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TRANSAXLE & TRANSMISSION

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PRECAUTION

PRECAUTIONS

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

INFOID:0000000008972108

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. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which 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 the SR section.**
- **Do not 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

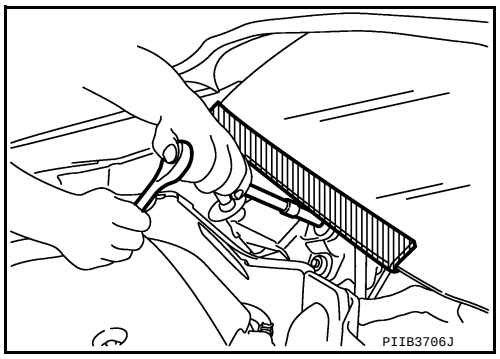
WARNING:

- **When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery and wait at least 3 minutes before performing any service.**

Precaution for Procedure without Cowl Top Cover

INFOID:0000000008765693

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



Service Notice or Precautions for Manual Transaxle

INFOID:0000000008765694

CAUTION:

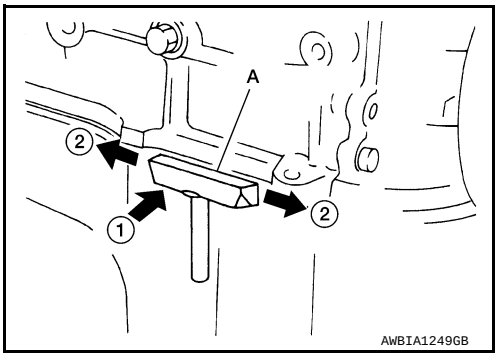
- **Do not reuse CSC (Concentric Slave Cylinder). Because CSC slides back to the original position every time when removing transaxle assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage. Refer to CL-16, "Removal and Installation".**
- **Do not reuse transaxle gear oil, once it has been drained.**
- **Check oil level or replace gear oil with vehicle on level surface.**
- **During removal or installation, keep inside of transaxle clear of dust or dirt.**
- **Check for the correct installation status prior to removal or disassembly. If matching marks are required, be certain they never interfere with the function of the parts they are applied.**
- **In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, use it.**
- **Do not damage sliding surfaces and mating surfaces.**

Liquid Gasket

INFOID:0000000009002422

REMOVAL OF LIQUID GASKET SEALING

- After removing the bolts and nuts, separate the mating surface and remove the liquid gasket using Tool (A).



Tool Number (A): KV10111100 (J-37228)

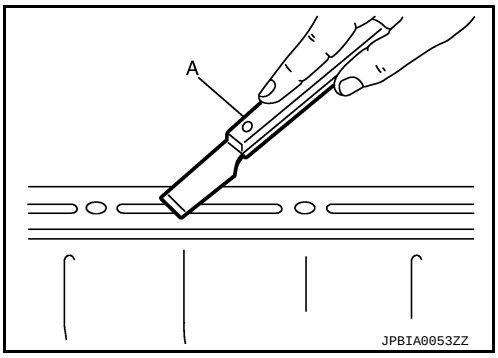
CAUTION:
Be careful not to damage the mating surfaces.

- In areas where the cutter is difficult to use, use a plastic hammer to lightly tap (1) the cutter where the liquid gasket is applied. Use a plastic hammer to slide (2) the cutter by tapping on the side.

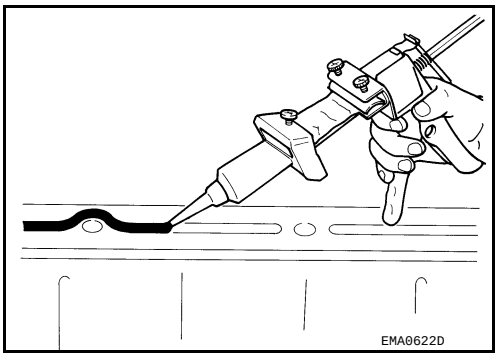
CAUTION:
Do not damage the mating surfaces.

LIQUID GASKET APPLICATION PROCEDURE

1. Using suitable tool (A), remove old liquid gasket adhering to the liquid gasket application surface and the mating surface.
   - Remove liquid gasket completely from the groove of the liquid gasket application surface, mounting bolts, and bolt holes.
2. Wipe the liquid gasket application surface and the mating surface with white gasoline (lighting and heating use) to remove adhering moisture, grease and foreign materials.



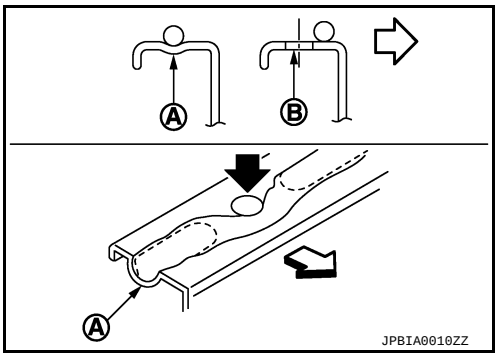
3. Attach liquid gasket tube to the tube presser (commercial service tool).
   Use Genuine Liquid Gasket or equivalent.
4. Apply liquid gasket without gaps to the specified location according to the specified dimensions.
   - If there is a groove for liquid gasket application, apply liquid gasket to the groove.



- As for bolt holes (B), normally apply liquid gasket inside the holes. Occasionally, it should be applied outside the holes. Check to read the text of this manual.

(A) : Groove

⇦ : Inside



- Within five minutes of liquid gasket application, install the mating component.
- If liquid gasket protrudes, wipe it off immediately.
- Do not retighten mounting bolts or nuts after the installation.
- After 30 minutes or more have passed from the installation, fill engine oil and engine coolant.

CAUTION:
If there are specific instructions in this manual, observe them.

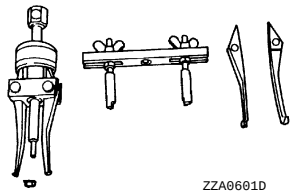
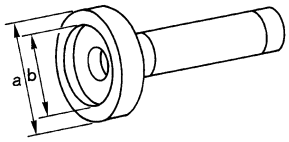
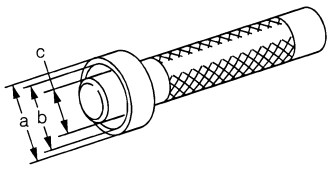
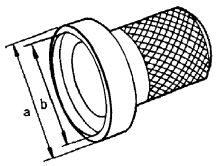
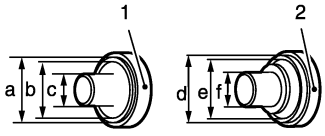
PREPARATION

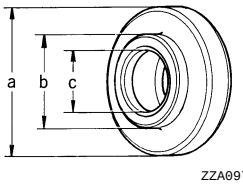
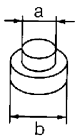
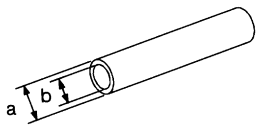
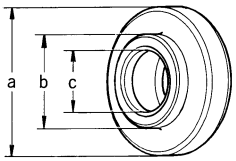
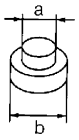
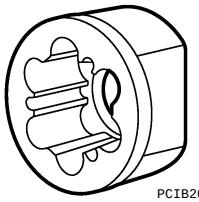
PREPARATION

Special Service Tools

INFOID:0000000008765695

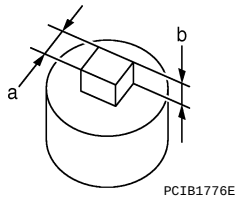
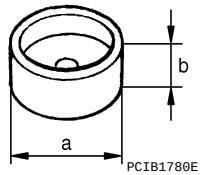
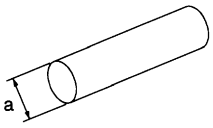
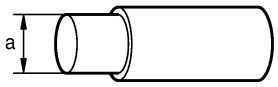
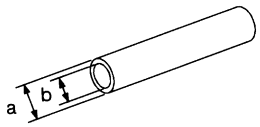
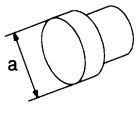
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

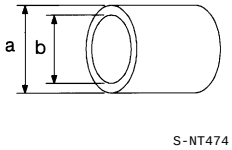
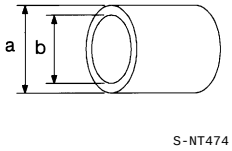
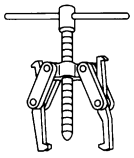
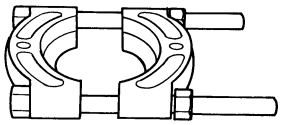
Tool number (Kent-Moore No.) Tool name	Description
KV381054S0 (J-34286) Puller  ZZA0601D	Removing mainshaft front bearing outer race
KV38100200 (—) Drift  ZZA1143D	• Installing mainshaft front bearing outer race • Installing mainshaft rear bearing outer race • Installing differential side bearing outer race (clutch housing side) **a: 65 mm (2.56 in) dia.** **b: 49 mm (1.93 in) dia.**
ST33220000 (—) Drift  ZZA1046D	Installing input shaft oil seal **a: 37 mm (1.46 in) dia.** **b: 31 mm (1.22 in) dia.** **c: 22mm (0.87in) dia.**
ST33400001 (J-26082) Drift  ZZA0814D	Installing differential side bearing outer race (transaxle case side) **a: 60 mm (2.36 in) dia.** **b: 47 mm (1.85 in) dia.**
KV32500QAA (—) (Renault SST: B.vi 1666) Drift set  JPDIC0730ZZ	Installing differential side oil seal 1. — (Stamping number: B.vi 1666-A) Drift **a: 54.3 mm (2.138 in) dia.** **b: 45 mm (1.77 in) dia.** **c: 26.6 mm (1.047 in) dia.** 2. — (Stamping number: B.vi 1666-B) Drift **d: 54 mm (2.13 in) dia.** **e: 48.6 mm (1.913 in) dia.** **f: 26.6 mm (1.047 in) dia.**

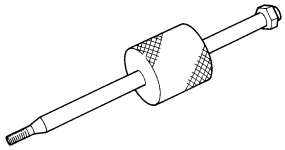
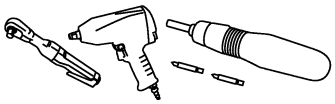
Tool number (Kent-Moore No.) Tool name	Description
ST36720030 (—) Drift  ZZA0978D	• Installing input shaft rear bearing • Installing mainshaft front bearing inner race **a: 70 mm (2.76 in) dia.** **b: 40 mm (1.57 in) dia.** **c: 29 mm (1.14 in) dia.**
ST33052000 (—) Drift  ZZA0969D	• Removing mainshaft rear bearing inner race • Removing 6th main gear • Removing 5th main gear • Removing 4th main gear • Removing 1st main gear • Removing 1st-2nd synchronizer hub assembly • Removing 2nd main gear • Removing bushing • Removing 3rd main gear • Removing mainshaft front bearing inner race **a: 22 mm (0.87 in) dia.** **b: 28 mm (1.10 in) dia.**
KV32102700 (—) Drift  S-NT065	• Installing bushing • Installing 2nd main gear • Installing 3rd main gear • Installing 4th main gear • Installing 5th main gear • Installing 6th main gear **a: 48.6 mm (1.913 in) dia.** **b: 41.6 mm (1.638 in) dia.**
ST30901000 (J-26010-01) Drift  ZZA0978D	Installing mainshaft rear bearing inner race **a: 79 mm (3.11 in) dia.** **b: 45 mm (1.77 in) dia.** **c: 35.2 mm (1.386 in) dia.**
ST33061000 (J-8107-2) Drift  ZZA0969D	Removing differential side bearing inner race (clutch housing side) **a: 28.5 mm (1.122 in) dia.** **b: 38 mm (1.50 in) dia.**
KV32300QAM (—) (Renault SST: B.vi 1823) Drift  PCIB2078J	Removing and installing input shaft rear bearing mounting bolt

Commercial Service Tools

INFOID:0000000008765696

Tool name	Description
Socket  PCIB1776E	Removing and installing drain plug **a: 8 mm (0.31 in)** **b: 5 mm (0.20 in)**
Spacer  PCIB1780E	Removing mainshaft front bearing outer race **a: 25 mm (0.98 in) dia**. **b: 25 mm (0.98 in**)
Drift  S-NT063	Installing bushing **a: 17 mm (0.67 in) dia.**
Drift  PCIB1779E	Removing input shaft rear bearing **a: 24 mm (0.94 in) dia.**
Drift  S-NT065	Installing input shaft front bearing **a: 35 mm (1.38 in) dia.** **b: 25 mm (0.98 in) dia.**
Drift  NT109	• Installing input shaft rear bearing • Removing differential side bearing inner race (transaxle case side) **a: 43 mm (1.69 in) dia.**

Tool name	Description
Drift  S-NT474	Installing differential side bearing inner race (clutch housing side) **a: 45 mm (1.77 in) dia.** **b: 39 mm (1.54 in) dia.**
Drift  S-NT474	Installing differential side bearing inner race (transaxle case side) **a: 52 mm (2.05 in) dia.** **b: 45 mm (1.77 in) dia.**
Puller  NT077	• Removing differential side bearing inner race (clutch housing side) • Removing differential side bearing inner race (transaxle case side)
Puller  ZZB0823D	• Removing differential side bearing inner race (clutch housing side) • Removing differential side bearing inner race (transaxle case side) • Removing input shaft rear bearing • Removing input shaft front bearing • Removing mainshaft rear bearing inner race • Removing 6th main gear • Removing 4th main gear • Removing 5th main gear • Removing 1st main gear • Removing 1st-2nd synchronizer hub assembly • Removing 2nd main gear • Removing 3rd main gear • Removing mainshaft front bearing inner race
Remover  S-NT134	• Removing bushing • Removing mainshaft rear bearing outer race

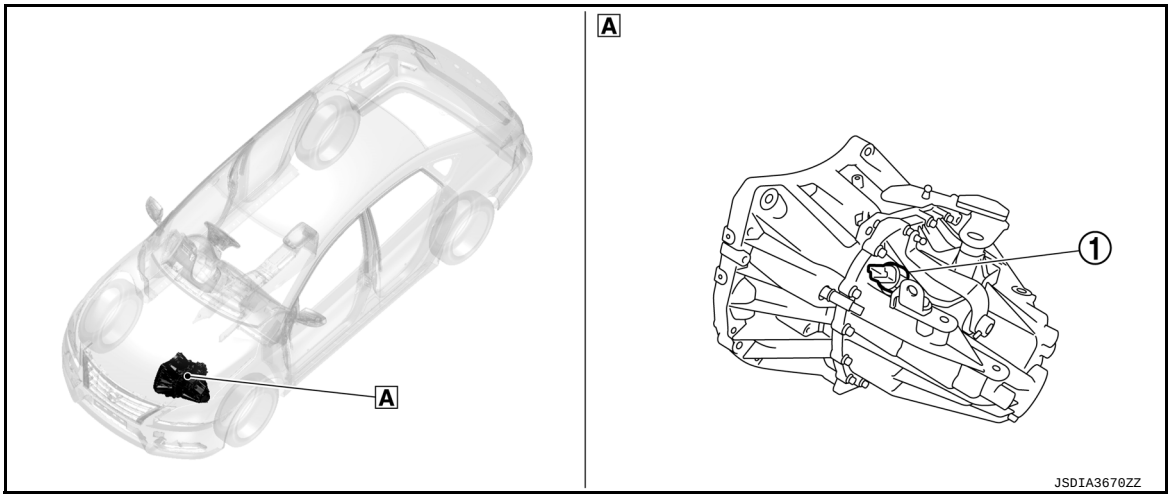
Tool name	Description
Sliding hammer  ZZA0023D	• Removing bushings and seals
Power tool  PIIB1407E	• Loosening nuts, screws and bolts

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000008765697



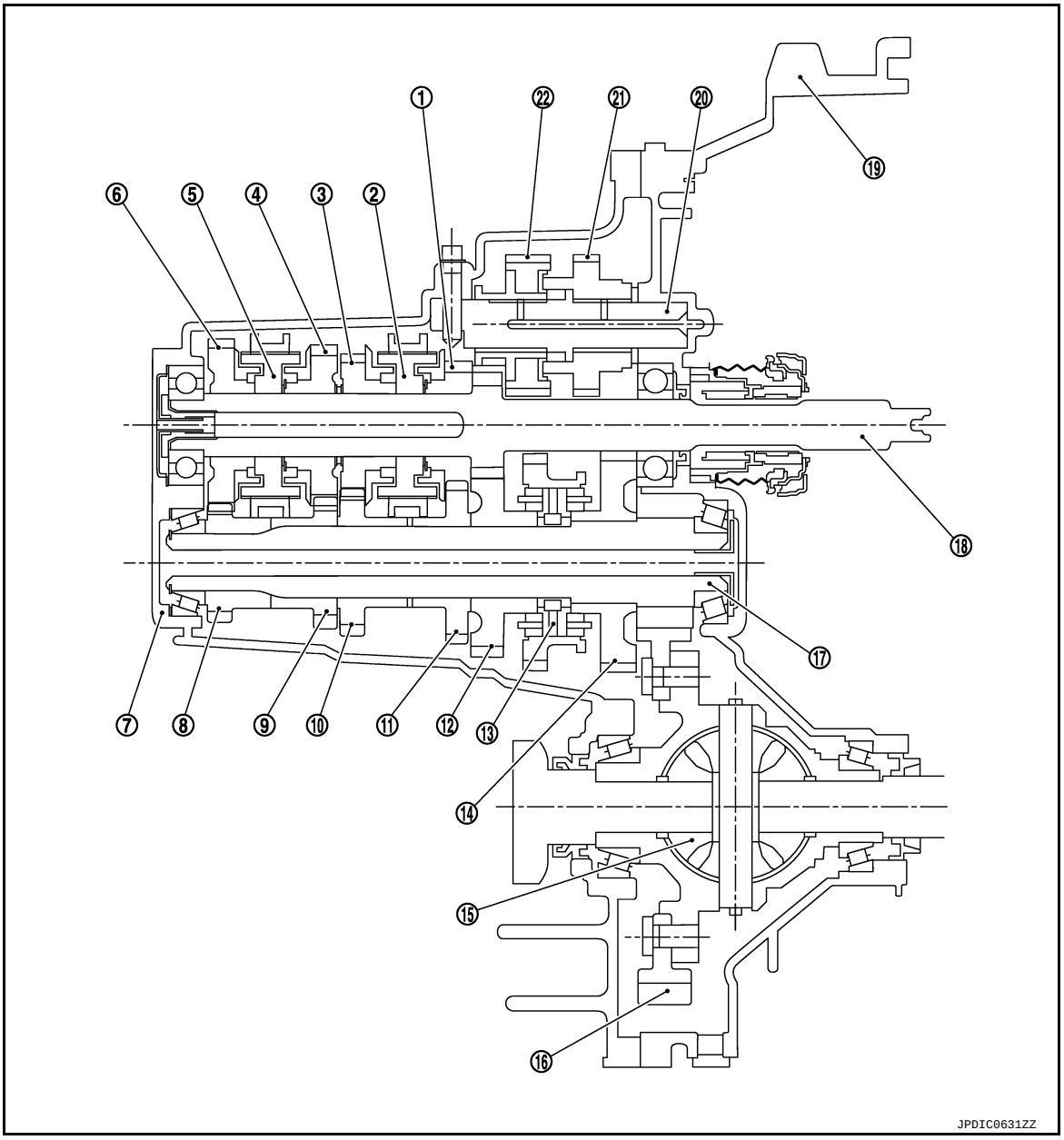
A. Transaxle assembly

No.	Component	Function
1.	Position switch	• It detects that the transaxle is in neutral. • It detects that the transaxle is in reverse.

STRUCTURE AND OPERATION

Sectional View

INFOID:0000000008765698



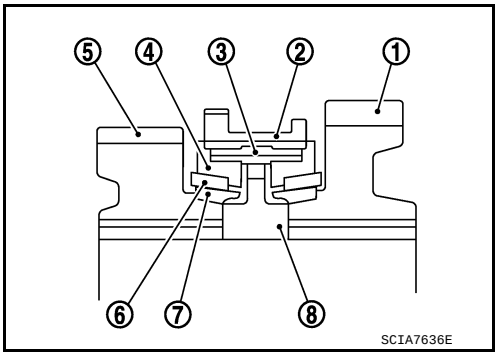
1. 3rd input gear
2. 3rd-4th synchronizer hub assembly
3. 4th input gear
4. 5th input gear
5. 5th-6th synchronizer hub assembly
6. 6th input gear
7. Transaxle case
8. 6th main gear
9. 5th main gear
10. 4th main gear
11. 3rd main gear
12. 2nd main gear
13. 1st-2nd synchronizer hub assembly
14. 1st main gear
15. Differential
16. Final gear
17. Mainshaft
18. Input shaft
19. Clutch housing
20. Reverse idler shaft
21. Reverse input gear
22. Reverse output gear

System Description

INFOID:0000000008765699

TRIPLE-CONE SYNCHRONIZER

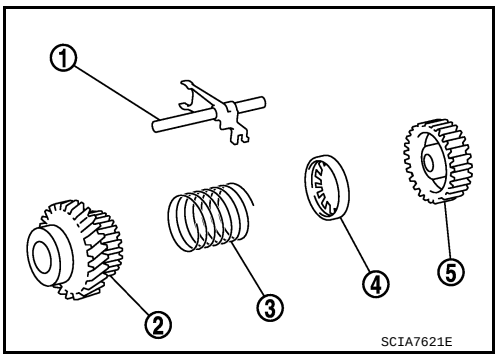
Triple-cone synchronizers are adopted for the 1st and the 2nd gears to reduce operating force of the shifter lever.



1. : 1st main gear
2. : 1st-2nd coupling sleeve
3. : Insert key
4. : Outer baulk ring
5. : 2nd main gear
6. : Synchronizer cone
7. : Inner baulk ring
8. : 1st-2nd synchronizer hub

REVERSE GEAR NOISE PREVENTION FUNCTION (SYNCHRONIZING METHOD)

Reverse gear assembly consists of reverse input gear, return spring, reverse baulk ring, and reverse output gear. When the shifter lever is moved to the reverse position, the construction allows smooth shift operation by stopping the reverse idler shaft rotation by frictional force of synchronizer.



1. : Reverse fork rod
2. : Reverse output gear
3. : Return spring
4. : Reverse baulk ring
5. : Reverse input gear

DTC/CIRCUIT DIAGNOSIS

POSITION SWITCH

BACK-UP LAMP SWITCH

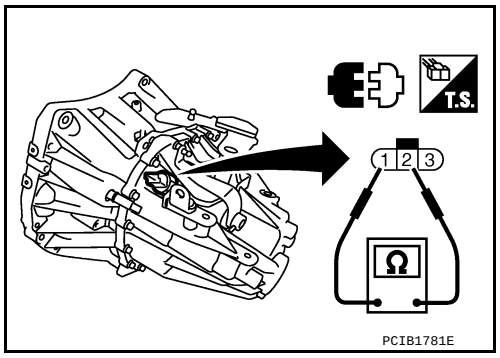
BACK-UP LAMP SWITCH : Component Inspection

INFOID:0000000008765700

1. CHECK BACK-UP LAMP SWITCH

1. Disconnect position switch harness connector. Refer to TM-21, "Removal and Installation".
2. Check continuity between position switch terminals.

Terminals		Condition	Continuity
1	2	Reverse gear position	Existed
		Except reverse gear position	Not existed



Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace position switch. Refer to TM-21, "Removal and Installation".

PARK/NEUTRAL POSITION (PNP) SWITCH

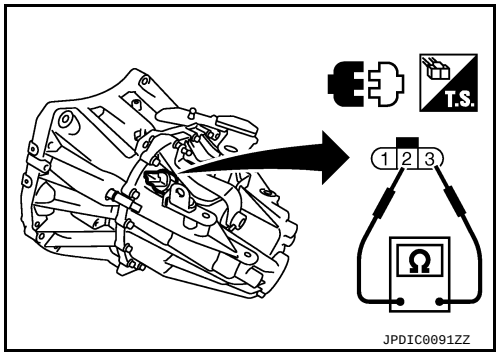
PARK/NEUTRAL POSITION (PNP) SWITCH : Component Inspection

INFOID:0000000008765701

1. CHECK PARK/NEUTRAL POSITION (PNP) SWITCH

1. Disconnect position switch harness connector. Refer to TM-21, "Removal and Installation".
2. Check continuity between position switch terminals.

Terminals		Condition	Continuity
2	3	Neutral gear position	Existed
		Except neutral gear position	Not existed



Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace position switch. Refer to TM-21, "Removal and Installation".

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000008765702

Use the chart below to find the cause of the symptom. The numbers indicate the order of the inspection. If necessary, repair or replace these parts.

