VCM connector.
3. Check the continuity between combination meter vehicle side harness connector terminal and VCM vehicle side harness connector terminal.

Combination meter vehicle side harness connector		VCM vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M34	7	E63	91	Existed

4. Check the continuity between combination meter vehicle side harness connector terminal and ground.

Combination meter vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M34	7	Ground	Not existed

Is the inspection result normal?

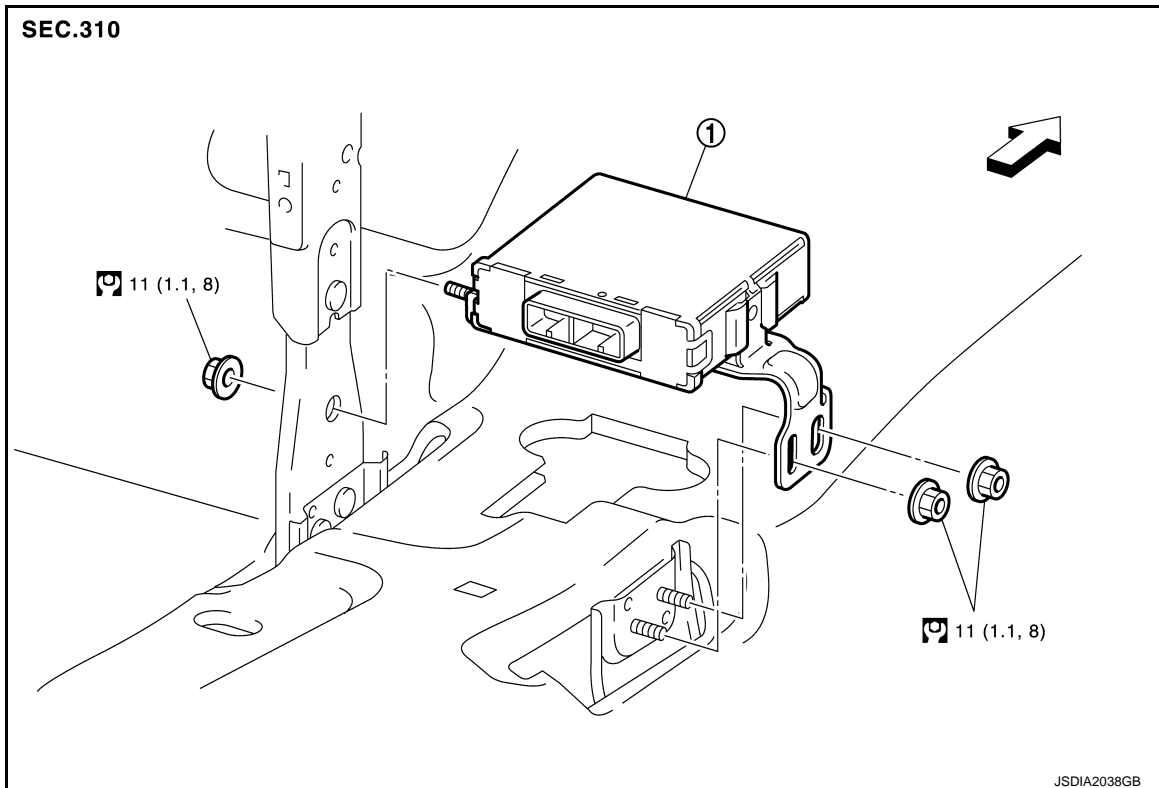
- YES >> INSPECTION END
NO >> Repair or replace damaged parts.

REMOVAL AND INSTALLATION

ELECTRIC SHIFT CONTROL MODULE

Exploded View

INFOID:000000007631947



1. Electric shift control module

← : Vehicle front

⌚ : N·m (kg-m, ft-lb)

Removal and Installation

INFOID:000000007631948

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

REMOVAL

1. Disconnect the negative cable from 12V battery. Refer to [TM-25, "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

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 [TM-57, "Work Procedure"](#).