SUSPECTED PARTS (Possible cause)		OIL (Oil level is low)	OIL (Wrong oil)	OIL (Oil level is high)	GASKET (Damaged)	OIL SEAL (Worn or damaged)	O-RING (Worn or damaged)	SHIFT CONTROL LINKAGE (Worn)	SHIFT FORK (Worn)	GEAR (Worn or damaged)	BEARING (Worn or damaged)	BAULK RING (Worn or damaged)	INSERT SPRING (Damaged)
Reference			TM-19, "Inspection"			TM-30, "Exploded View"		TM-26, "Inspection"	TM-30, "Exploded View"		TM-30, "Exploded View"		
Symptoms	Noise	1	2							3	3		
	Oil leaks		3	1	2	2	2						
	Hard to shift or will not shift		1	1				2				3	3
	Jumps out of gear							1	2	2			

PERIODIC MAINTENANCE

M/T OIL

Inspection

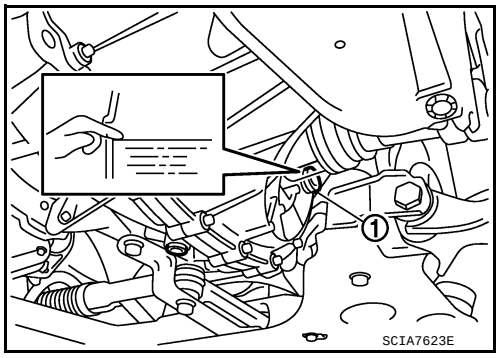
INFOID:0000000008765703

OIL LEAKAGE

Make sure that gear oil is not leaking from transaxle or around it.

OIL LEVEL

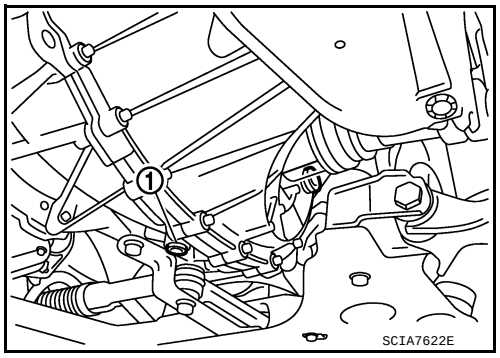
1. Remove filler plug (1) and gasket from transaxle case.
2. Check the oil level from filler plug mounting hole as shown.
   CAUTION:
   Do not start engine while checking oil level.
3. Set a gasket on filler plug and then install it to transaxle case.
   CAUTION:
   Do not reuse gasket.
4. Tighten filler plug to the specified torque. Refer to TM-30, "Exploded View".
   CAUTION:
   Do not overtighten the filler plug as this could cause the transaxle case to crack.



Draining

INFOID:0000000008765704

1. Start engine and let it run to warm up transaxle.
2. Stop engine. Remove drain plug (1) and gasket, using a suitable tool and then drain gear oil.
3. Set a gasket on drain plug and install it to clutch housing, using a suitable tool.
   CAUTION:
   Do not reuse gasket.
4. Tighten drain plug to the specified torque. Refer to TM-30, "Exploded View".
   CAUTION:
   Do not overtighten the filler plug as this could cause the transaxle case to crack.



Refilling

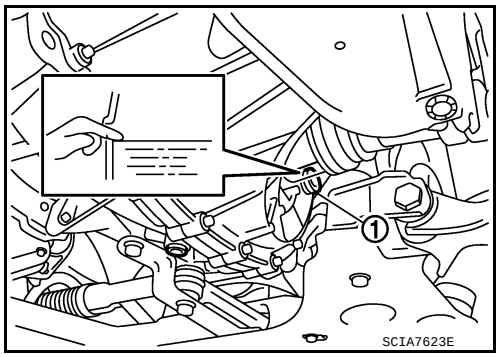
INFOID:0000000008765705

1. Remove filler plug (1) and gasket from transaxle case.
2. Fill with new gear oil until oil level reaches the specified limit at filler plug mounting hole as shown.

   Oil grade and viscosity : **Refer to MA-12, "Fluids and Lubricants".**

   Oil capacity : **Refer to MA-12, "Fluids and Lubricants".**

3. After refilling gear oil, check the oil level. Refer to TM-19, "Inspection".
4. Set a gasket on filler plug and then install it to transaxle case.
   CAUTION:
   Do not reuse gasket.
5. Tighten filler plug to the specified torque. Refer to TM-30, "Exploded View".
   CAUTION:
   Do not overtighten the filler plug as this could cause the transaxle case to crack.



REMOVAL AND INSTALLATION

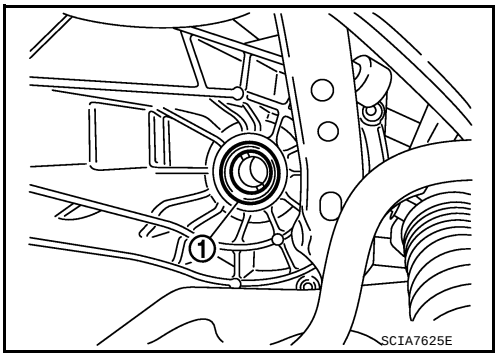
SIDE OIL SEAL

Removal and Installation

INFOID:0000000008765706

REMOVAL

1. Remove front drive shafts. Refer to FAX-17, "6M/T : Removal and Installation (LH)".
2. Remove differential side oil seals (1) from clutch housing and transaxle case using a suitable tool.
   CAUTION:
   Do not damage transaxle case and clutch housing.



INSTALLATION

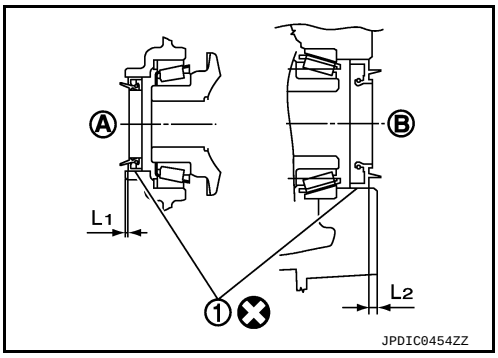
Installation is in the reverse order of removal.

- Install differential side oil seals (1) to clutch housing and transaxle case, using Tools.

Tool number : KV32500QAA
Tool number : B.vi 1666-B

(A) : Transaxle case side
(B) : Clutch housing side

Dimension (L_1) : 1.2 – 1.8 mm (0.047 – 0.071 in)
Dimension (L_2) : 2.7 – 3.3 mm (0.106 – 0.130 in)



CAUTION:

- **Do not incline differential side oil seal.**
- **Do not damage clutch housing and transaxle case.**

Inspection

INFOID:0000000008765707

INSPECTION AFTER INSTALLATION

Check the oil level and oil leaks. Refer to TM-19, "Inspection".

POSITION SWITCH

Removal and Installation

INFOID:0000000008765708

REMOVAL

1. Remove battery. Refer to PG-50, "Removal and Installation (Battery)".
2. Disconnect position switch harness connector.
3. Remove position switch from transaxle case.

INSTALLATION

1. Apply recommended sealant to threads of position switch.
   - **Use Genuine Liquid Gasket, Three Bond 1215 or an equivalent. Refer to GI-21, "Recommended Chemical Products and Sealants".**

   CAUTION:
   Remove old sealant and oil adhering to threads.
2. Install position switch to transaxle case.
3. Tighten position switch to the specified torque. Refer to TM-30, "Exploded View".
4. For the next step and after, install in the reverse order of removal.

Inspection

INFOID:0000000008765709

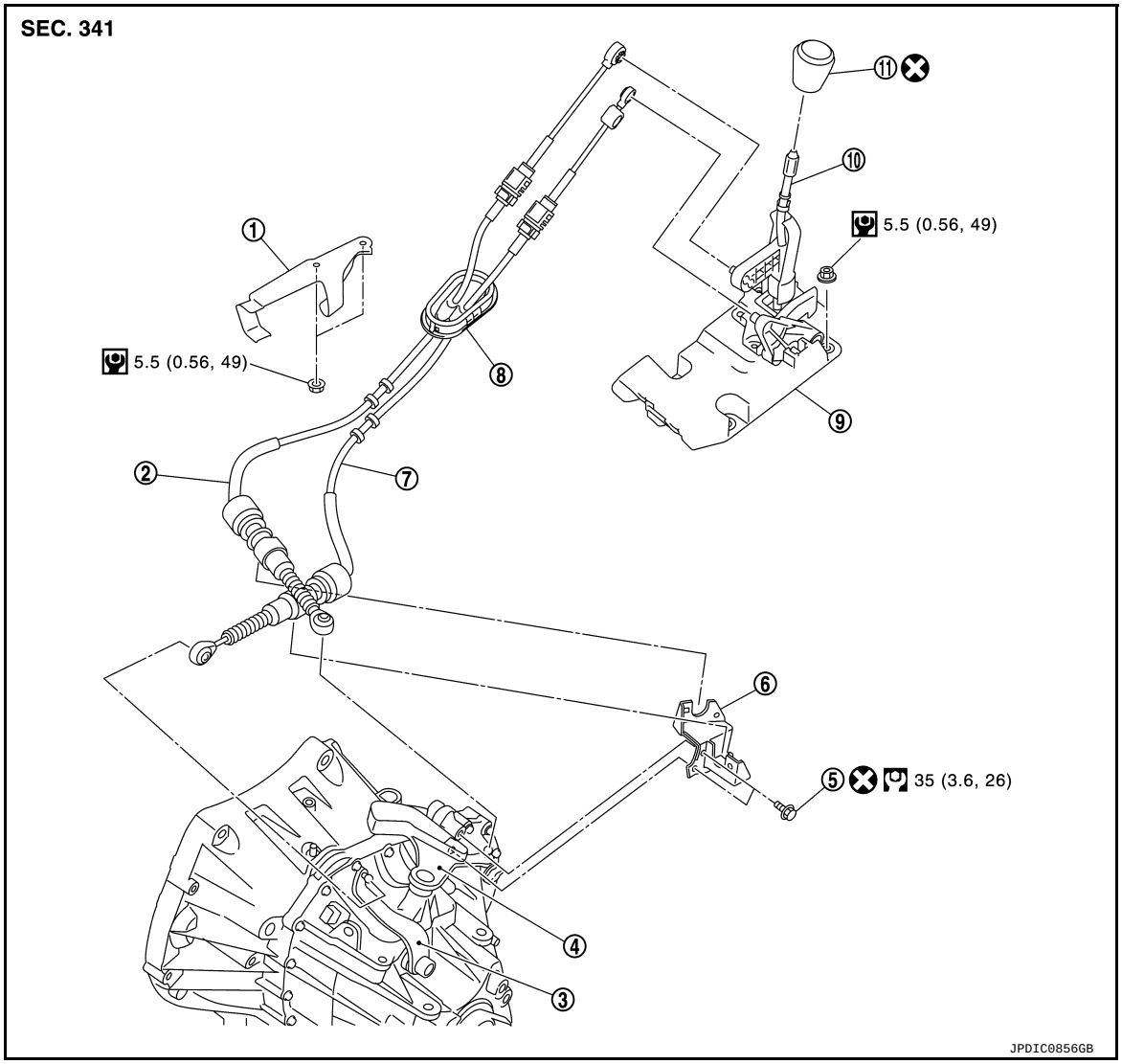
INSPECTION AFTER INSTALLATION

- Check continuity between position switch terminals. Refer to TM-17, "BACK-UP LAMP SWITCH : Component Inspection" (Back-up lamp switch) and TM-17, "PARK/NEUTRAL POSITION (PNP) SWITCH : Component Inspection" (PNP switch).
- Check the oil leaks. Refer to TM-19, "Inspection".

CONTROL LINKAGE

Exploded View

INFOID:0000000008765710



1. Bracket
2. Shifter cable
3. Selector lever
4. Shift lever
5. Tapping bolt
6. M/T cable mounting bracket
7. Selector cable
8. Grommet
9. Shift selector assembly
10. Shift selector
11. Shift selector knob

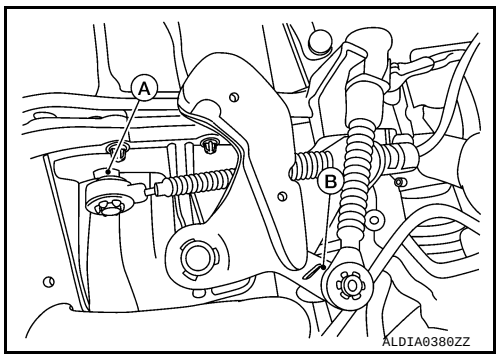
Removal and Installation

INFOID:0000000008765711

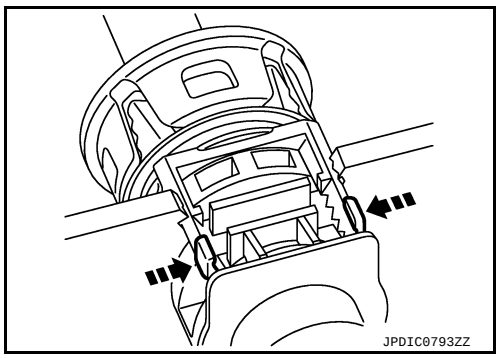
REMOVAL

1. Move the shift selector to the neutral position.
2. Remove air cleaner case assembly. Refer to EM-25, "Removal and Installation".
3. Remove the battery tray and battery support brackets. Refer to PG-51, "Removal and Installation (Battery Bracket)".

4. Disconnect the each cable from the shifter lever A (B) and the selector lever (A) using a suitable tool.



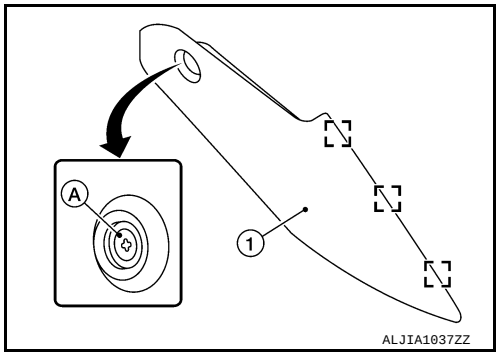
5. While pressing the lock of the selector cable in the direction of the arrow shown, remove the selector cable from the M/T cable bracket.
6. While pressing the lock of the shifter cable in the direction of the arrow shown, remove the shifter cable from the M/T cable bracket.
7. Remove M/T cable bracket from transaxle case.



8. Remove the center console side finishers (1) (LH/RH).

a. Remove the center console side finisher screw (A) (LH/RH).

b. Release the clips using a suitable tool, then remove the center console side finisher.
: Metal clip

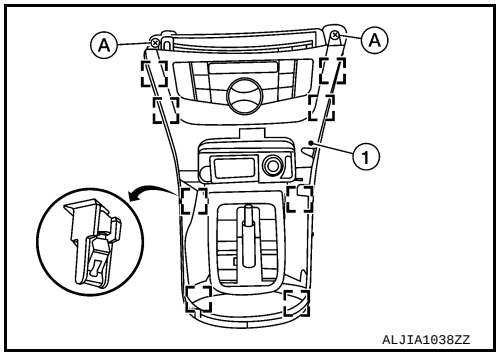


9. Remove the CVT/MT shift selector finisher (1).

a. Remove cluster lid C. Refer to IP-20, "Removal and Installation - Cluster Lid C Lower".

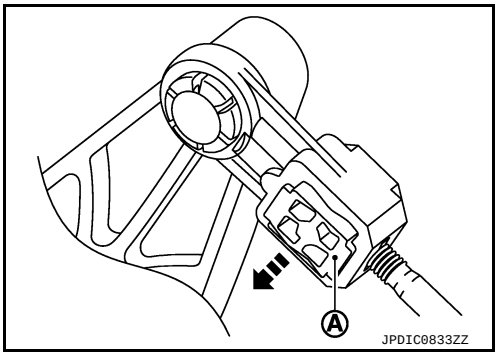
b. Remove the CVT/MT shift selector screws (A).

c. Release the clips using a suitable tool, then remove the CVT/MT shift selector finisher.
: Metal clip

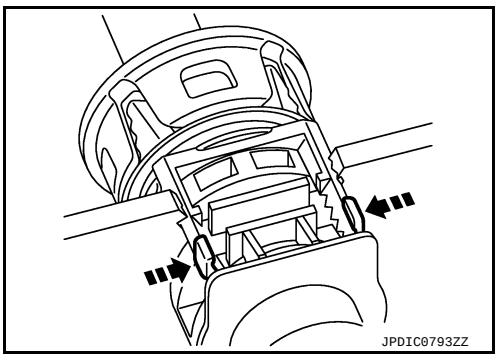


10. Pull out and disconnect the shifter cable from the pin of the shift selector assembly using a suitable tool.

11. Pull up the cable stopper (A) of the selector cable in the direction of the arrow as shown.
12. Pull out and disconnect the selector cable from the pin of the shift selector assembly, using a suitable tool.

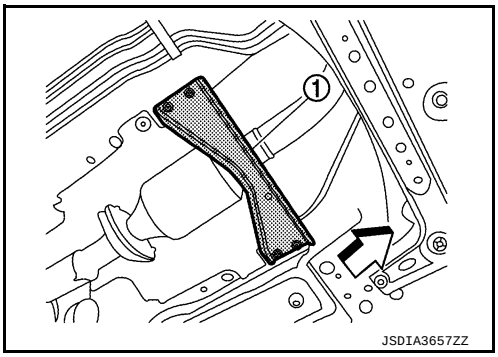


13. While pressing the lock of the selector cable in the direction of the arrow shown, remove the selector cable from the shift selector assembly.
14. While pressing the lock of the shifter cable in the direction of the arrow shown, remove the shifter cable from the shift selector assembly.
15. Remove the shift selector assembly.



16. Remove the tunnel stay (1).

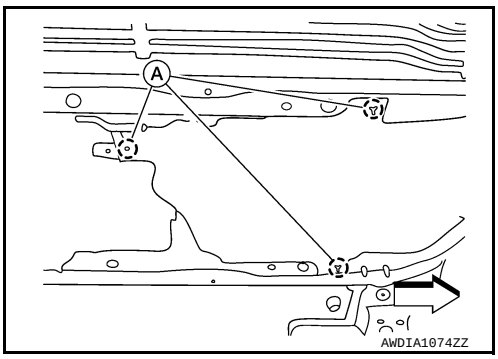
⇦ : Front



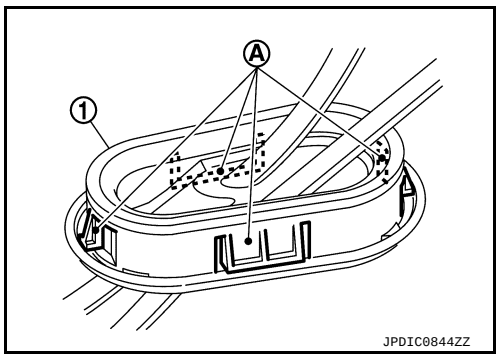
17. Remove exhaust front tube and sub muffler. Refer to EX-5, "Removal and Installation".
18. Remove the heat plate fixtures (A).

⇦ : Front

19. Remove the shift cable and selector cable from the bracket.



20. Disengage the pawls (A) of the grommet (1), and pull downwards to remove.
21. Remove the shifter cable and selector cable from the vehicle.

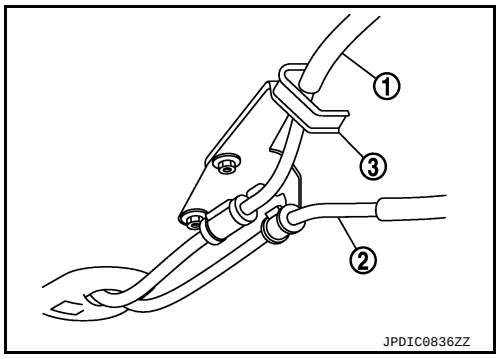


INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

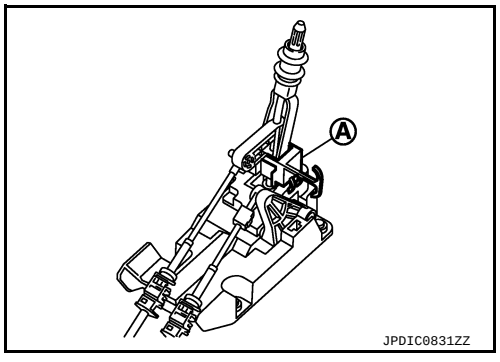
- **Install each cable without causing interference with other parts, a 120 mm (4.72 in)-or-less bend, and a 180-degrees-or-more twist.**
- **Install boot of each cable without causing interference with other parts and a 90-degrees-or-more twist.**
- **Fit boot of to center console assembly the groove on shift selector knob.**
- To install the shift selector knob, press it into the shift selector.
  CAUTION:
  - **Do not reuse shift selector knob.**
  - **Be careful with orientation of shift selector knob.**
- Tapping work for tapping bolts is not applied to new transaxle case. Do not perform tapping by other than screwing tapping bolts because tapping is formed by screwing tapping bolts into transaxle case.
  CAUTION:
  Do not reuse tapping bolt.
- Insert the each cable until it reaches the cable mounting bracket and shift selector assembly.
- Insert the each cable until it reaches the shifter lever A and the selector lever.
- Move the shift selector to the neutral position.
- Install the shifter cable (1) and the selector cable (2) to the bracket (3) as shown.



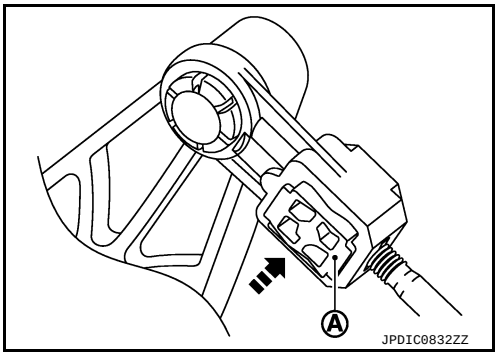
Install the selector cable (the shift selector assembly side), as per the following procedure.

When shift selector is replaced:

1. Install the selector cable to the shift selector assembly.
2. Move the shift selector to the neutral position.
3. Install the shift selector stopper (A) to the shift selector assembly as shown.
   CAUTION:
   Selector cable cannot be adjusted accurately without using the shift selector stopper.
4. Check that the shift selector does not move in a back and forth direction. If it moves, repeat the installation of the shift selector stopper to the shift selector assembly.

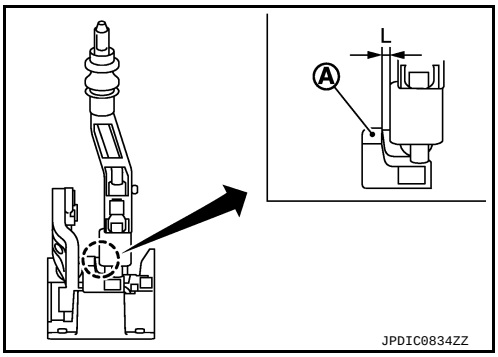


5. Insert the cable stopper (A) until it reaches the selector cable.
6. Remove the shift selector stopper from the shift selector assembly.
7. Move the shift selector to each gear position to check that there are no bindings. If any, repeat the installation of the shift selector stopper to the shift selector assembly.

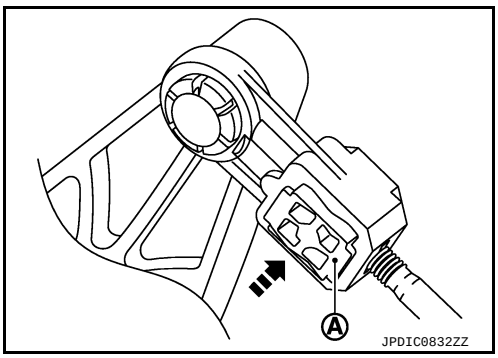


When shift selector assembly is not replaced:
1. Install the selector cable to the shift selector assembly.
2. Move the shift selector to the 4th gear position.
3. Adjust the length (L) between the cable stopper (A) and the shift selector to the standard value.

Length (L) : 3.51 – 4.11 mm (0.1382 – 0.1618 in)



4. Insert the stopper (A) until it reaches the selector cable.
5. Move the shift selector to each gear position to check that there are no bindings. If any, repeat the adjustment of the length between the cable stopper and the shift selector.



Inspection

INFOID:0000000008765712

INSPECTION AFTER INSTALLATION

Shift selector Knob

Check that the shift selector knob is installed in the right position.

Shifter Cable and Selector Cable

- Pull each cable in the removal direction to check that it dose not disconnect from the cable mounting bracket.
- Pull each cable in the removal direction to check that it dose not disconnect from the shift selector assembly.
- Pull grommet in the removal direction to check that it dose not disconnect from the vehicle.

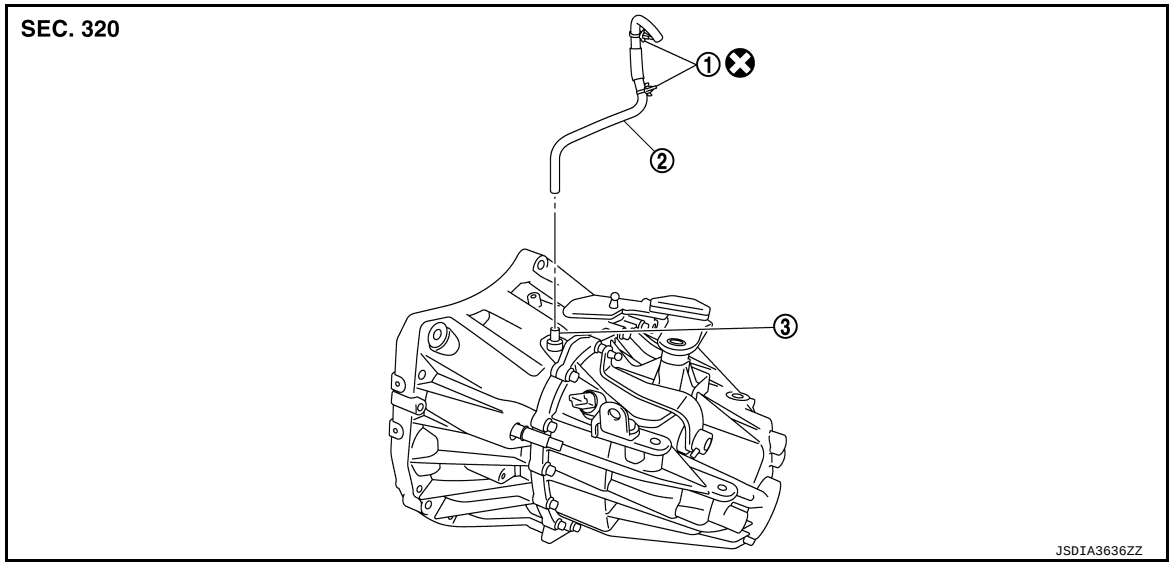
Shift Selector Assembly and shift selector

- Check that there is no tangle, hook, abnormal sound, looseness, and interference when the shifter selector is moved to each position. If there is a malfunction, then repair or replace the malfunctioning part.
- Check that the shifter selector smoothly returns to the neutral position after moving the shift selector from 1st to 2nd gear and moving hands off the shift selector. If there is a malfunction, then repair or replace the malfunctioning part.
- Check that the shift selector smoothly returns to the neutral position after moving the lever from 5th to 6th gear and moving hands off the shift selector. If there is a malfunction, then repair or replace the malfunctioning part.

AIR BREATHER HOSE

Exploded View

INFOID:0000000008765713



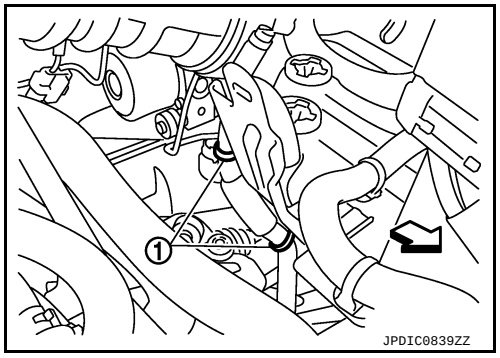
1. Clip
2. Air breather hose
3. 2 way connector

Removal and Installation

INFOID:0000000008765714

REMOVAL

1. Remove air cleaner case assembly. Refer to EM-25, "Removal and Installation".
2. Remove clips (1).



⇦ : Front

3. Remove air breather hose from the 2 way connector.
   CAUTION:
   When removing air breather hose, be sure to hold 2 way connector securely.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

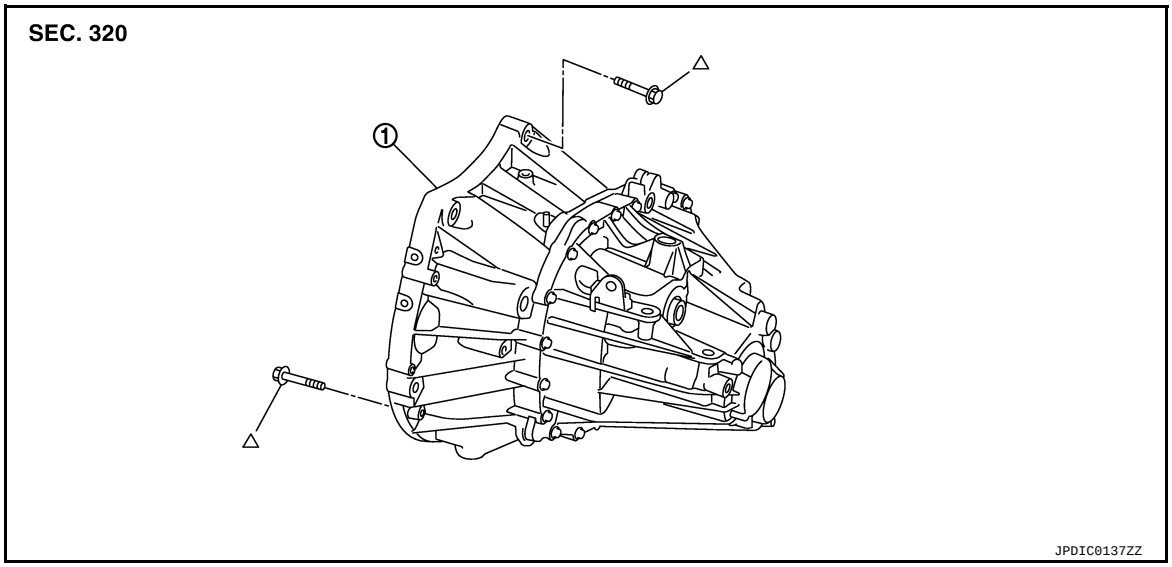
- **Install air breather hose, preventing crush and clogging caused by bending.**
- **Insert the allowance of air breather hose to the spool of the 2 way connector.**
- **Install air breather hose to the 2 way connector with the paint mark faced forward of the vehicle.**
- **Securely engage the clips in the hole.**
- **Do not reuse clip.**

UNIT REMOVAL AND INSTALLATION

TRANSAXLE ASSEMBLY

Exploded View

INFOID:0000000008765715



1. Transaxle assembly
△ Refer to INSTALLATION

Removal and Installation

INFOID:0000000008765716

WARNING:
Do not remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way.
CAUTION:
Do not reuse CSC (Concentric Slave Cylinder). The CSC slides back to the original position every time the transaxle assembly is removed. This action may allow dust or contaminants to gather on the sliding parts and damage a seal of CSC causing clutch fluid leakage.
NOTE:
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

1. Remove the engine and transaxle assembly. Refer to EM-82, "M/T : Removal and Installation".
2. Disconnect the reverse lamp switch harness connector.
3. Remove the bolts that fasten the transaxle assembly and engine assembly.
4. Remove transaxle assembly from the engine assembly.
5. Remove engine mounting bracket (LH). Refer to EM-82, "M/T : Exploded View".
6. Remove CSC. Refer to CL-16, "Removal and Installation".

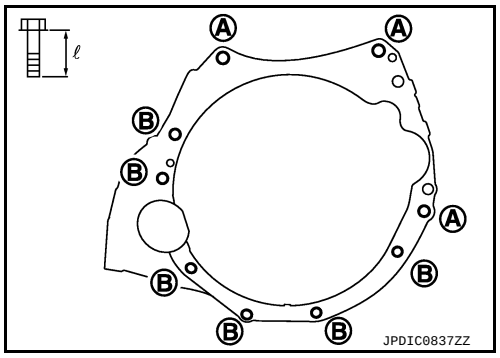
INSTALLATION

Installation is in the reverse order of removal.
CAUTION:
- **When replacing an engine or transaxle you must make sure any dowels are installed correctly during re-assembly**
- **The transaxle assembly must not interfere with the wire harnesses and clutch tube.**

- **Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drive train components.**
- **When installing transaxle assembly, do not bring input shaft into contact with clutch cover.**
- **Tapping work for tapping bolts is not applied to new transaxle case. Do not perform tapping by other than screwing tapping bolts because tapping is formed by screwing tapping bolts into transaxle case.**

Tighten transaxle assembly mounting bolts to the specified torque. As shown viewing from the engine.

Bolt symbol	(A)	(B)
Insertion direction	Transaxle to engine	Engine to transaxle
Quantity	3	6
Bolt length " ℓ " mm (in)	60 (2.36)	50 (1.97)
Tightening torque N·m (kg-m, ft-lb)	62.0 (6.3, 46)	



Inspection

INFOID:0000000008765717

INSPECTION AFTER INSTALLATION

- Check the operation of the control linkage. Refer to TM-26, "Inspection".
- Check the oil level and for oil leaks. Refer to TM-19, "Inspection".

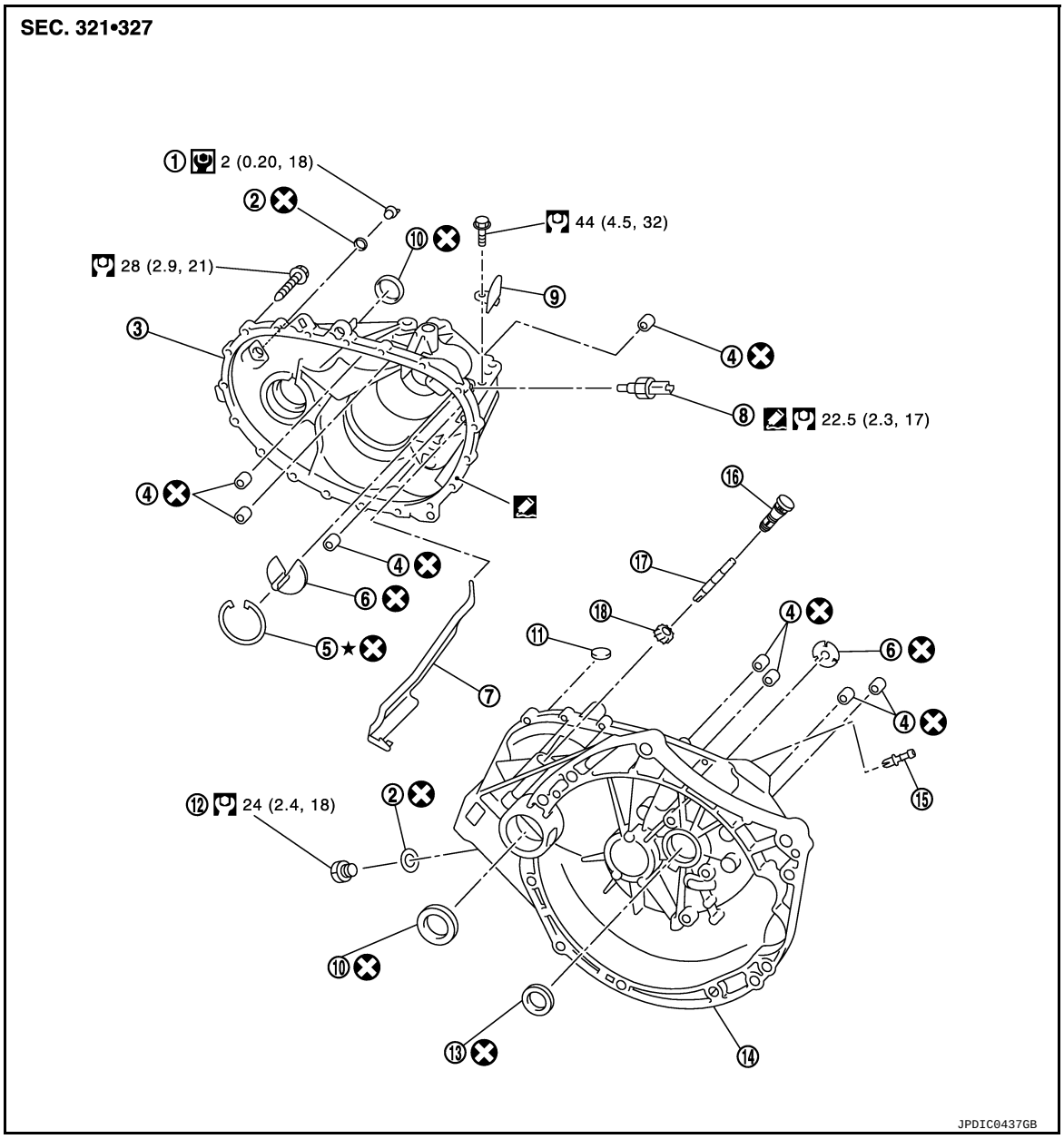
UNIT DISASSEMBLY AND ASSEMBLY

TRANSAXLE ASSEMBLY

Exploded View

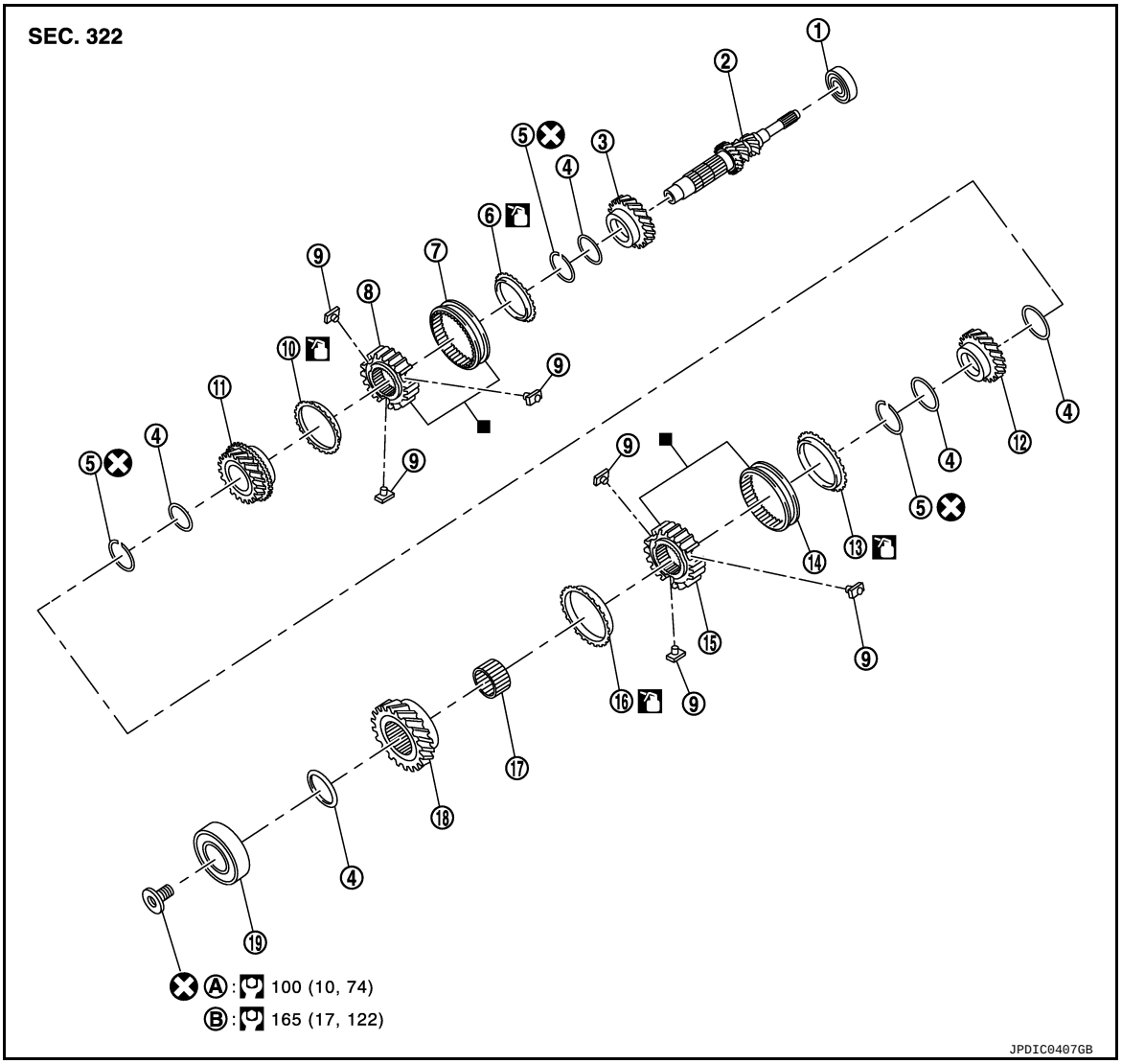
INFOID:0000000008765718

CASE AND HOUSING

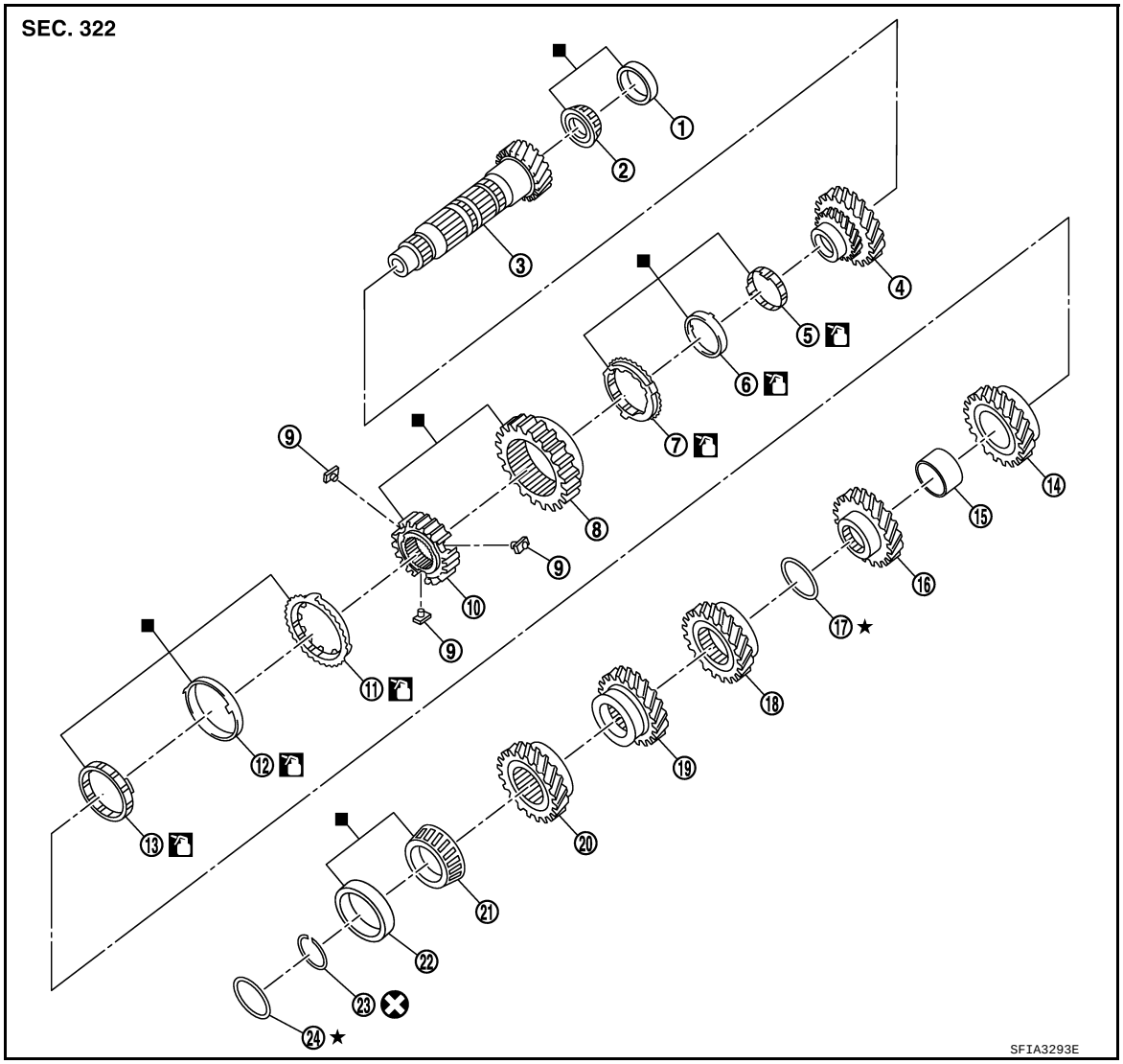


1.	Filler plug	2.	Gasket	3.	Transaxle case
4.	Bushing	5.	Snap ring	6.	Oil channel
7.	Oil gutter	8.	Position switch	9.	Bracket
10.	Differential side oil seal	11.	Magnet	12.	Drain plug
13.	Input shaft oil seal	14.	Clutch housing	15.	2 way connector
16.	Plug	17.	Pinion shaft	18.	Pinion gear

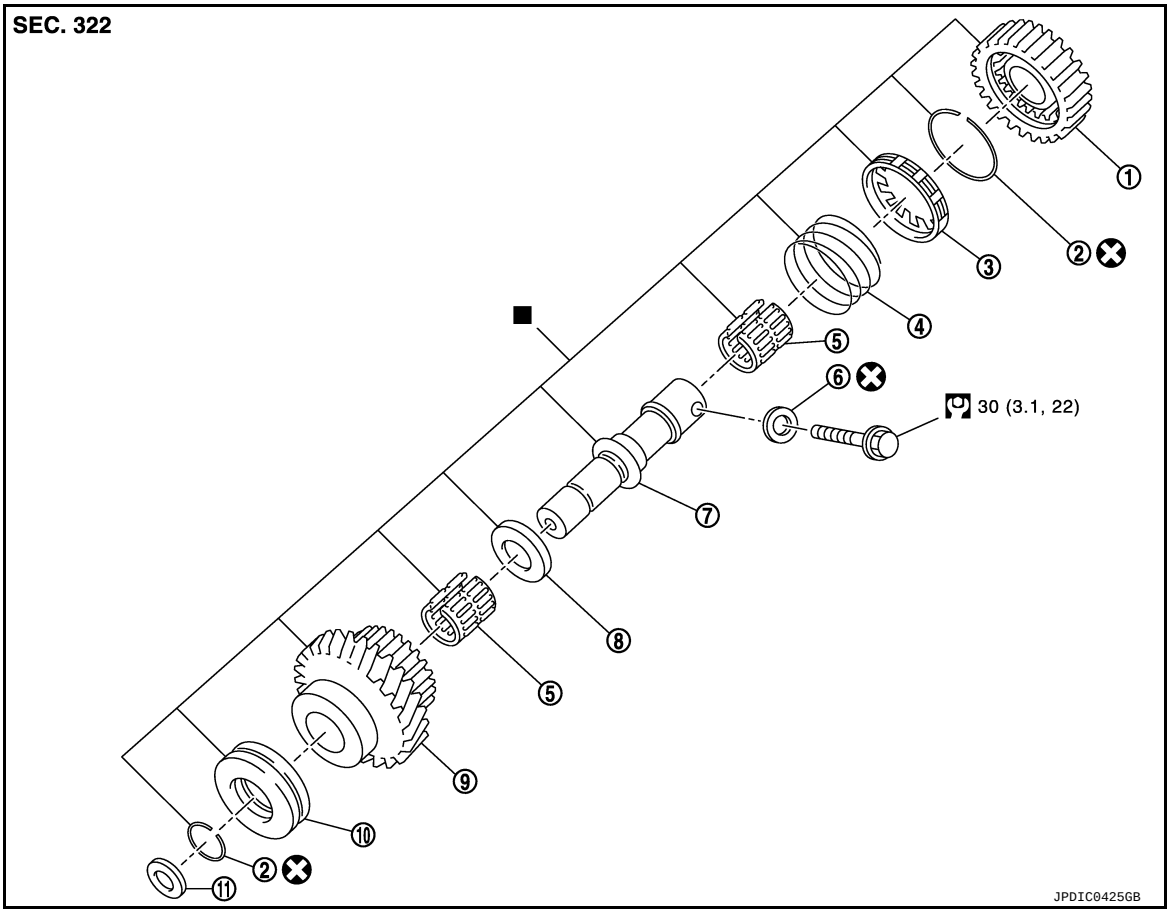
SHAFT AND GEAR



1. Input shaft front bearing
2. Input shaft
3. 3rd input gear
4. Spacer
5. Snap ring
6. 3rd baulk ring
7. 3rd-4th coupling sleeve
8. 3rd-4th synchronizer hub
9. Insert key
10. 4th baulk ring
11. 4th input gear
12. 5th input gear
13. 5th baulk ring
14. 5th-6th coupling sleeve
15. 5th-6th synchronizer hub
16. 6th baulk ring
17. Needle bearing
18. 6th input gear
19. Input shaft rear bearing
A. First step
B. Final step