ELECTRIC SHIFT SELECTOR

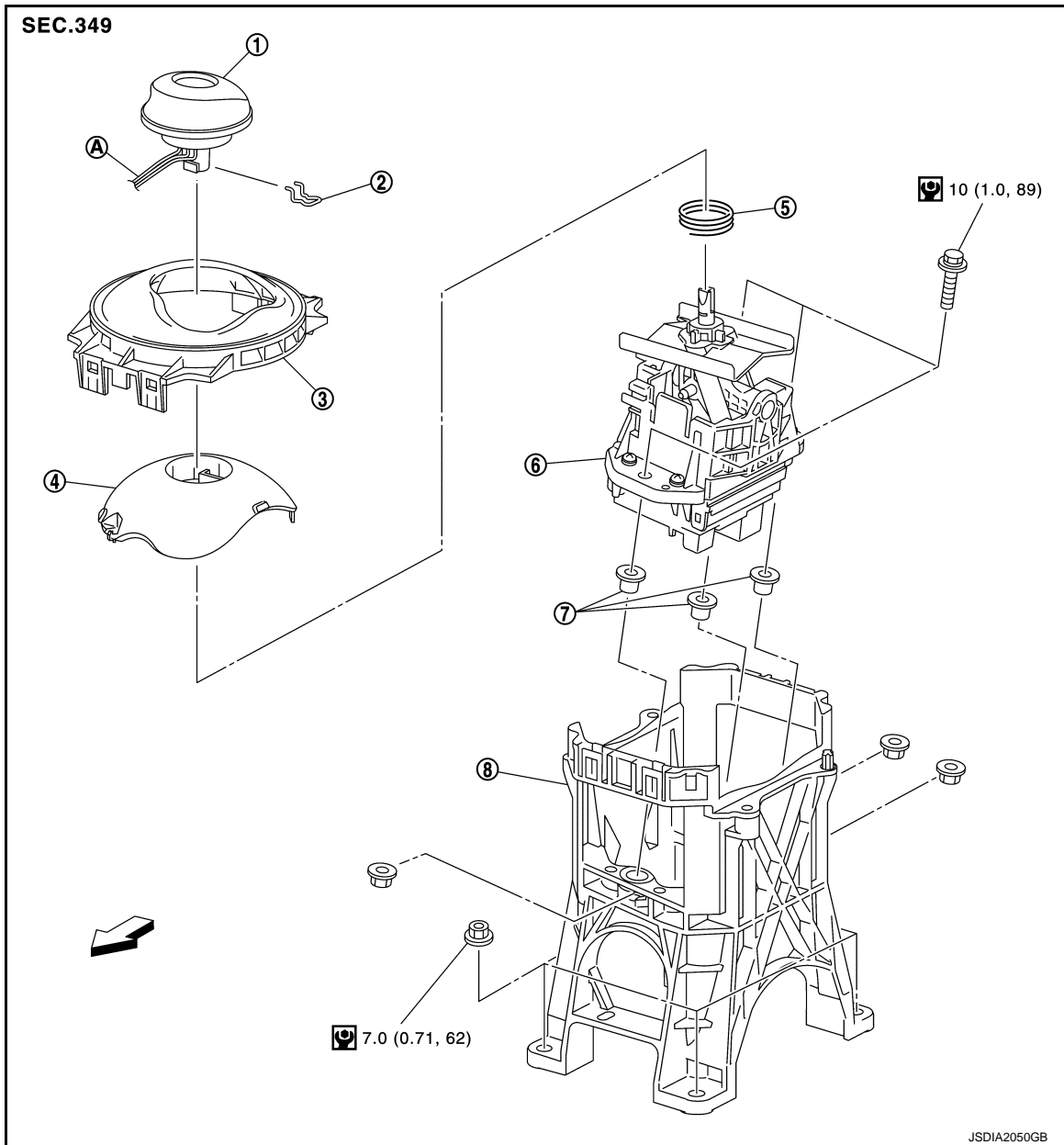
< REMOVAL AND INSTALLATION >

[ELECTRIC SHIFT]

ELECTRIC SHIFT SELECTOR

Exploded View

INFOID:000000007631950



- | | | |
|------------------------|-----------------|--------------------------|
| 1. Selector lever knob | 2. Lock pin | 3. Shift gate |
| 4. Slider plate | 5. Spring | 6. Electric shift sensor |
| 7. Collar | 8. Body bracket | |
- A. P position switch harness
- ← : Vehicle front
- : N·m (kg-m, in-lb)

Removal and Installation

INFOID:000000007631951

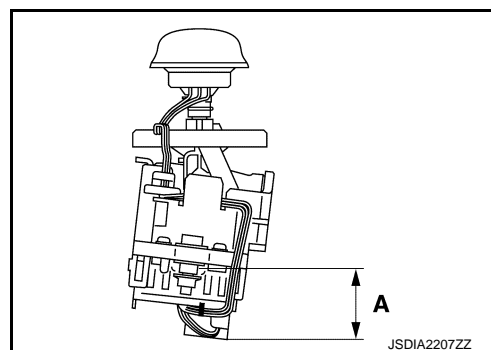
CAUTION:

ELECTRIC SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

[ELECTRIC SHIFT]

- 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.

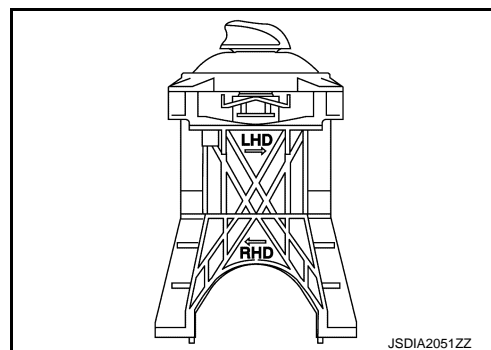


REMOVAL

1. Disconnect the negative cable from 12V battery. Refer to [TM-25, "Precautions for Removing Battery Terminal"](#).
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.

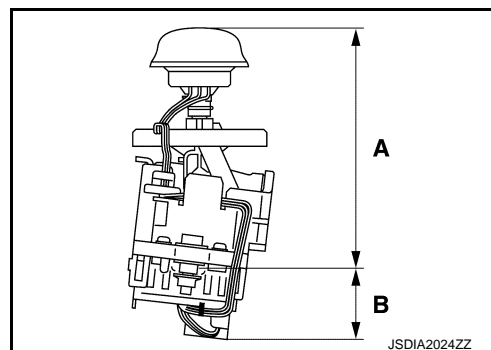


Disassembly and Assembly

INFOID:000000007631952

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

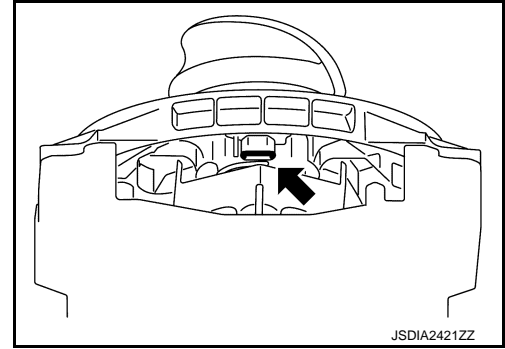
1. Put a mark at the hook position of the P position switch harness.
CAUTION:
Memorize how the P position switch harness is routed.