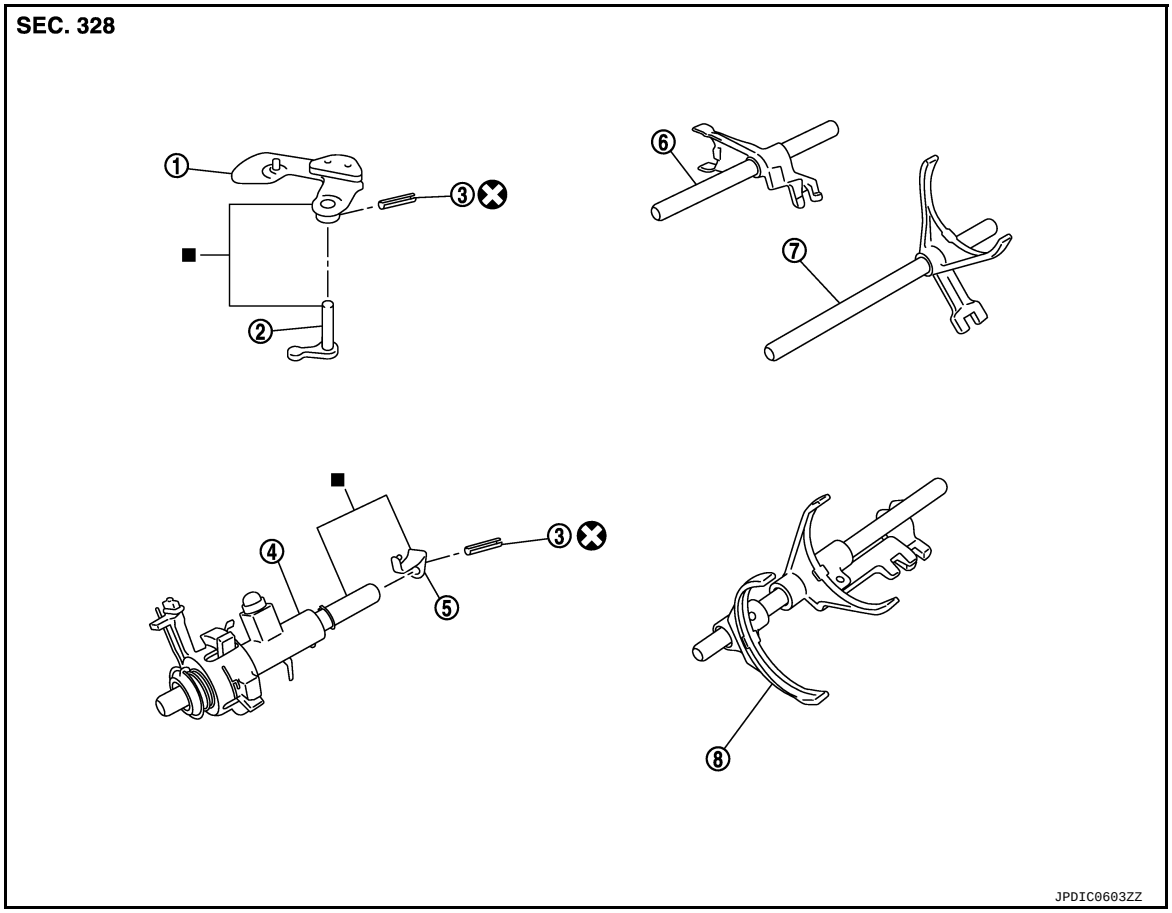


1.	Mainshaft front bearing outer race	2.	Mainshaft front bearing inner race	3.	Mainshaft
4.	1st main gear	5.	1st inner baulk ring	6.	1st synchronizer cone
7.	1st outer baulk ring	8.	1st-2nd coupling sleeve	9.	Insert key
10.	1st-2nd synchronizer hub	11.	2nd outer baulk ring	12.	2nd synchronizer cone
13.	2nd inner baulk ring	14.	2nd main gear	15.	Bushing
16.	3rd main gear	17.	Mainshaft adjusting shim	18.	4th main gear
19.	5th main gear	20.	6th main gear	21.	Mainshaft rear bearing inner race
22.	Mainshaft rear bearing outer race	23.	Snap ring	24.	Mainshaft rear bearing adjusting shim



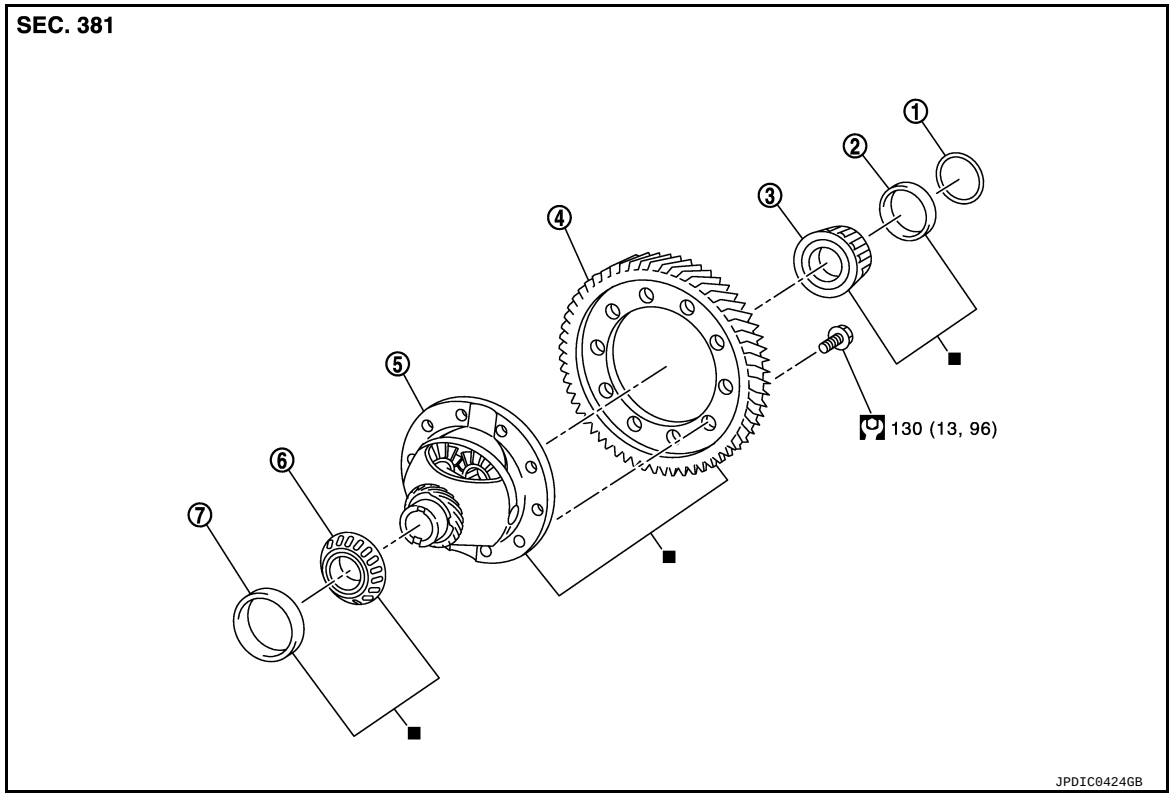
1. Reverse output gear
2. Snap ring
3. Reverse baulk ring
4. Return spring
5. Needle bearing
6. Seal washer
7. Reverse idler shaft
8. Spacer
9. Reverse input gear
10. Lock washer
11. Spring washer

SHIFT FORK AND FORK ROD



1. Shifter lever A
2. Shifter lever B
3. Retaining pin
4. Selector
5. Selector lever
6. Reverse fork rod
7. 1st-2nd fork rod
8. Fork rod

FINAL DRIVE

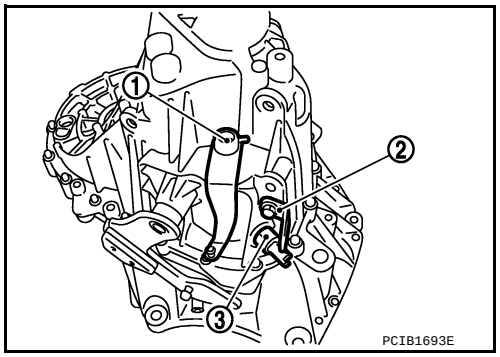


1. Shim
2. Differential side bearing outer race (transaxle case side)
3. Differential side bearing inner race (transaxle case side)
4. Final gear
5. Differential case
6. Differential side bearing inner race (clutch housing side)
7. Differential side bearing outer race (clutch housing side)

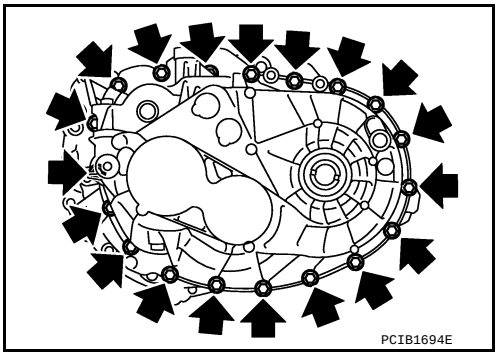
Disassembly

INFOID:0000000008765719

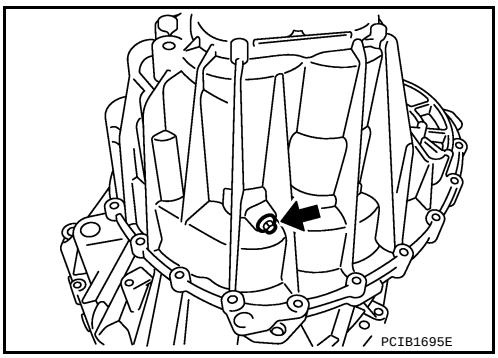
1. Remove drain plug and gasket from clutch housing, using a suitable tool and drain gear oil.
2. Remove filler plug and gasket from transaxle case.
3. Remove selector lever (1) retaining pin with a pin punch to remove selector lever.
4. Remove bracket (2) and position switch (3) from transaxle case.



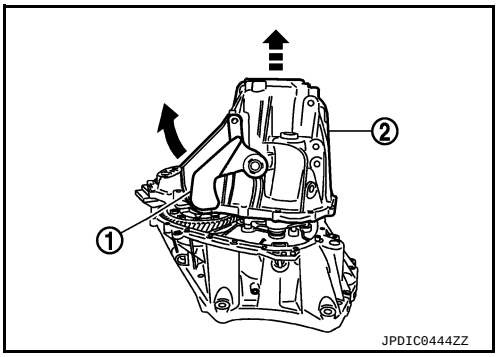
5. Remove transaxle case bolts (⬅).



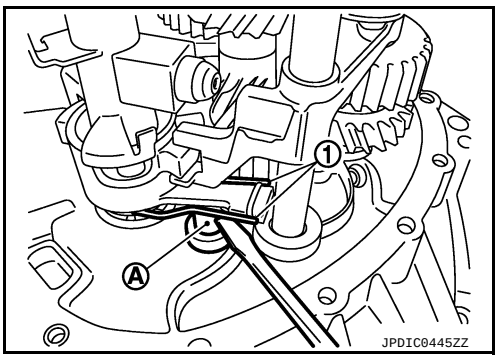
6. Remove reverse idler shaft bolt (⬅) and sealing washer.



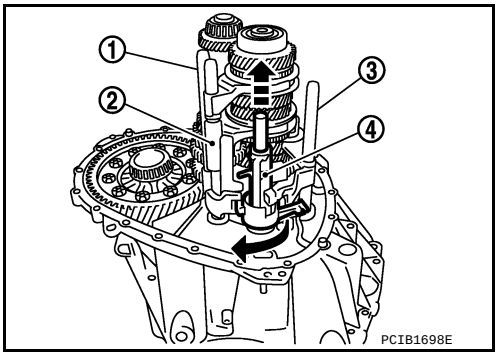
7. Remove transaxle case (2) while rotating shifter lever A (1) in the direction as shown.



8. Remove selector spring (1) from return bushing (A).



9. Shift 1st-2nd fork rod (1), fork rod (2), and reverse fork rod (3) to the neutral position.
10. Remove selector (4) from clutch housing.

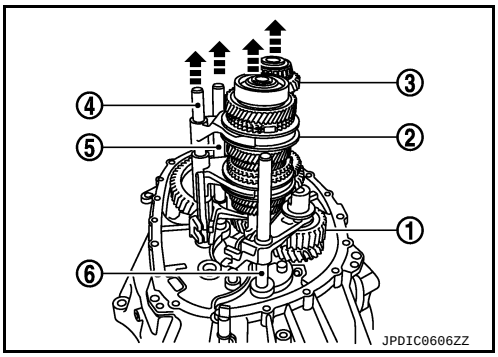


11. Remove reverse idler shaft assembly (1), with the following procedure.

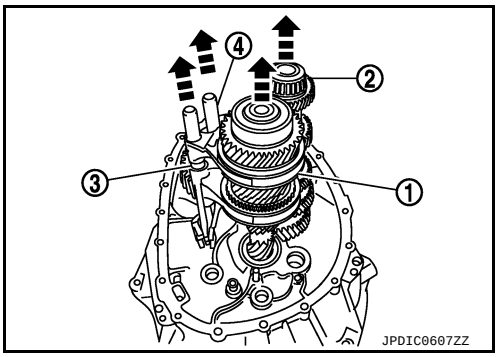
a. Pull up input shaft assembly (2), mainshaft assembly (3), fork rod (4), and 1st-2nd fork rod (5).
NOTE:
It is easier to pull up when shifting each fork rod to each shaft side.

b. Remove reverse idler shaft assembly and reverse fork rod (6) from clutch housing.

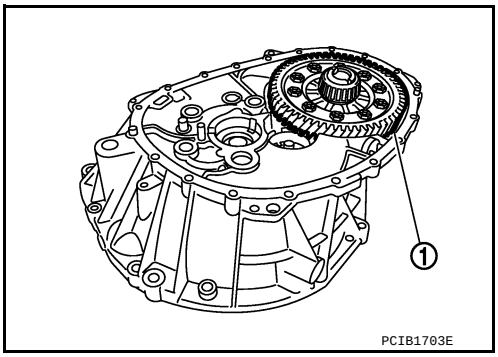
12. Remove spring washer from clutch housing.



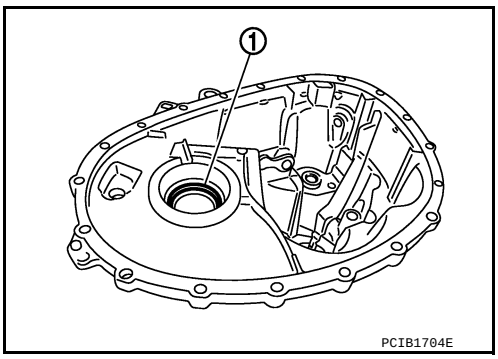
13. Pull up and remove input shaft assembly (1), mainshaft assembly (2), fork rod (3), and 1st-2nd fork rod (4) from clutch housing.
NOTE:
It is easier to pull up when shifting each fork rod to each shaft side.



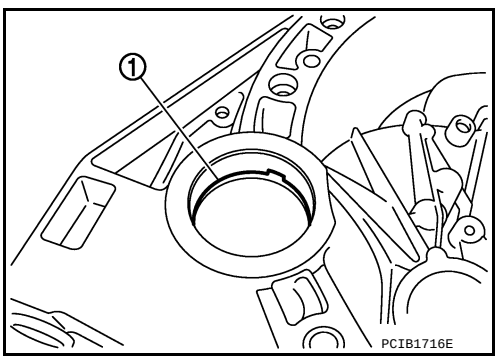
14. Remove final drive assembly (1) from clutch housing.
15. Remove magnet from clutch housing.



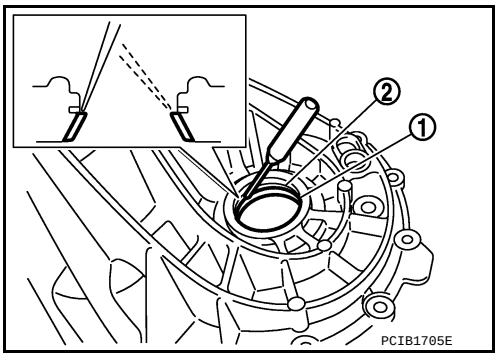
16. Remove differential side oil seals (1) from clutch housing and transaxle case.
CAUTION:
Do not damage clutch housing and transaxle case.
Do not reuse differential side oil seal.



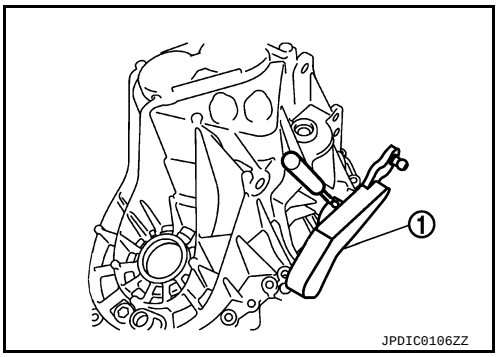
17. Remove differential side bearing outer race (1) from clutch housing, using a suitable tool.
CAUTION:
Do not damage clutch housing.



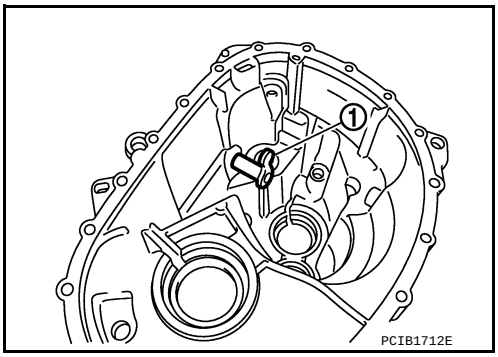
18. Remove differential side bearing outer race (1) from transaxle case, using a suitable tool.
CAUTION:
Do not damage transaxle case.
19. Remove shim (2) from transaxle case.



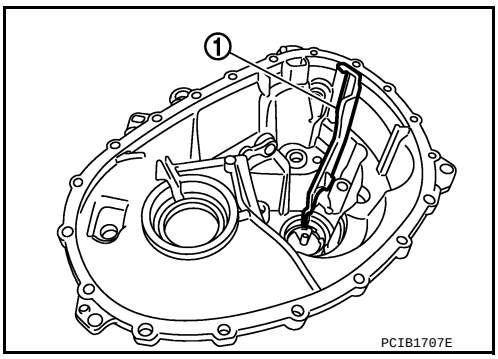
20. Remove shifter lever A (1) retaining pin, using a suitable tool.
CAUTION:
Do not reuse retaining pin.
21. Remove shifter lever A from transaxle case.



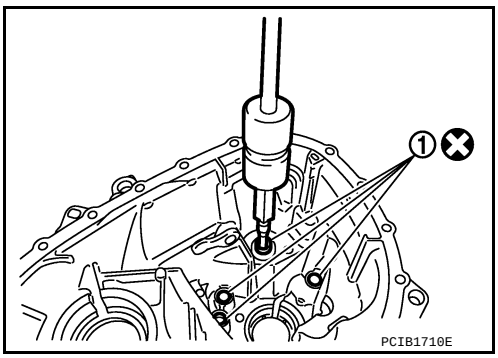
22. Remove shifter lever B (1) from transaxle case.



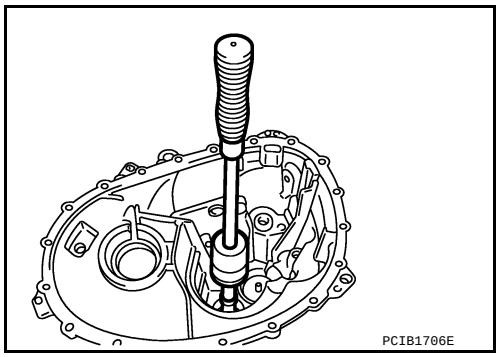
23. Remove oil gutter (1) from transaxle case.



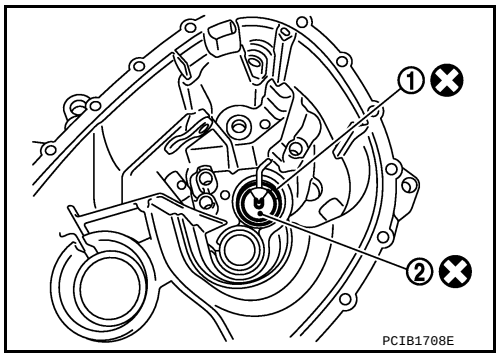
24. Remove bushings (1) from transaxle case, using a suitable tool.
CAUTION:
Do not reuse bushings.



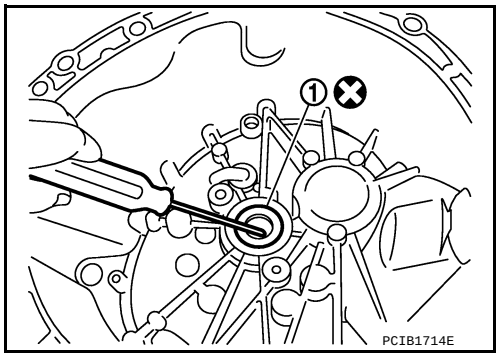
25. Remove mainshaft rear bearing outer race from transaxle case, using a suitable tool.
26. Remove mainshaft rear bearing adjusting shim from transaxle case.



27. Remove snap ring (1) and oil channel (2) from transaxle case.
CAUTION:
Do not reuse snap ring or oil channel.



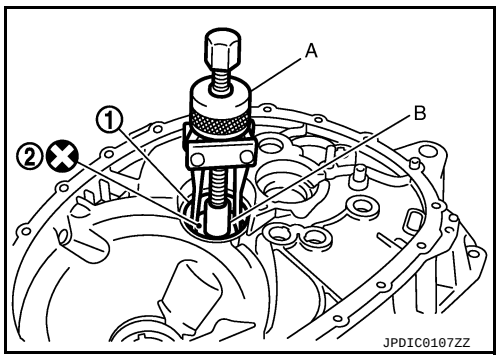
28. Remove input shaft oil seal (1) from clutch housing, using a suitable tool.
CAUTION:
Do not damage clutch housing.
Do not reuse input shaft oil seal.



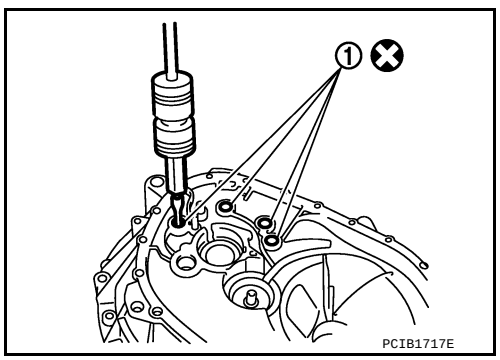
29. Remove mainshaft front bearing outer race (1) from clutch housing, using Tool (A) and a suitable tool (B).

Tool number (A) : KV381054S0 (J-34286)

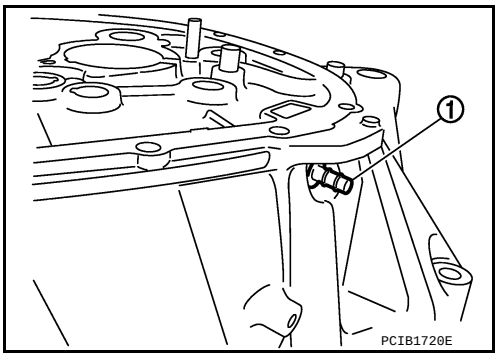
30. Remove oil channel (2) from clutch housing.
CAUTION:
Do not reuse oil channel.



31. Remove bushings (1) from clutch housing, using a suitable tool.
CAUTION:
Do not reuse bushings.



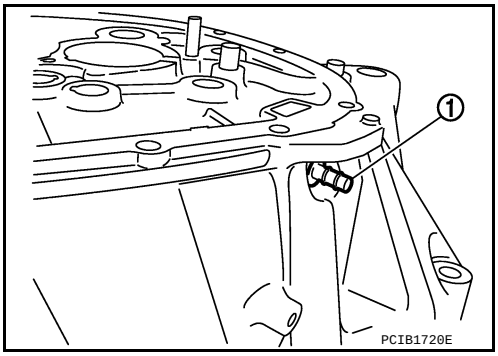
32. Remove 2 way connector (1) from clutch housing.



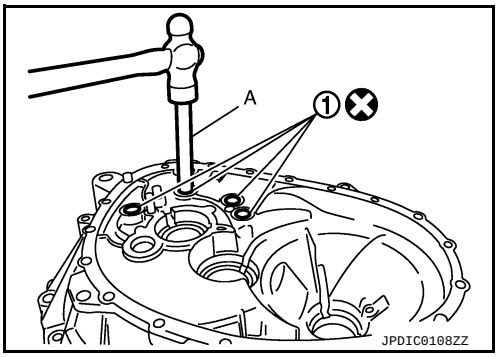
Assembly

INFOID:0000000008765720

1. Install 2 way connector (1) to clutch housing.

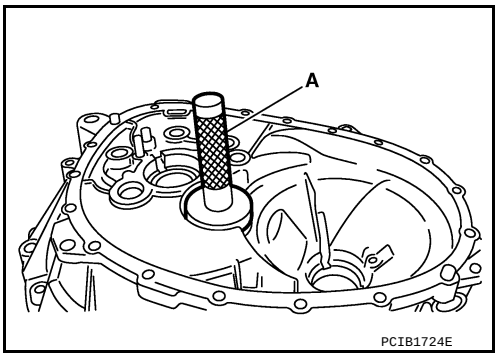


2. Install bushings (1) so that they becomes even with clutch housing surface, using suitable tool (A).
3. Install oil channel to clutch housing.
CAUTION:
Do not reuse oil channel.



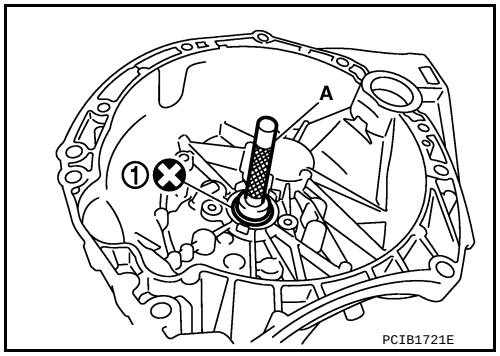
4. Install mainshaft front bearing outer race to clutch housing using Tool (A).
CAUTION:
Replace mainshaft front bearing outer race and mainshaft front bearing inner race as a set.
Do not reuse mainshaft front bearing inner or outer race.

Tool number (A) : KV38100200 (—)



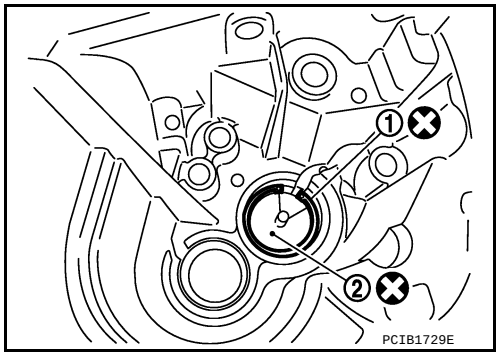
5. Install input shaft oil seal (1) to clutch housing using the Tool (A).

Tool number (A) : ST33220000 (—)



6. Install snap ring (1) and oil channel (2) to transaxle case.

CAUTION:
- **Select and install snap ring that has the same thickness as previous one.**
- **Replace transaxle assembly when replacing transaxle case.**



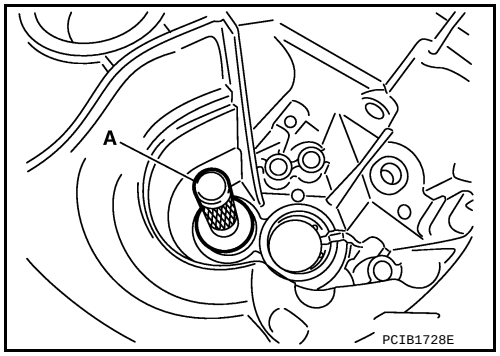
7. Install mainshaft rear bearing adjusting shim to transaxle case.

CAUTION:
Select mainshaft rear bearing adjusting shim, with the following procedure when replacing mainshaft adjusting shim, 6th main gear, 5th main gear, or 4th main gear.
- **Replace mainshaft adjusting shim.**
  - **If new mainshaft adjusting shim is thinner than previous one, offset the thickness difference by selecting thicker mainshaft rear bearing adjusting shim.**
  - **If new mainshaft adjusting shim is thicker than previous one, offset the thickness difference by selecting thinner mainshaft rear bearing adjusting shim.**
- **Replace 6th main gear, 5th main gear, or 4th main gear.**
  - **Measure the thickness of the main gear used before and the new main gear**
  - **Increase the thickness of the mainshaft rear bearing adjusting shim, if the difference is smaller than 0.025 mm (0.0010 in).**
  - **Decrease the thickness of the mainshaft rear bearing adjusting shim, if the difference is greater than 0.025 mm (0.0010 in).**

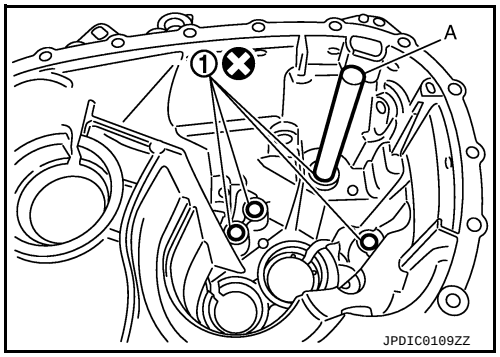
8. Install mainshaft rear bearing outer race to transaxle case using suitable tool (A).

CAUTION:
Replace mainshaft rear bearing outer race and mainshaft rear bearing inner race as a set.

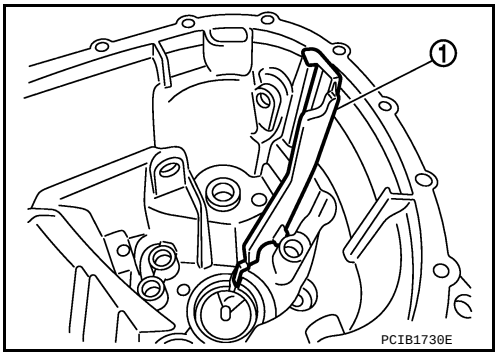
Tool number : KV38100200 (—)



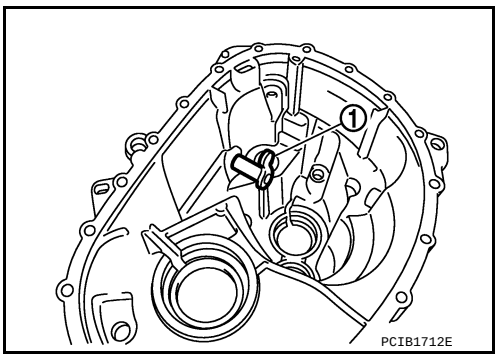
9. Install bushings (1) to transaxle case, using suitable tool (A).



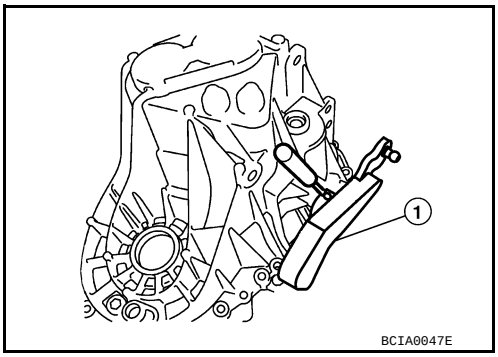
10. Install oil gutter (1) to transaxle case.



11. Install shifter lever B (1) to transaxle case.
CAUTION:
Replace shifter lever A and shifter lever B as a set.
12. Install shifter lever A to transaxle case.
CAUTION:
Replace shifter lever A and shifter lever B as a set.

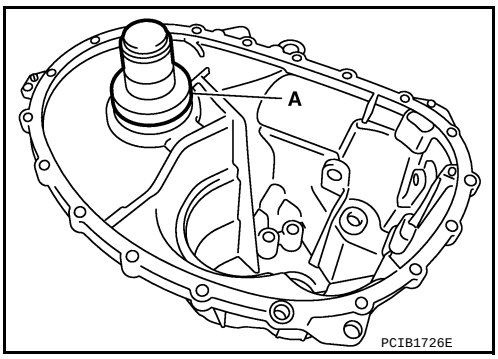


13. Install retaining pin to shifter lever A (1) using a suitable tool.
CAUTION:
Do not reuse retaining pin.
14. Install shim to transaxle case.



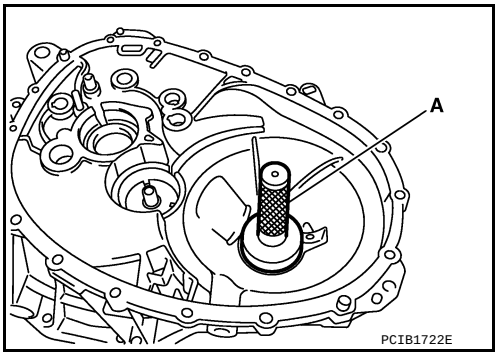
15. Install differential side bearing outer race (transaxle case side) to transaxle case, using Tool (A).
CAUTION:
Replace differential side bearing outer race (transaxle case side) and differential side bearing inner race (transaxle case side) as a set.
Do not reuse differential side bearing inner or outer race.

Tool number : ST33400001 (J-26082)

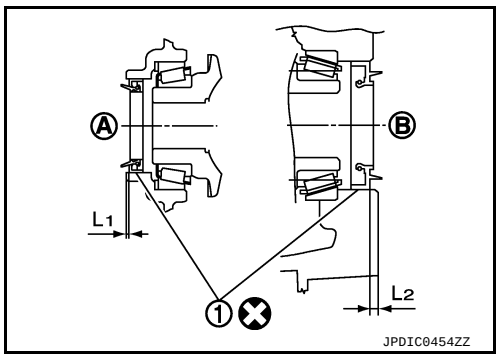


16. Install differential side bearing outer race (clutch housing side) to clutch housing, using Tool (A).
CAUTION:
Replace differential side bearing outer race (clutch housing side) and differential side bearing inner race (clutch housing side) as a set.
Do not reuse differential side bearing inner or outer race.

Tool number : KV38100200 (—)



17. Install differential side oil seals (1) to clutch housing and transaxle case, using Tools.



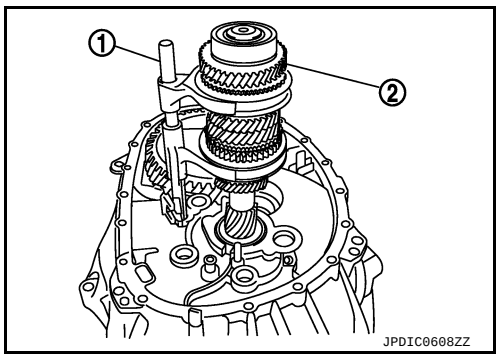
Tool number : KV32500QAA
Tool number : B.vi 1666-B

(A) : Transaxle case side
(B) : Clutch housing side

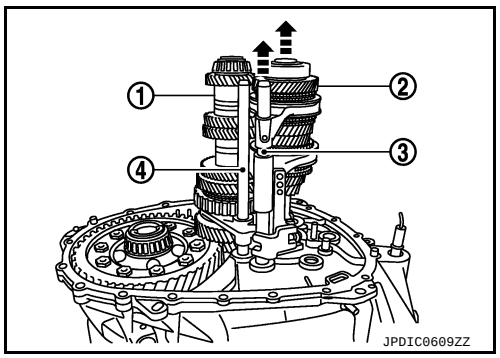
Dimension (L_1) : 1.2 – 1.8 mm (0.047 – 0.071 in)
Dimension (L_2) : 2.7 – 3.3 mm (0.106 – 0.130 in)

CAUTION:
- **Do not incline differential side oil seal.**
- **Do not damage clutch housing and transaxle case.**

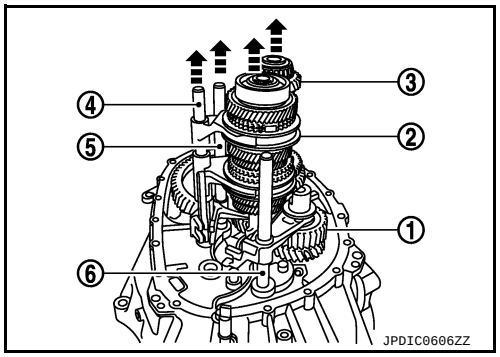
18. Install magnet to clutch housing.
19. Install final drive assembly to clutch housing.
20. Set fork rod (1) to input shaft assembly (2), and then install them to clutch housing.



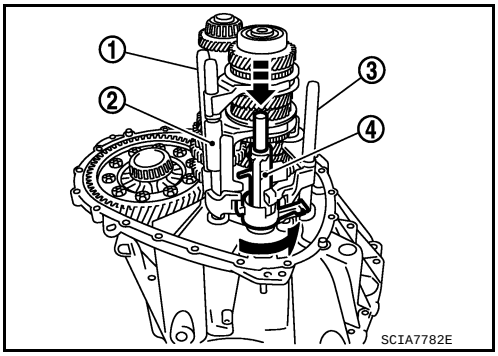
21. Install mainshaft assembly (1), with the following procedure.
a. Pull up input shaft assembly (2) and fork rod (3).
b. Set 1st-2nd fork rod (4) to mainshaft assembly and install them to clutch housing.



22. Install reverse idler shaft assembly (1) with the following procedure.
a. Install spring washer to clutch housing.
b. Pull up input shaft assembly (2), mainshaft assembly (3), fork rod (4), and 1st-2nd fork rod (5).
NOTE:
It is easier to pull up when shifting each fork rod to each shaft side.
c. Set reverse fork rod (6) to reverse idler shaft assembly and install them to clutch housing.

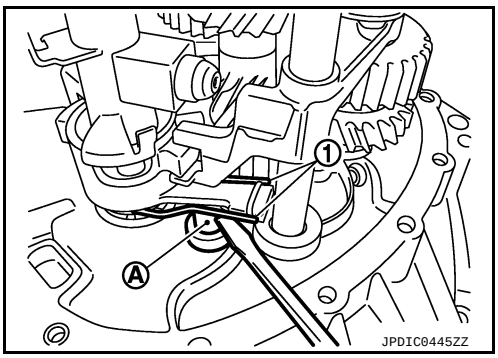


23. Move 1st-2nd fork rod (1), fork rod (2), and reverse fork rod (3) to the neutral position.
24. Install selector (4) to clutch housing.
CAUTION:
Replace selector lever and selector as a set.

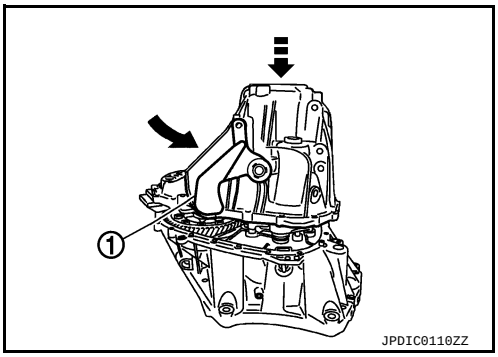


25. Install selector spring (1) to return bushing (A).
26. Apply recommended sealant to the gasket surface of transaxle case.
- **Use Genuine Silicone RTV or an equivalent. Refer to** GI-21, "Recommended Chemical Products and Sealants"**.**

CAUTION:
- **Do not allow old liquid gasket, moisture, oil, or foreign matter to remain on gasket surface.**
- **Check that the gasket surface is not damaged.**
- **Apply sealant bead continuously.**



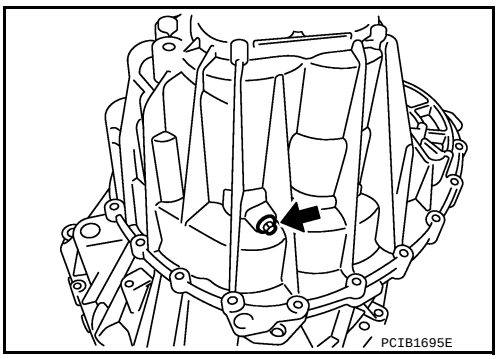
27. Install transaxle case to clutch housing while rotating shifter lever A (1) in the direction as shown.



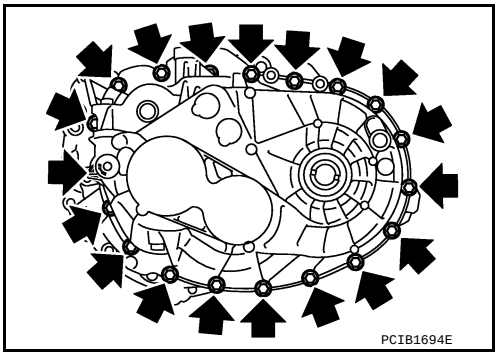
28. Install reverse idler shaft bolt (⬅), as per the following procedure.

a. Install sealing washer to reverse idler shaft bolt, and install reverse idler shaft bolt to transaxle case.
CAUTION:
Do not reuse sealing washer.

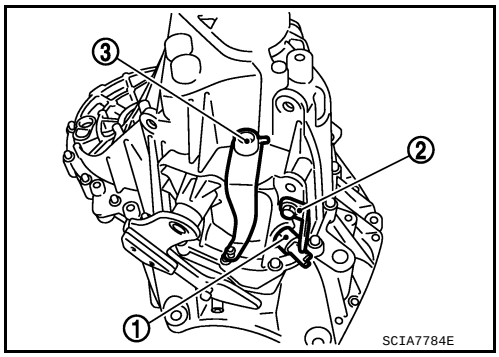
b. Tighten reverse idler shaft bolt to the specified torque.



29. Tighten transaxle case bolts (⬅) to the specified torque.



30. Install position switch (1), with the following procedure.



a. Apply recommended sealant to threads of position switch.
   - **Use Genuine Silicone RTV or an equivalent.Refer to** GI-21, "Recommended Chemical Products and Sealants"**.**

   CAUTION:
   Do not allow old liquid gasket, moisture, oil, or foreign matter to remain on thread.

b. Install position switch to transaxle case and tighten it to the specified torque.

31. Install bracket (2) to transaxle case and tighten bolt to the specified torque.
32. Install selector lever (3) with the following procedure.

a. Install selector lever to transaxle case.

   CAUTION:
   Replace selector lever and selector as a set.

b. Install retaining pin to selector lever using a suitable tool.

   CAUTION:
   Do not reuse retaining pin.

33. Install drain plug with the following procedure.

a. Install gasket to drain plug.

   CAUTION:
   Do not reuse gasket.

b. Install drain plug to clutch housing using a suitable tool.
c. Tighten drain plug to the specified torque.

   CAUTION:
   Do not overtighten drain plug as this could cause the transaxle case to crack.

34. Install filler plug with the following procedure.

a. Install gasket to filler plug and install it to the transaxle case.

   CAUTION:
   Do not reuse gasket.

b. Tighten filler plug to the specified torque.

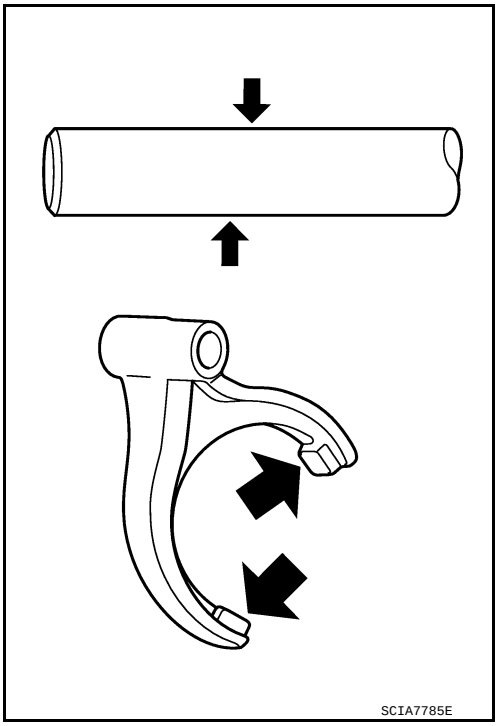
   CAUTION:
   Fill with gear oil before tighten filler plug to the specified torque.
   Do not overtighten the filler plug as this could cause the transaxle case to crack.

Inspection

INFOID:0000000008765721

INSPECTION AFTER DISASSEMBLY

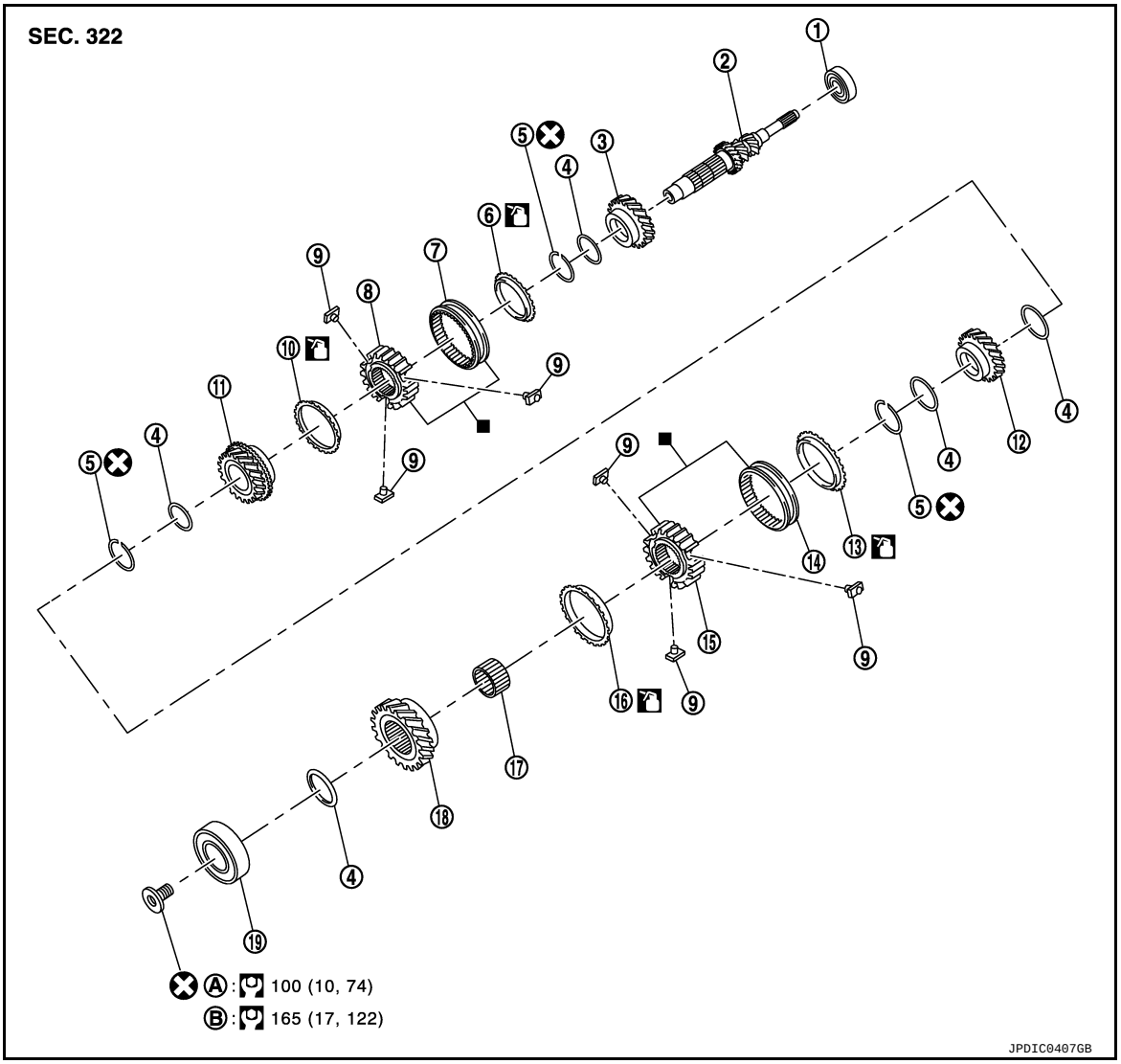
Check contact surface (⬅) and sliding surface (⬅) for excessive wear, uneven wear, bend, and damage. Replace if necessary.



INPUT SHAFT AND GEAR

Exploded View

INFOID:0000000008765722



1.	Input shaft front bearing	2.	Input shaft	3.	3rd input gear
4.	Spacer	5.	Snap ring	6.	3rd baulk ring
7.	3rd-4th coupling sleeve	8.	3rd-4th synchronizer hub	9.	Insert key
10.	4th baulk ring	11.	4th input gear	12.	5th input gear
13.	5th baulk ring	14.	5th-6th coupling sleeve	15.	5th-6th synchronizer hub
16.	6th baulk ring	17.	Needle bearing	18.	6th input gear
19.	Input shaft rear bearing	A.	First step	B.	Final step

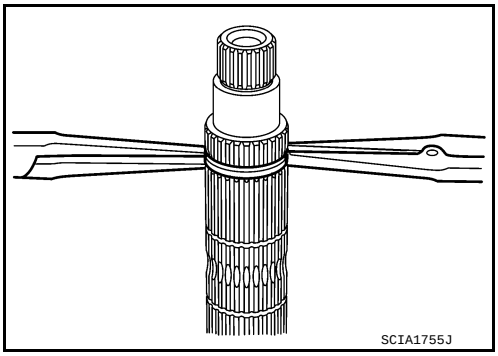
Disassembly

INFOID:0000000008765723

CAUTION:

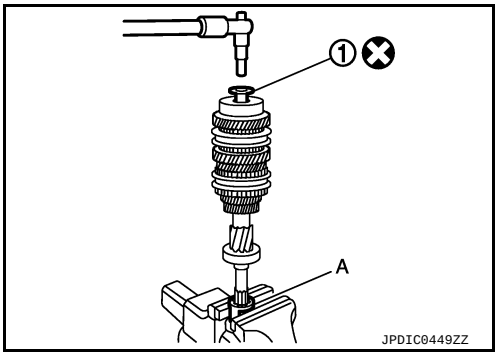
- **Fix input shaft in a vise with back plate, and then remove gears and snap rings.**

- **For removal of snap ring, set snap ring pliers and flat pliers at both sides of snap ring. While expanding snap ring with snap ring pliers, move snap ring with flat pliers.**
- **Disassemble gear components putting direction marks on the parts that do not affect any functions.**



1. Remove input shaft rear bearing bolt (1), using Tool (A).
   CAUTION:
   Do not reuse rear bearing bolt.

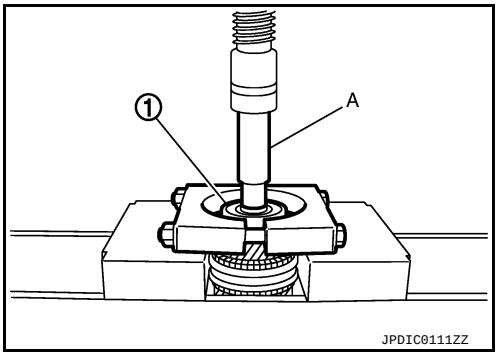
   Tool number (A) : KV32300QAM (—)



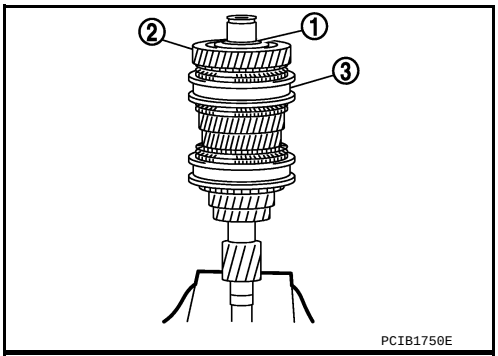
2. Remove input shaft rear bearing (1) with the following procedure.

a. Set a suitable tool to input shaft rear bearing.