ELECTRIC SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

[ELECTRIC SHIFT]

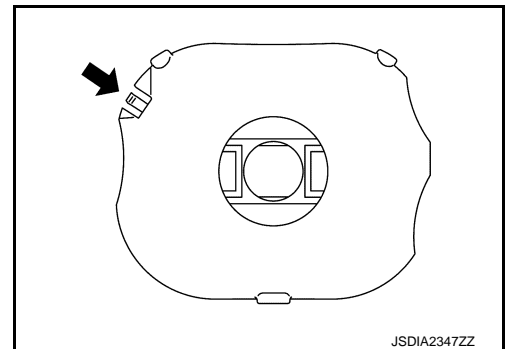
2. Disconnect the P position switch connector.
3. Pull the lock pin out of the selector lever using long-nose pliers.
NOTE:
Tilting of the selector lever knob in the N position direction allows easier work.
4. Remove P position switch harness from hook.
5. Pull the selector lever knob upward out of the 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.



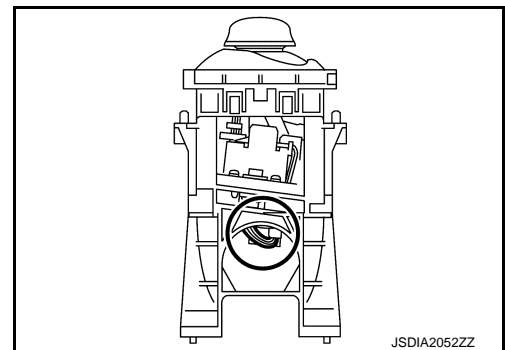
ASSEMBLY

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

INFOID:000000007631953

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.

SELECTOR INDICATOR

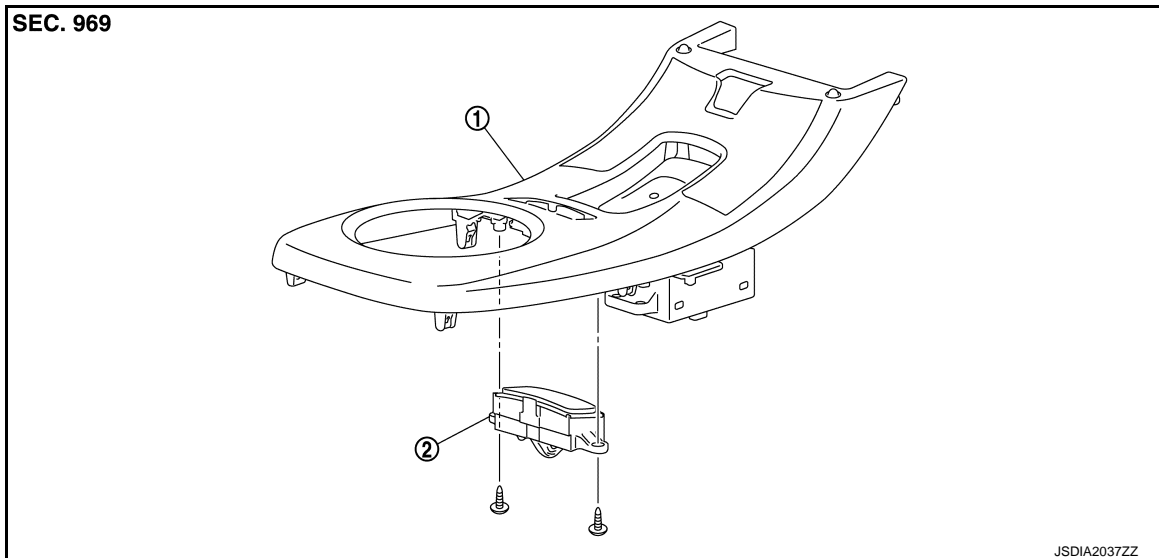
< REMOVAL AND INSTALLATION >

[ELECTRIC SHIFT]

SELECTOR INDICATOR

Exploded View

INFOID:000000007631954



1. Console finisher assembly
2. Selector indicator

Removal and Installation

INFOID:000000007631955

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

INSPECTION AFTER INSTALLATION

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