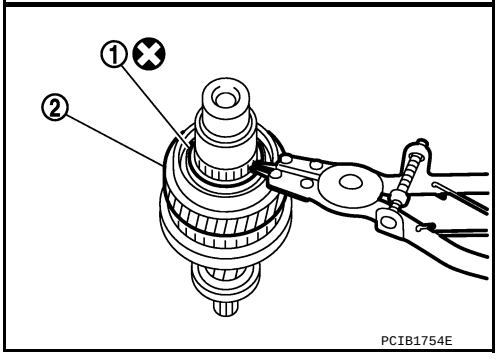
b. Remove input shaft rear bearing using suitable tool (A).



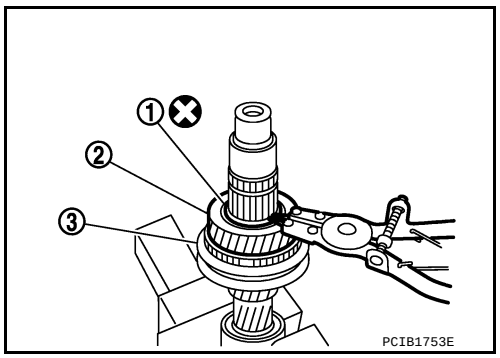
3. Remove spacer (1), 6th input gear (2), needle bearing, 6th baulk ring, and 5th-6th synchronizer hub assembly (3).
4. Remove insert keys and 5th-6th coupling sleeve from 5th-6th synchronizer hub.



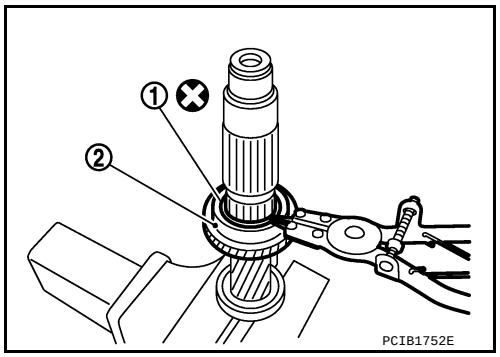
5. Remove snap ring (1).
   CAUTION:
   Do not reuse snap ring.
6. Remove spacer, 5th baulk ring, 5th input gear (2), and spacer.



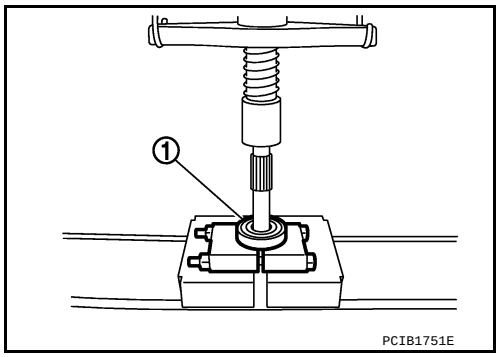
7. Remove snap ring (1).
CAUTION:
Do not reuse snap ring.
8. Remove spacer, 4th input gear (2), 4th baulk ring, and 3rd-4th synchronizer hub assembly (3).
9. Remove insert keys and 3rd-4th coupling sleeve from 3rd-4th synchronizer hub.



10. Remove snap ring (1).
CAUTION:
Do not reuse snap ring.
11. Remove spacer, 3rd baulk ring, and 3rd input gear (2).



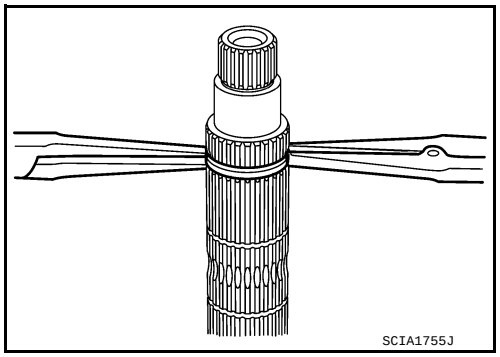
12. Set a suitable tool to input shaft front bearing (1), and then remove input shaft front bearing.



Assembly

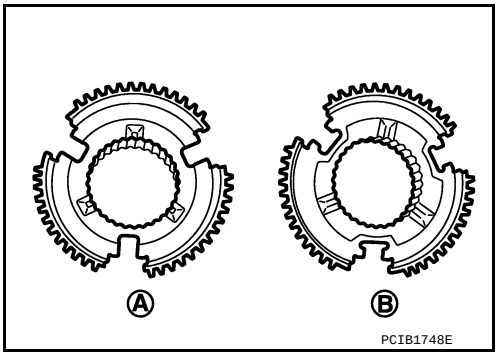
INFOID:0000000008765724

Assembly is in the reverse order of disassembly.
CAUTION:
- **Replace transaxle assembly when replacing input shaft.**
- **For installation of snap ring, set snap ring pliers and flat pliers at both sides of snap ring. While expanding snap ring with snap ring pliers, move snap ring with flat pliers.**
- **Do not reuse snap ring.**
- **Check that snap ring is securely installed in a groove.**
- **Replace 3rd-4th coupling sleeve and 3rd-4th synchronizer hub as a set.**
- **Replace 5th-6th coupling sleeve and 5th-6th synchronizer hub as a set.**



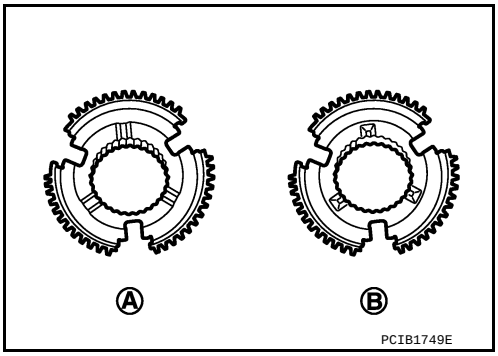
- **Be careful to install 3rd-4th synchronizer hub according to the specified direction.**

(A) : 3rd input gear side
(B) : 4th input gear side

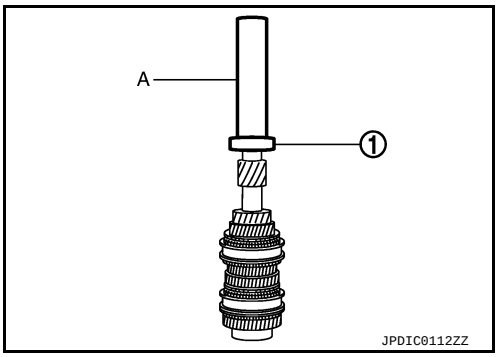


- **Be careful to install 5th-6th synchronizer hub according to the specified direction.**

(A) : 5th input gear side
(B) : 6th input gear side



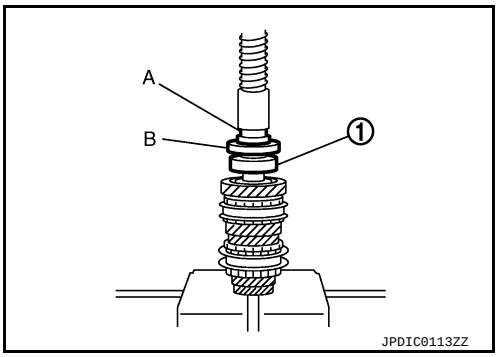
- Install input shaft front bearing (1) using a suitable tool (A).



- Install input shaft rear bearing (1) using a suitable tool (A) and Tool (B).

Tool number : ST36720030 (—)

- Apply gear oil to 3rd baulk ring, 4th baulk ring, 5th baulk ring, and 6th baulk ring.

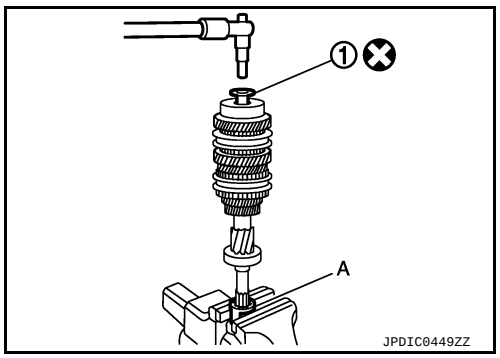


- Install input shaft rear bearing bolt (1), as per the following procedure.

CAUTION:
Follow the procedures. Otherwise it may cause a transaxle malfunction.
Do not reuse rear bearing bolt.

1. Fix the Tool (A) in a vise and set input shaft assembly.

Tool number : KV32300QAM (—)



2. Install input shaft rear bearing bolt and tighten it to the specified torque of the first step.
3. Loosen input shaft rear bearing bolt by a half turn.
4. Tighten input shaft rear bearing bolt to the specified torque of the final step.

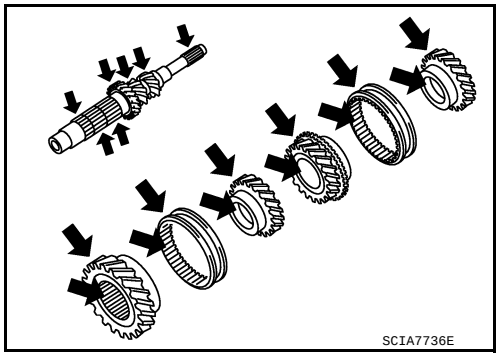
Inspection

INFOID:0000000008765725

INSPECTION AFTER DISASSEMBLY

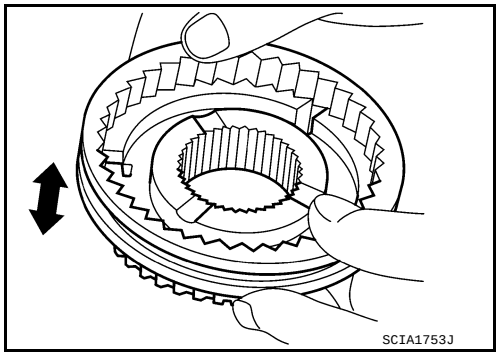
Input Shaft and Gear

Check the following items and replace if necessary.
- Damage, peeling, bend, uneven wear, and distortion of shaft.
- Excessive wear, damage, and peeling of gear.



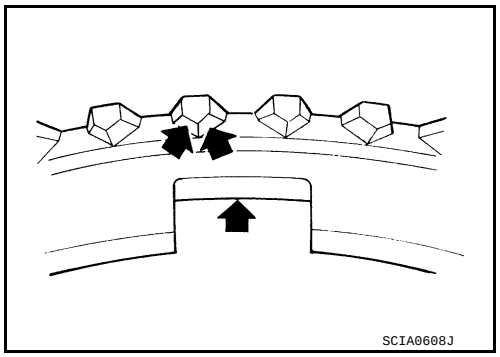
Synchronizer Hub and Coupling Sleeve

Check the following items and replace if necessary.
- Breakage, damage, and unusual wear on contact surface of coupling sleeve, synchronizer hub, and insert key.
- Coupling sleeve and synchronizer hub move smoothly.



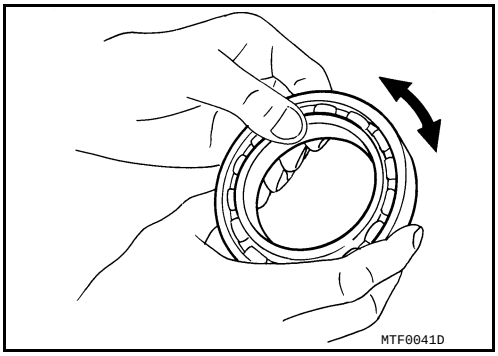
Baulk Ring

Check contact surface of baulk ring cam and insert key for excessive wear, uneven wear, bend, and damage. Replace if necessary.



Bearing

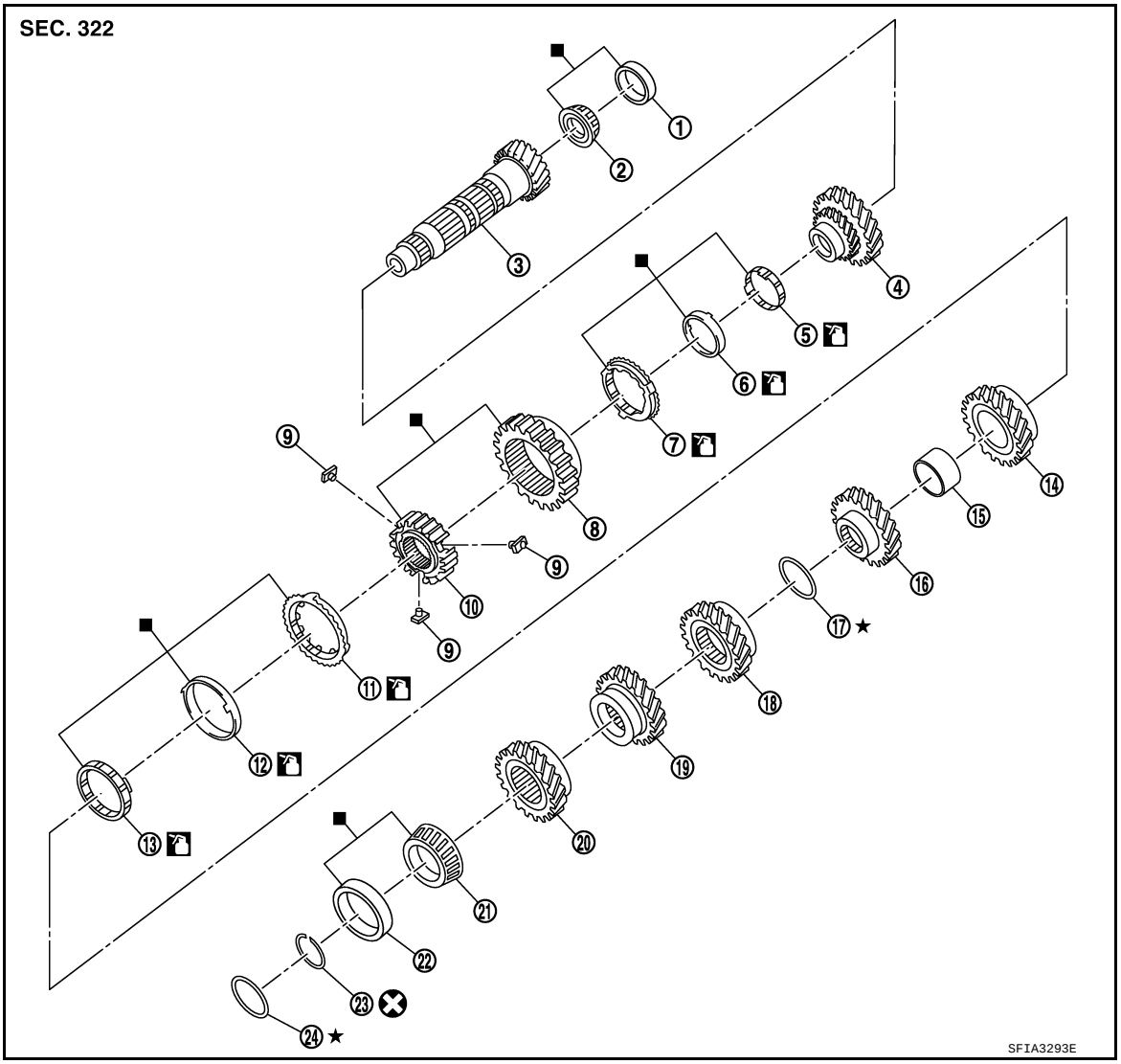
Check bearing for damage and uneven rotation. Replace if necessary.



MAINSHAFT AND GEAR

Exploded View

INFOID:0000000008765726



1.	Mainshaft front bearing outer race	2.	Mainshaft front bearing inner race	3.	Mainshaft
4.	1st main gear	5.	1st inner baulk ring	6.	1st synchronizer cone
7.	1st outer baulk ring	8.	1st-2nd coupling sleeve	9.	Insert key
10.	1st-2nd synchronizer hub	11.	2nd outer baulk ring	12.	2nd synchronizer cone
13.	2nd inner baulk ring	14.	2nd main gear	15.	Bushing
16.	3rd main gear	17.	Mainshaft adjusting shim	18.	4th main gear
19.	5th main gear	20.	6th main gear	21.	Mainshaft rear bearing inner race
22.	Mainshaft rear bearing outer race	23.	Snap ring	24.	Mainshaft rear bearing adjusting shim

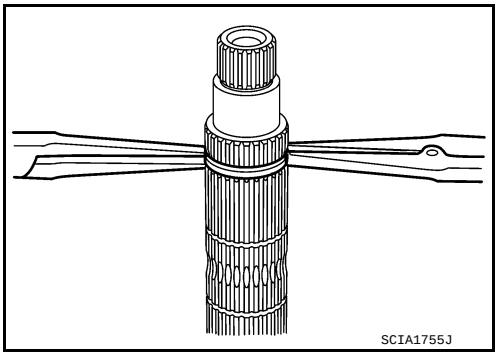
Disassembly

INFOID:0000000008765727

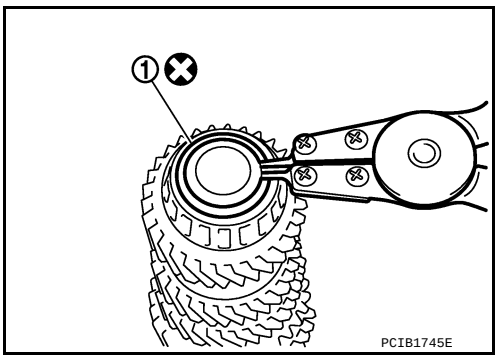
CAUTION:

- **Fix mainshaft in a vise with back plate, and then remove gears and snap rings.**

- **For removal of snap ring, set snap ring pliers and flat pliers at both sides of snap ring. While expanding snap ring with snap ring pliers, move snap ring with flat pliers.**
- **Disassemble gear components putting direction marks on the parts that never affect any functions.**



1. Remove snap ring (1).
   CAUTION:
   Do not reuse snap ring.

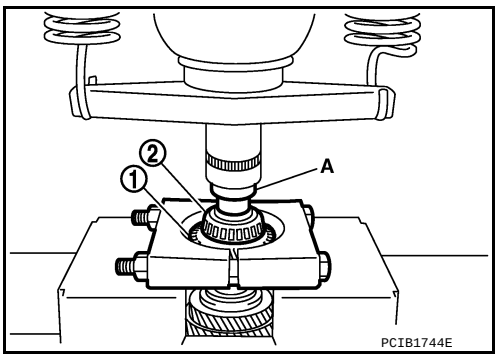


2. Remove 6th main gear (1) and mainshaft rear bearing inner race (2), with the following procedure.

a. Set a suitable tool to 6th main gear.

b. Remove mainshaft rear bearing inner race and 6th main gear, using Tool (A).

Tool number : ST33052000 (—)



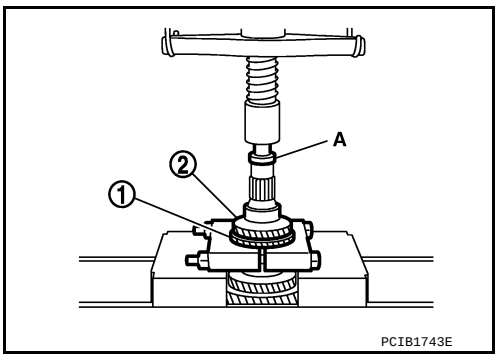
3. Remove 4th main gear (1) and 5th main gear (2) with the following procedure.

a. Set a suitable tool to 4th main gear.

b. Remove 5th main gear and 4th main gear, using Tool (A).

Tool number : ST33052000 (—)

4. Remove mainshaft adjusting shim.

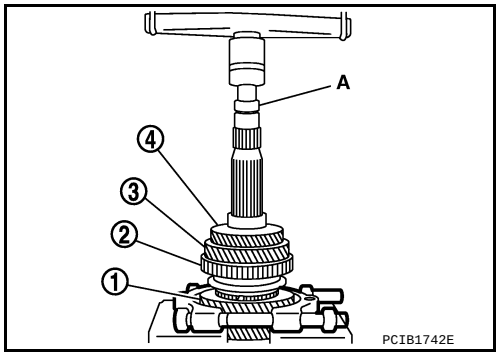


5. Remove 1st main gear (1), 1st-2nd synchronizer hub assembly (2), 2nd main gear (3), and 3rd main gear (4) with the following procedure.

a. Set a suitable tool to 1st main gear.

b. Remove 3rd main gear, busing, 2nd main gear, 2nd inner baulk ring, 2nd synchronizer cone, 2nd outer baulk ring, 1st-2nd synchronizer hub assembly, 1st outer baulk ring, 1st synchronizer cone, 1st inner baulk ring, and 1st main gear using Tool (A).

Tool number : ST33052000 (—)



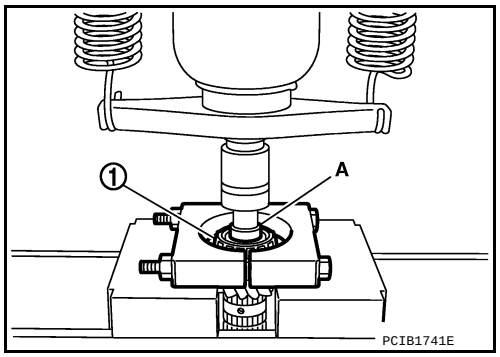
c. Remove insert keys and 1st-2nd coupling sleeve from 1st-2nd synchronizer hub.

6. Remove mainshaft front bearing inner race (1) with the following procedure.

a. Set a suitable tool to mainshaft front bearing inner race.

b. Remove mainshaft front bearing inner race using Tool (A).

Tool number : ST33052000 (—)

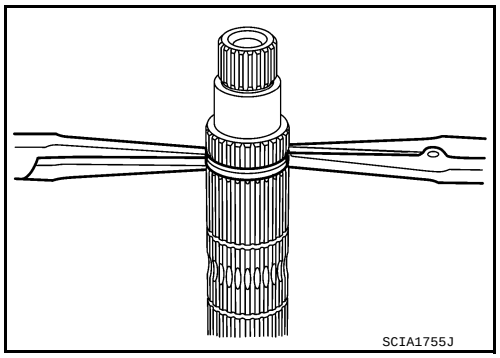


Assembly

INFOID:0000000008765728

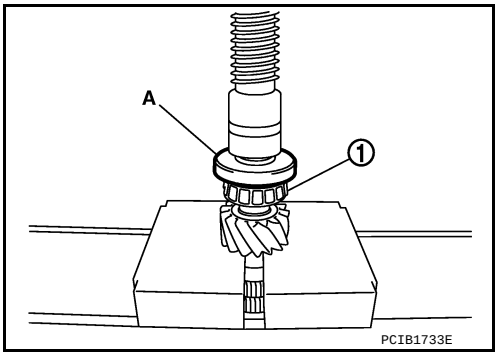
CAUTION:

- **Select mainshaft rear bearing adjusting shim, as per the following procedure when replacing mainshaft adjusting shim, 6th main gear, 5th main gear, or 4th main gear.**
- **Replace mainshaft adjusting shim.**
- **If new mainshaft adjusting shim is thinner than previous one, offset the thickness difference by selecting thicker mainshaft rear bearing adjusting shim.**
- **If new mainshaft adjusting shim is thicker than previous one, offset the thickness difference by selecting thinner mainshaft rear bearing adjusting shim.**
- **Replace 6th main gear, 5th main gear, or 4th main gear.**
- **Measure the thickness of the main gear used before and the new main gear**
- **Increase the thickness of the mainshaft rear bearing adjusting shim, if the difference is smaller than 0.025 mm (0.0010 in).**
- **Replace transaxle assembly when replacing mainshaft.**
- **For installation of snap ring, set snap ring pliers and flat pliers at both sides of snap ring. While expanding snap ring with snap ring pliers, move snap ring with flat pliers.**
- **Do not reuse snap ring.**



1. Install mainshaft front bearing inner race (1) using Tool (A).
CAUTION:
Replace mainshaft front bearing outer race and mainshaft front bearing inner race as a set.
Do not reuse mainshaft front bearing inner or outer race.

Tool number : ST36720030 (—)

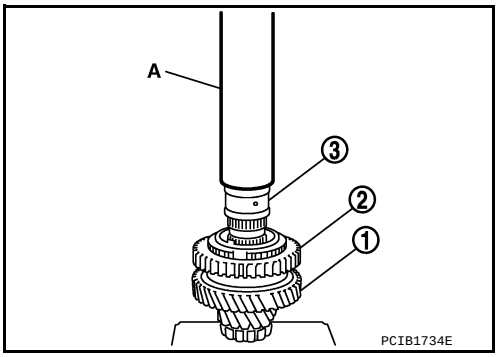


2. Apply gear oil to 1st inner baulk ring, 1st synchronizer cone, 1st outer baulk ring, 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring.
CAUTION:
- **Replace 1st inner baulk ring, 1st synchronizer cone, and 1st outer baulk ring as a set.**
- **Replace 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring as a set.**

3. Install insert keys and 1st-2nd coupling sleeve to 1st-2nd synchronizer hub.
CAUTION:
Replace 1st-2nd synchronizer hub and 1st-2nd coupling sleeve as a set.

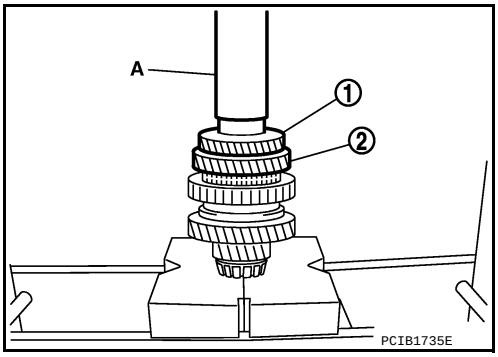
4. Install 1st main gear (1), 1st inner baulk ring, 1st synchronizer cone, 1st outer baulk ring, 1st-2nd synchronizer hub assembly (2), 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring.
5. Install bushing (3) using Tool (A).

Tool number : ST32102700 (—)



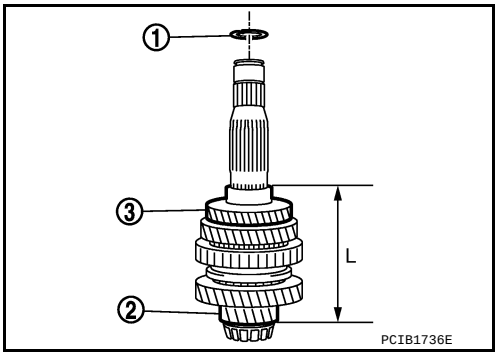
6. Install 3rd main gear (1) and 2nd main gear (2) using Tool (A).

Tool number : KV32102700 (—)



7. Measure dimension (L) as shown in the figure. Select mainshaft adjusting shim (1) according to the following list, and then install it to mainshaft.

(2) : Mainshaft
(3) : 3rd main gear



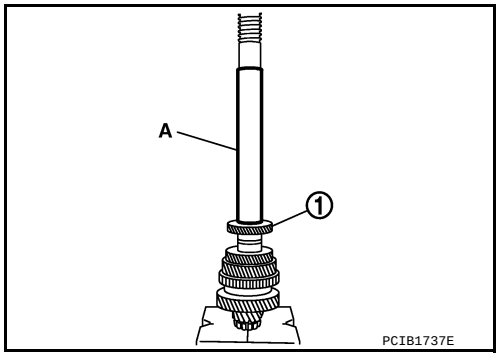
Unit: mm (in)

Dimension (L)	Mainshaft adjusting shim thickness
147.690 – 147.666 (5.8146 – 5.8136)	1.500 (0.0591)
147.665 – 147.641 (5.8136 – 5.8126)	1.525 (0.0600)
147.640 – 147.616 (5.8126 – 5.8116)	1.550 (0.0610)
147.615 – 147.591 (5.8116 – 5.8107)	1.575 (0.0620)
147.590 – 147.566 (5.8106 – 5.8097)	1.600 (0.0630)
147.565 – 147.541 (5.8096 – 5.8087)	1.625 (0.0640)
147.540 – 147.516 (5.8086 – 5.8077)	1.650 (0.0650)

Dimension (L)	Mainshaft adjusting shim thickness
147.515 – 147.491 (5.8077 – 5.8067)	1.675 (0.0659)
147.490 – 147.466 (5.8067 – 5.8057)	1.700 (0.0669)
147.465 – 147.441 (5.8057 – 5.8048)	1.725 (0.0679)
147.440 – 147.416 (5.8047 – 5.8038)	1.750 (0.0689)
147.415 – 147.391 (5.8037 – 5.8028)	1.775 (0.0699)

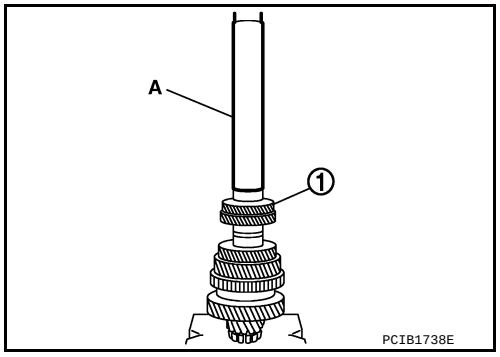
8. Install 4th main gear (1) using Tool (A).

Tool number : KV32102700 (—)



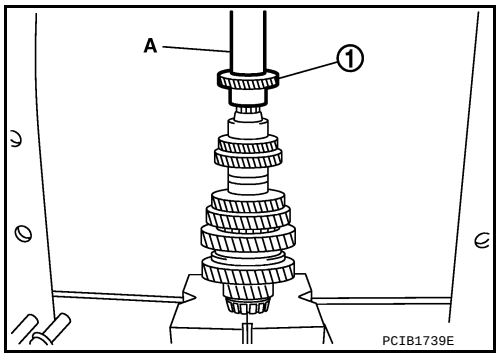
9. Install 5th main gear (1) using Tool (A).

Tool number : KV32102700 (—)



10. Install 6th main gear (1) using Tool (A).

Tool number : KV32102700 (—)



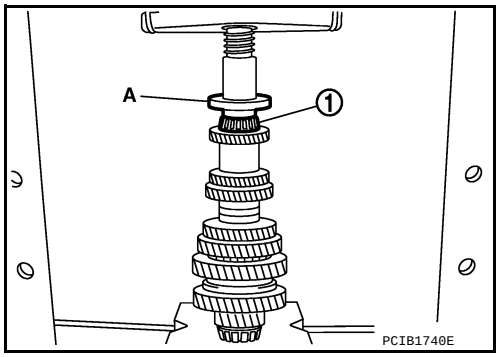
11. Install mainshaft rear bearing inner race (1) using Tool (A).

CAUTION:
Replace mainshaft rear bearing inner race and mainshaft rear bearing outer race as a set.

Tool number : ST30901000 (J-26010-01)

12. Install snap ring.

CAUTION:
Do not reuse snap ring.



Inspection

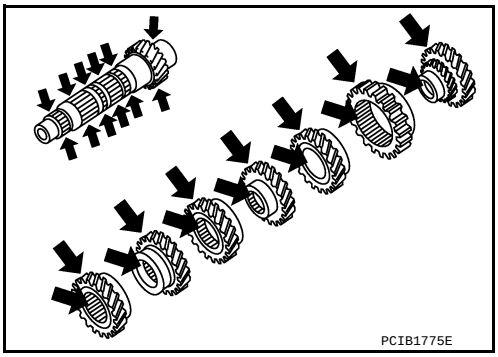
INFOID:0000000008765729

INSPECTION AFTER DISASSEMBLY

Mainshaft and Gear

Check the following items and replace if necessary.

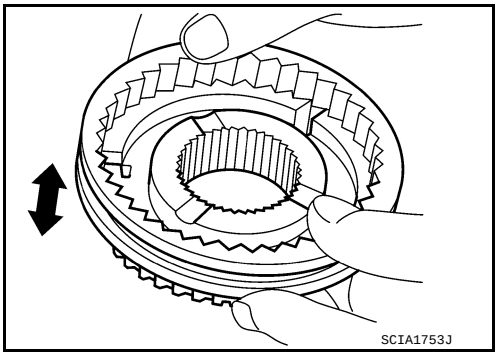
- Damage, peeling, bend, uneven wear, and distortion of shaft.
- Excessive wear, damage, and peeling of gear.



Synchronizer Hub and Coupling Sleeve

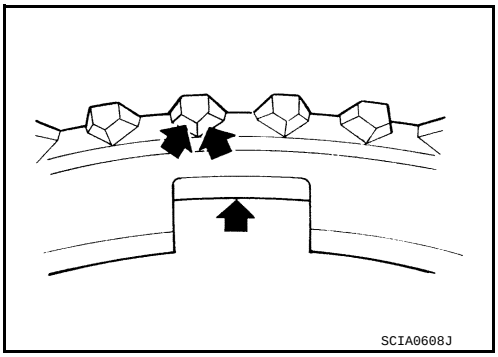
Check the following items and replace if necessary.

- Breakage, damage, and unusual wear on contact surface of coupling sleeve, synchronizer hub, and insert key.
- Coupling sleeve and synchronizer hub move smoothly.



Baulk Ring

Check contact surface of baulk ring cam and insert key for excessive wear, uneven wear, bend, and damage. Replace if necessary.

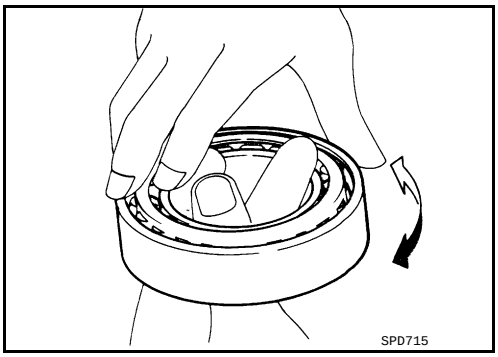


Bearing

Check bearing for damage and uneven rotation. Replace if necessary.

CAUTION:

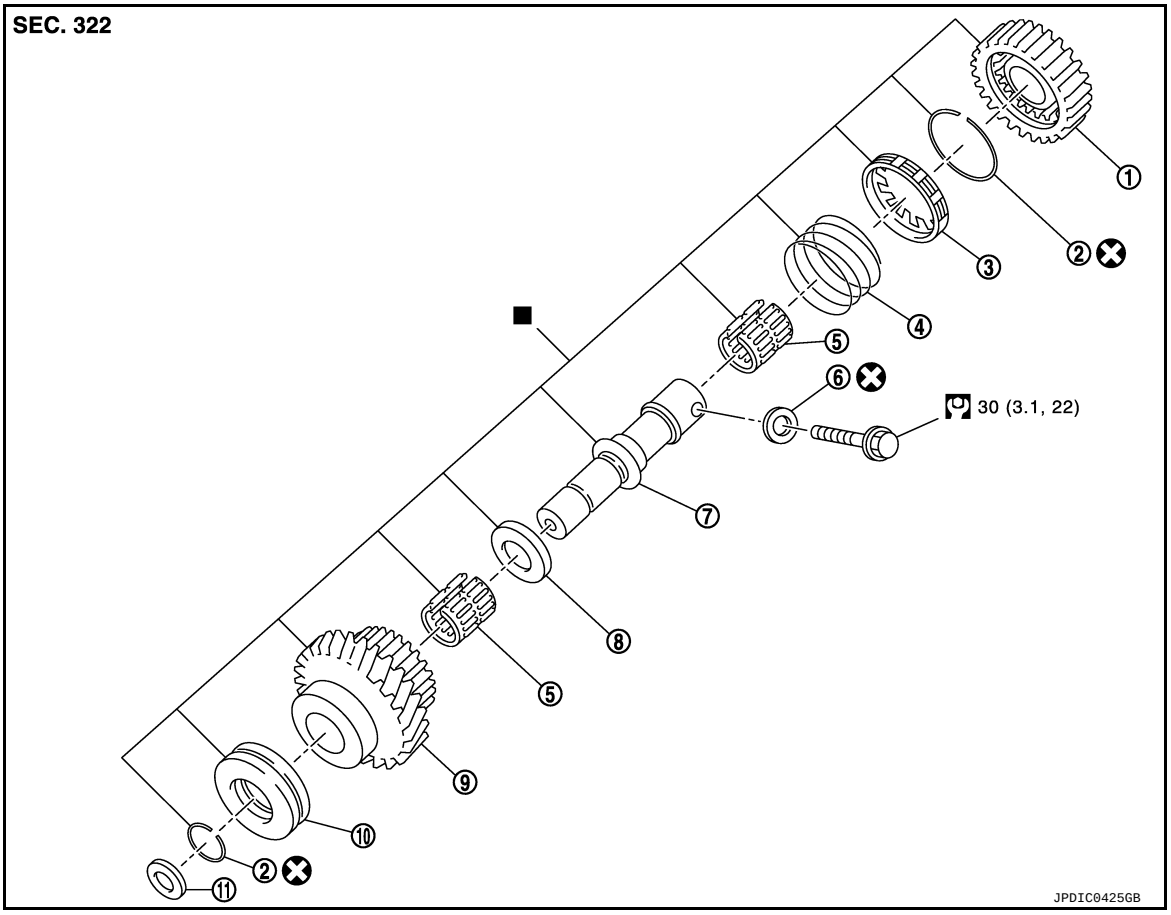
- **Replace mainshaft front bearing outer race and mainshaft front bearing inner race as a set.**
- **Replace mainshaft rear bearing inner race and mainshaft rear bearing outer race as a set.**



REVERSE IDLER SHAFT AND GEAR

Exploded View

INFOID:0000000008765730

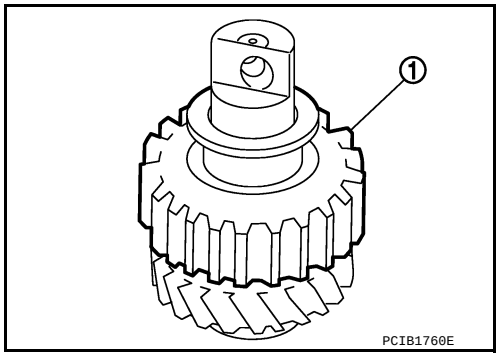


1. Reverse output gear
2. Snap ring
3. Reverse baulk ring
4. Return spring
5. Needle bearing
6. Seal washer
7. Reverse idler shaft
8. Spacer
9. Reverse input gear
10. Lock washer
11. Spring washer

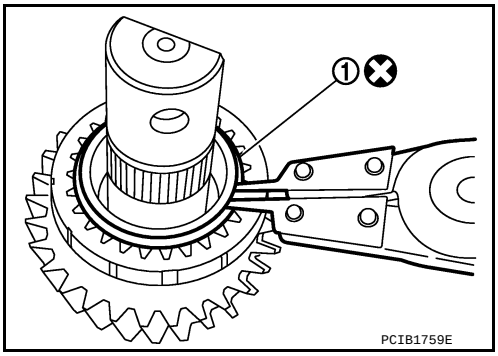
Disassembly

INFOID:0000000008765731

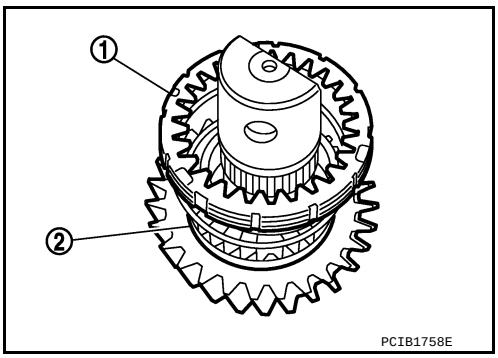
1. Remove reverse output gear (1).



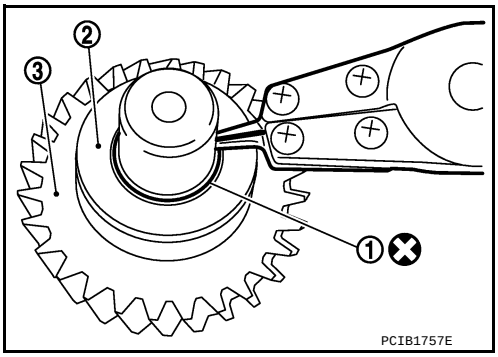
2. Remove snap ring (1).
CAUTION:
Do not reuse snap ring.



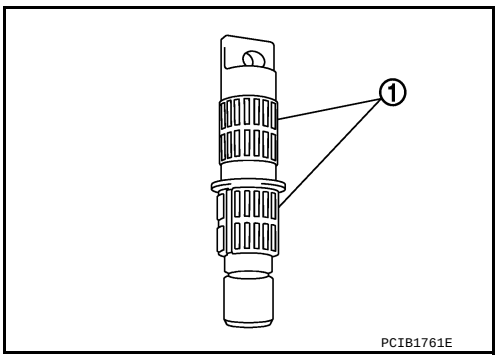
3. Remove reverse baulk ring (1) and return spring (2).



4. Remove snap ring (1), lock washer (2), and reverse input gear (3).
CAUTION:
Do not reuse snap ring.



5. Remove needle bearings (1) and washer.



Assembly

INFOID:0000000008765732

Assembly is in the reverse order of disassembly.
CAUTION:
- **Do not reuse snap ring.**
- **Check that snap ring is securely installed in a groove.**
- **Replace reverse output gear, snap ring, reverse baulk ring, return spring, needle bearing, reverse idler shaft, spacer, reverse input gear, and lock washer as a set.**

Inspection

INFOID:0000000008765733

INSPECTION AFTER DISASSEMBLY

Shaft and Gear

Check the following items. Replace reverse output gear, snap ring, reverse baulk ring, return spring, needle bearing, reverse idler shaft, spacer, reverse input gear, and lock washer as a set, if necessary.

- Damage, peeling, bend, uneven wear, and distortion of shaft
- Excessive wear, damage, and peeling of gear

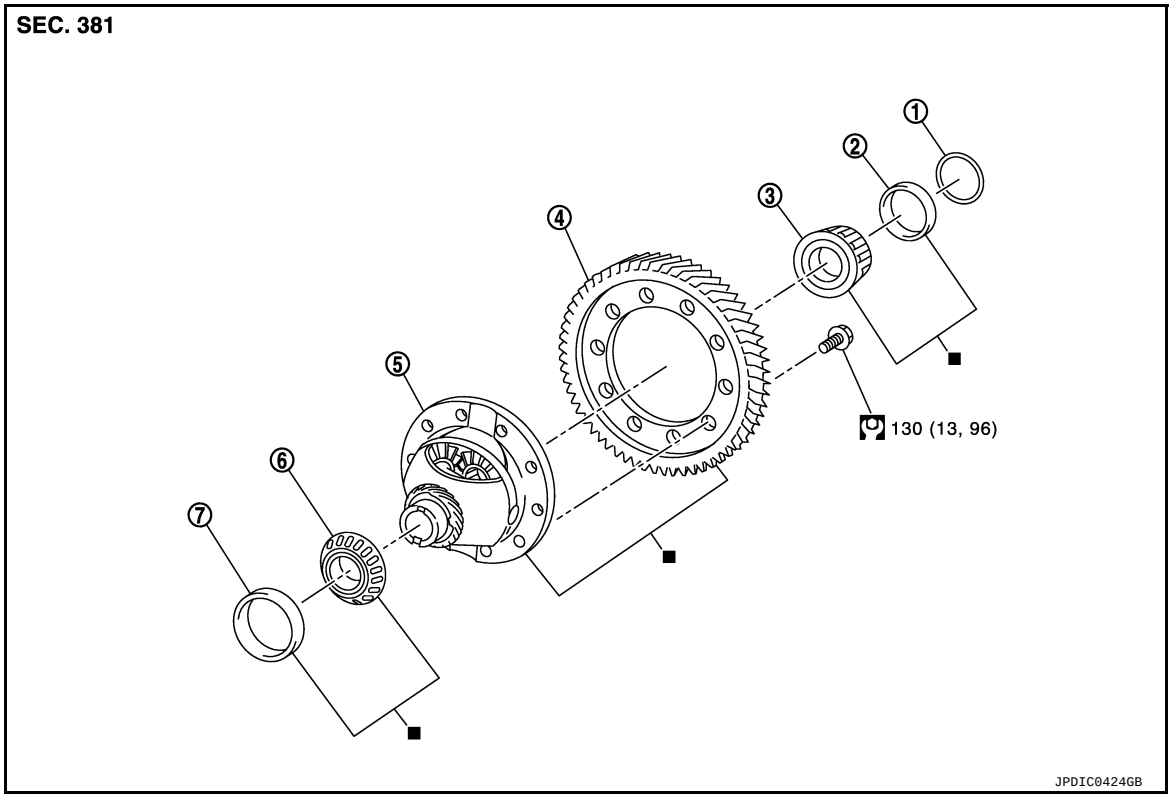
Bearing

Check damage and rotation of bearing. Replace reverse output gear, snap ring, reverse baulk ring, return spring, needle bearing, reverse idler shaft, spacer, reverse input gear, and lock washer as a set, if necessary.

FINAL DRIVE

Exploded View

INFOID:0000000008765734



1. Shim
2. Differential side bearing outer race (transaxle case side)
3. Differential side bearing inner race (transaxle case case side)
4. Final gear
5. Differential case
6. Differential side bearing inner race (clutch housing side)
7. Differential side bearing outer race (clutch housing side)

Disassembly

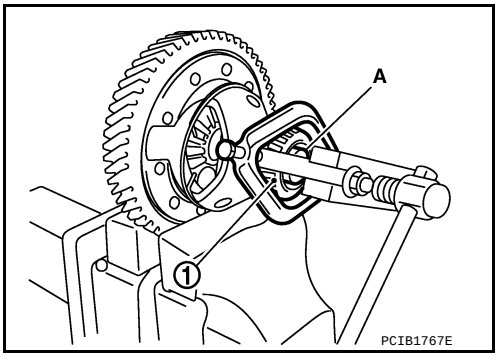
INFOID:0000000008765735

1. Remove differential side bearing inner race (clutch housing side) (1) with the following procedure.

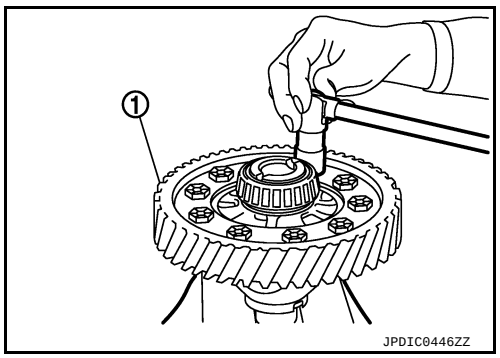
a. Set a suitable tool to differential side bearing inner race (clutch housing side).

b. Remove differential side bearing inner race (clutch housing side) using Tool (A).

Tool number : ST33061000 (J-8107-2)



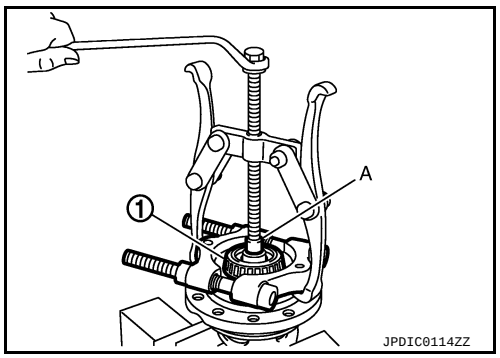
2. Remove final gear mounting bolts and remove final gear (1).



3. Remove differential side bearing inner race (transaxle case side) (1) with the following procedure.

a. Set a suitable tool to differential side bearing inner race (transaxle case side).

b. Remove differential side bearing inner race (transaxle case side) using a suitable tool (A).

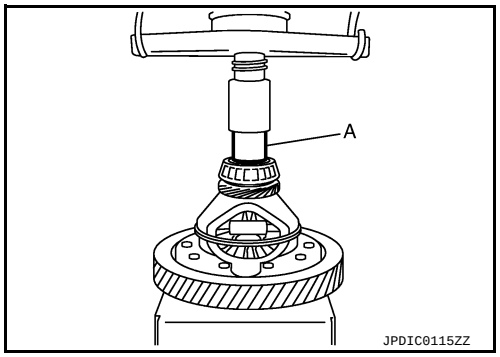


Assembly

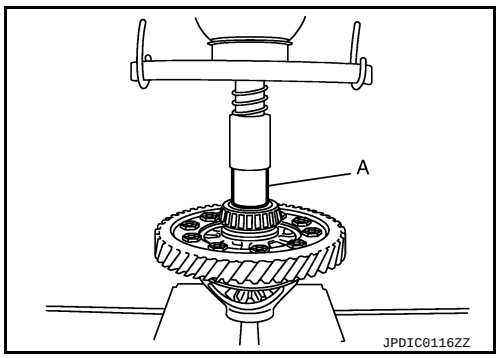
INFOID:0000000008765736

1. Install final gear, and then tighten final gear mounting bolts to the specified torque.
CAUTION:
Replace final gear and differential case as a set.

2. Install differential side bearing inner race (clutch housing side) using a suitable tool (A).
CAUTION:
Replace differential side bearing inner race (clutch housing side) and differential side bearing outer race (clutch housing side) as a set.



3. Install differential side bearing inner race (transaxle case side) using a suitable tool (A).
CAUTION:
Replace differential side bearing inner race (transaxle case side) and differential side bearing outer race (transaxle case side) as a set.



Inspection

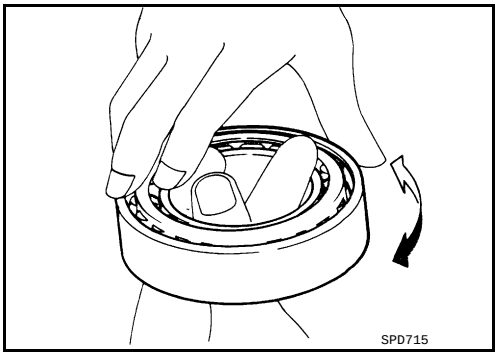
INFOID:0000000008765737

INSPECTION AFTER DISASSEMBLY

Gear and Case
Check final gear and differential case. Replace if necessary.

Bearing

Check bearing for damage and uneven rotation. Replace if necessary.

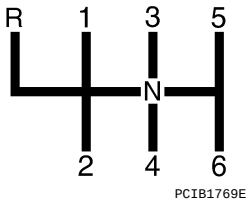


SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000008765738

Transaxle type			RS6F94R
Engine type			MRA8DE
Model code number			ET80A
Number of speed			6
Synchromesh type			Warner
Shift pattern			
Gear ratio	1st		3.7273
	2nd		2.1053
	3rd		1.5185
	4th		1.1714
	5th		0.9143
	6th		0.7674
	Reverse		3.6865
	Final gear		3.9333
Number of teeth	Input gear	1st	11
		2nd	19
		3rd	27
		4th	35
		5th	35
		6th	43
		Reverse	11
	Main gear	1st	41
		2nd	40
		3rd	41
		4th	41
		5th	32
		6th	33
		Reverse	42
	Reverse idler gear	Input/Output	28/29
	Final gear	Final gear/Pinion	59/15
		Side gear/Pinion mate gear	13/10
Oil capacity (Reference)		ℓ (US pt, Imp pt)	Approx. 2.0 (4-1/4, 3-1/2)
Remarks	Reverse synchronizer		Installed
	Triple-cone synchronizer		1st and 2nd

PRECAUTION

PRECAUTIONS

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

INFOID:0000000008765740

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. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which 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 the SR section.**
- **Do not 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

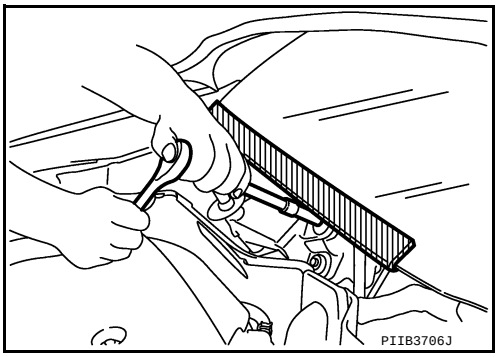
WARNING:

- **When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery and wait at least 3 minutes before performing any service.**

Precaution for Procedure without Cowl Top Cover

INFOID:0000000008765742

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



Liquid Gasket

INFOID:0000000009002423

REMOVAL OF LIQUID GASKET SEALING

- After removing the bolts and nuts, separate the mating surface and remove the liquid gasket using Tool (A).

Tool Number (A): KV10111100 (J-37228)

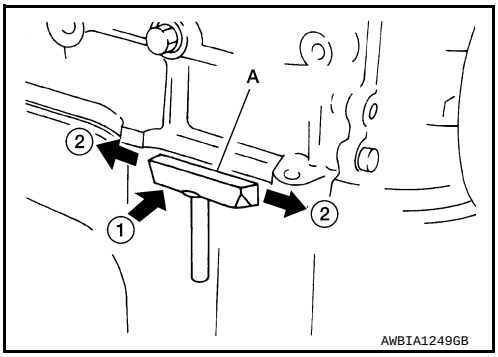
CAUTION:

Be careful not to damage the mating surfaces.

- In areas where the cutter is difficult to use, use a plastic hammer to lightly tap (1) the cutter where the liquid gasket is applied. Use a plastic hammer to slide (2) the cutter by tapping on the side.

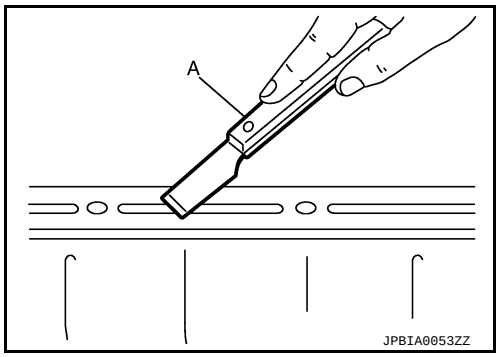
CAUTION:

Do not damage the mating surfaces.

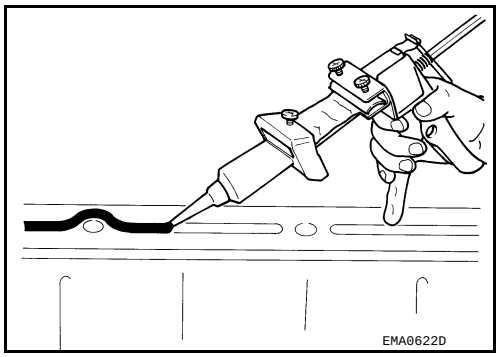


LIQUID GASKET APPLICATION PROCEDURE

1. Using suitable tool (A), remove old liquid gasket adhering to the liquid gasket application surface and the mating surface.
   - Remove liquid gasket completely from the groove of the liquid gasket application surface, mounting bolts, and bolt holes.
2. Wipe the liquid gasket application surface and the mating surface with white gasoline (lighting and heating use) to remove adhering moisture, grease and foreign materials.



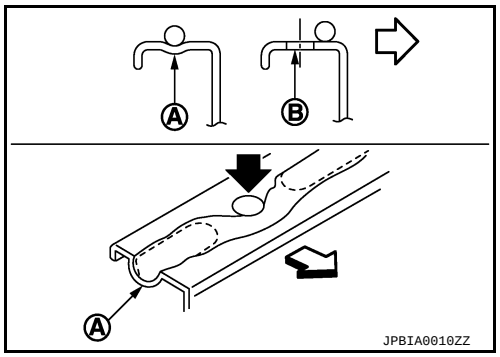
3. Attach liquid gasket tube to the tube presser (commercial service tool).
   Use Genuine Liquid Gasket or equivalent.
4. Apply liquid gasket without gaps to the specified location according to the specified dimensions.
   - If there is a groove for liquid gasket application, apply liquid gasket to the groove.



- As for bolt holes (B), normally apply liquid gasket inside the holes. Occasionally, it should be applied outside the holes. Check to read the text of this manual.

(A) : Groove

⇦ : Inside



- Within five minutes of liquid gasket application, install the mating component.
- If liquid gasket protrudes, wipe it off immediately.
- Do not retighten mounting bolts or nuts after the installation.
- After 30 minutes or more have passed from the installation, fill engine oil and engine coolant.

CAUTION:
If there are specific instructions in this manual, observe them.

Precaution for TCM and Transaxle Assembly Replacement

INFOID:0000000008765743

CAUTION:
- **To replace TCM, refer to TM-141, "Description".**
- **To replace transaxle assembly, refer to TM-142, "Description".**

Precaution for G Sensor Removal/Installation or Replacement

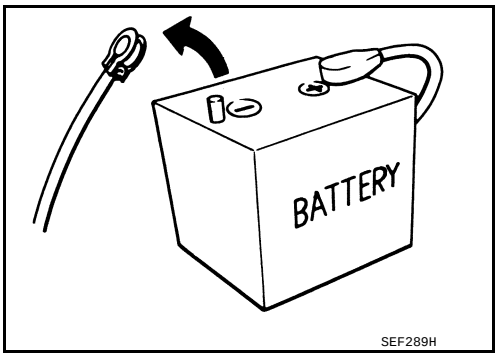
INFOID:0000000008765744

CAUTION:
To remove/install or replace G sensor, refer to TM-144, "Description".

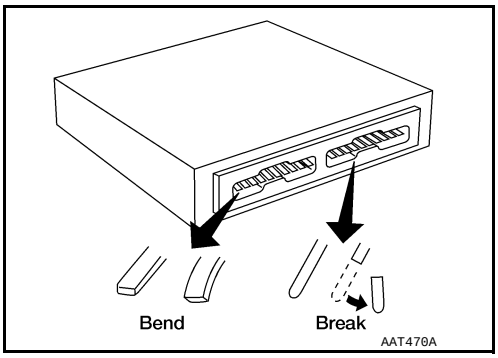
General Precautions

INFOID:0000000008765745

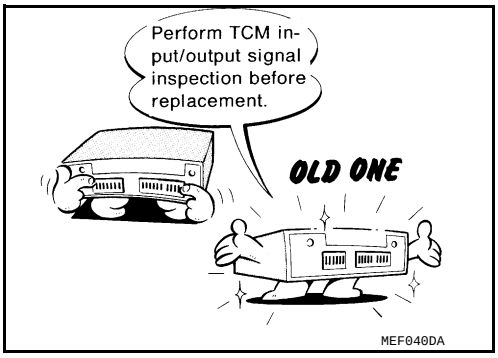
- **Turn ignition switch OFF and disconnect the battery cable from the negative terminal before connecting or disconnecting the CVT assembly harness connector. Because battery voltage is applied to TCM even if ignition switch is turned OFF.**



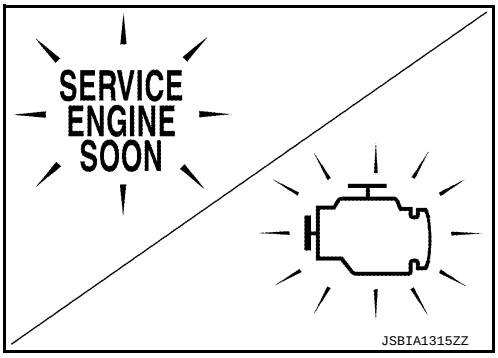
- **When connecting or disconnecting pin connectors into or from TCM, do not damage pin terminals (bend or break).**
  Check that there are not any bends or breaks on TCM pin terminal, when connecting pin connectors.



- **Perform TCM input/output signal inspection and check whether TCM functions normally or not before replacing TCM. Refer to TM-113, "Reference Value".**



- **Perform "DTC (Diagnostic Trouble Code) CONFIRMATION PROCEDURE".**
  If the repair is completed DTC should not be displayed in the "DTC CONFIRMATION PROCEDURE".



- Always use the specified brand of CVT fluid. Refer to MA-12, "Fluids and Lubricants".
- Use lint-free paper not cloth rags during work.
- Dispose of the waste oil using the methods prescribed by law, ordinance, etc. after replacing the CVT fluid.

On Board Diagnosis (OBD) System of CVT and Engine

INFOID:0000000008765746

The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

CAUTION:

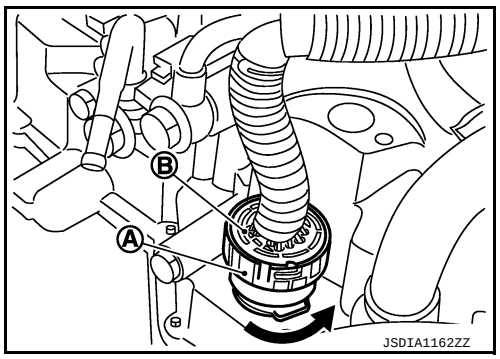
- **Be sure to turn the ignition switch OFF and disconnect the battery cable from the negative terminal before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MIL to light up.**
- **Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MIL to light up due to an open circuit. (Be sure the connector is free from water, grease, dirt, bent terminals, etc.)**
- **Be sure to route and secure the harnesses properly after work. Interference of the harness with a bracket, etc. may cause the MIL to light up due to a short circuit.**
- **Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MIL to light up due to a malfunction of the EGR system or fuel injection system, etc.**
- **Be sure to erase the unnecessary malfunction information (repairs completed) from the TCM and ECM before returning the vehicle to the customer.**

Removal and Installation Procedure for CVT Unit Connector

INFOID:0000000008765747

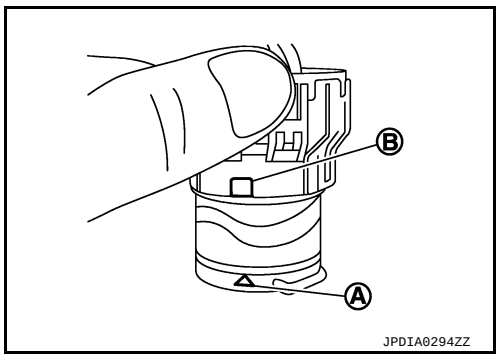
REMOVAL

- Rotate bayonet ring (A) counterclockwise. Pull out CVT unit harness connector (B) upward and remove it.

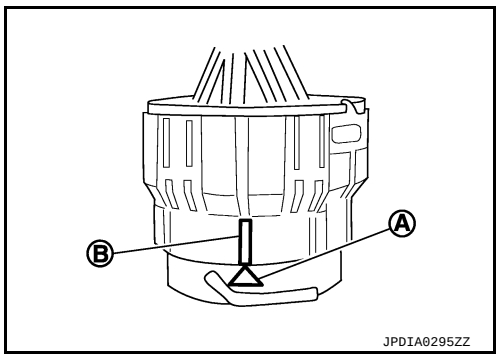


INSTALLATION

1. Align marking (A) on CVT unit harness connector terminal with marking (B) on bayonet ring. Insert CVT unit harness connector.
2. Rotate bayonet ring clockwise.

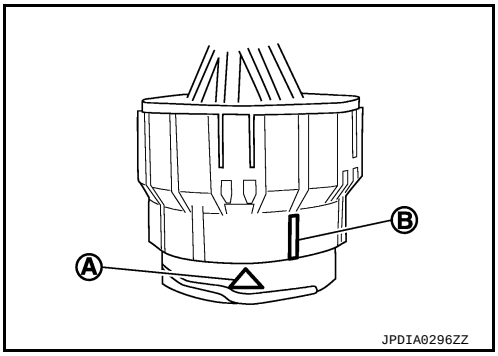


3. Rotate bayonet ring clockwise until marking (A) on CVT unit harness connector terminal body is aligned with the slit (B) on bayonet ring as shown in the figure (correctly fitting condition).



CAUTION:

- **Securely align marking (A) on CVT unit harness connector terminal body with bayonet ring slit (B). Then, be careful not to make a half fit condition as shown in the figure.**
- **Never mistake the slit of bayonet ring for other dent portion.**

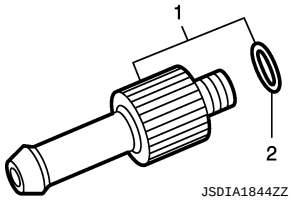
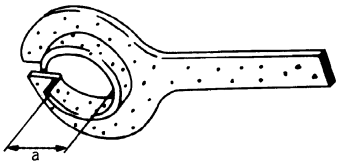


PREPARATION

PREPARATION

Special Service Tools

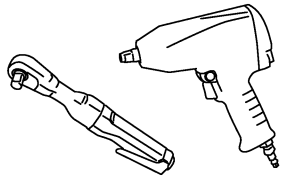
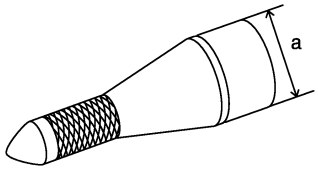
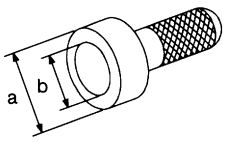
INFOID:0000000008765748

Tool number Tool name		Description
1. KV311039S0 Charging pipe set 2. KV31103920* O-ring	 JSDIA1844ZZ	CVT fluid changing and adjustment
KV38107900 Protector a: ϕ 32 mm (1.26 in)	 PDIA1183J	Installing drive shaft

*: The O-ring as a unit part is set as a SST.

Commercial Service Tools

INFOID:0000000008765749

Tool number Tool name		Description
Power tool	 PBIC0190E	Loosening nuts and bolts
31197EU50A Drive plate location guide a: ϕ 25 mm (0.98 in)	 JPDIA0676ZZ	Installing transaxle assembly
Drift a: ϕ 56 mm (2.20 in) b: ϕ 50 mm (1.97 in)	 NT115	Installing differential side oil seal

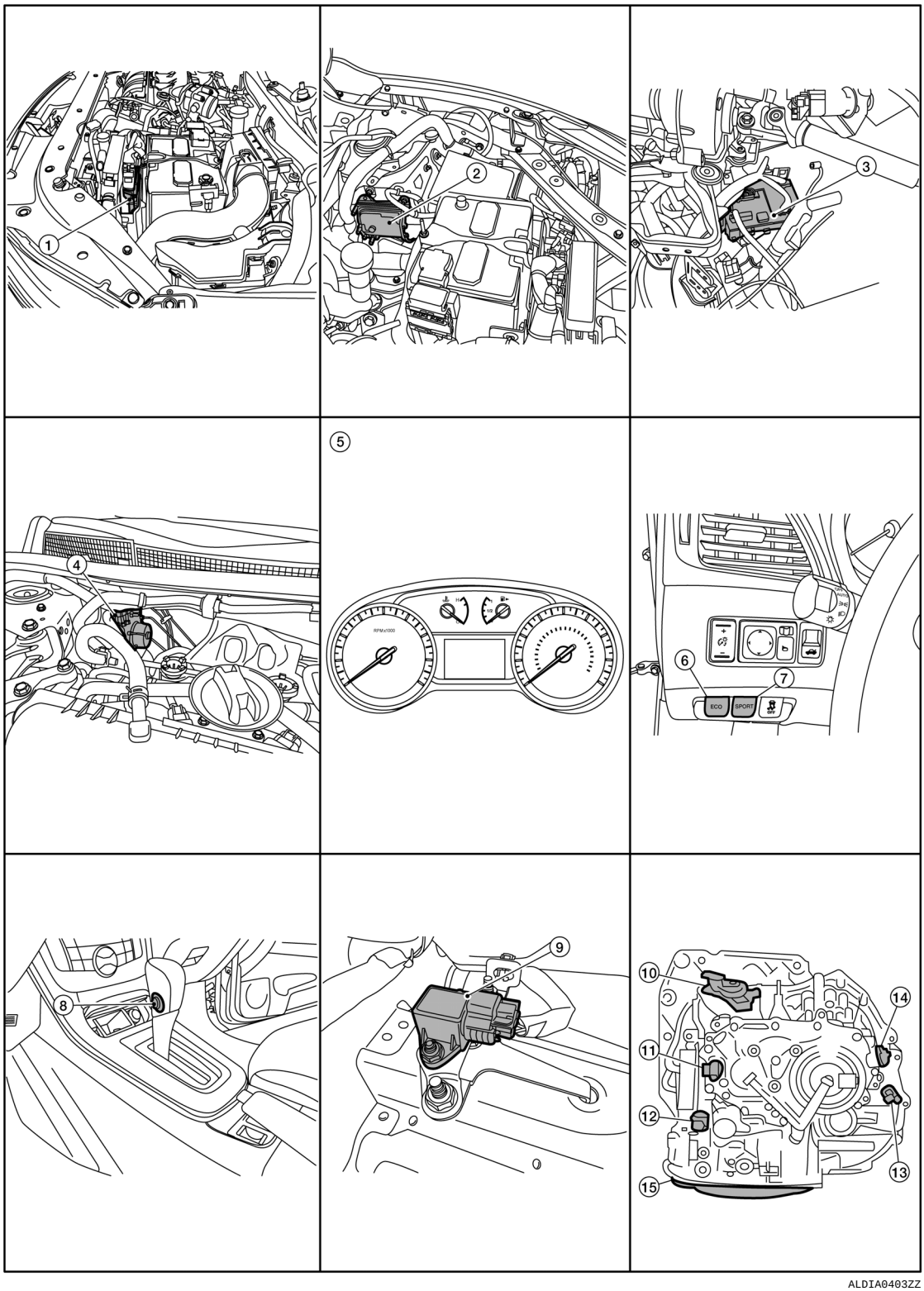
SYSTEM DESCRIPTION

COMPONENT PARTS

CVT CONTROL SYSTEM

CVT CONTROL SYSTEM : Component Parts Location

INFOID:0000000008765750



ALDIA0403ZZ

No.	Component	Function
①	ECM	Mainly transmits the following signal to TCM via CAN communication. • Engine and CVT integrated control signal **NOTE:** General term for the communication (torque-down permission, torque-down request, etc.) exchanged between the ECM and TCM. • Engine speed signal • Accelerator pedal position signal • Closed throttle position signal • N idle instruction signal Mainly receives the following signals from TCM via CAN communication. • N idle instruction signal • Malfunction indicator lamp (MIL) signal Refer to EC-15, "ENGINE CONTROL SYSTEM : Component Parts Location" for detailed installation location.
②	TCM	TM-74, "CVT CONTROL SYSTEM : TCM"
③	BCM	Mainly transmits the following signal to TCM via CAN communication. • Stop lamp switch signal • Turn indicator signal Refer to BCS-6, "BODY CONTROL SYSTEM : Component Parts Location" (With intelligent key system) or BCS-78, "BODY CONTROL SYSTEM : Component Parts Location" (Without intelligent key system) for detailed installation location.
④	ABS actuator and electric unit (control unit)	Mainly transmits the following signal to TCM via CAN communication. • Vehicle speed signal (ABS) • ABS operation signal • TCS operation signal • VDC operation signal • ABS malfunction signal Refer to BRC-7, "Component Parts Location" for detailed installation location.
⑤	Combination meter	Mainly transmits the following signal to TCM via CAN communication. • Overdrive control switch signal Mainly receives the following signals from TCM via CAN communication. • Shift position indicator signal • OD OFF indicator lamp signal Refer to MWI-5, "METER SYSTEM : Component Parts Location" for detailed installation location.
⑥	ECO mode switch	DMS-23, "ECO Mode Switch"
⑦	SPORT mode switch	DMS-58, "SPORT Mode Switch"
⑧	Overdrive control switch	TM-81, "CVT CONTROL SYSTEM : Overdrive Control Switch"
⑨	G sensor	TM-80, "CVT CONTROL SYSTEM : G Sensor"
⑩	Transmission range switch	TM-74, "CVT CONTROL SYSTEM : Transmission Range Switch"
⑪	Primary speed sensor	TM-75, "CVT CONTROL SYSTEM : Primary Speed Sensor"
⑫	CVT unit connector	—
⑬	Output speed sensor	TM-76, "CVT CONTROL SYSTEM : Output Speed Sensor"
⑭	Secondary speed sensor	TM-75, "CVT CONTROL SYSTEM : Secondary Speed Sensor"

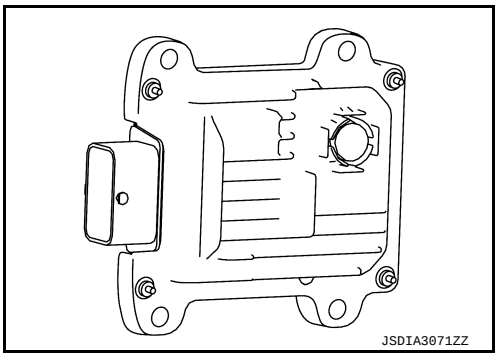
No.	Component		Function
⑮	Control valve	ROM assembly*	TM-74, "CVT CONTROL SYSTEM : ROM Assembly"
		CVT fluid temperature sensor*	TM-77, "CVT CONTROL SYSTEM : CVT Fluid Temperature Sensor"
		Secondary pressure sensor*	TM-77, "CVT CONTROL SYSTEM : Secondary Pressure Sensor"
		Primary pressure solenoid valve*	TM-78, "CVT CONTROL SYSTEM : Primary Pressure Solenoid Valve"
		Low brake solenoid valve*	TM-78, "CVT CONTROL SYSTEM : Low Brake Solenoid Valve"
		High clutch & reverse brake solenoid valve*	TM-79, "CVT CONTROL SYSTEM : High Clutch & Reverse Brake Solenoid Valve"
		Torque converter clutch solenoid valve*	TM-79, "CVT CONTROL SYSTEM : Torque Converter Clutch Solenoid Valve"
		Line pressure solenoid valve*	TM-80, "CVT CONTROL SYSTEM : Line Pressure Solenoid Valve"

*: These components are included in control valve assembly.

CVT CONTROL SYSTEM : TCM

INFOID:0000000008765751

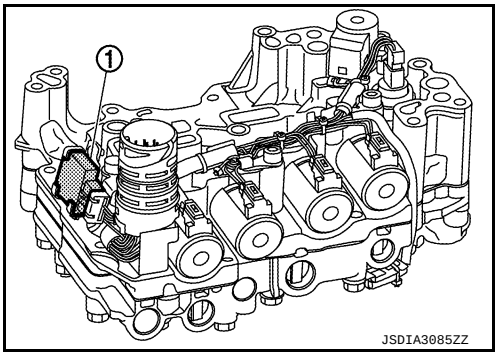
- The TCM consists of a microcomputer and connectors for signal input and output and for power supply.
- The vehicle driving status is judged based on the signals from the sensors, switches, and other control units, and the optimal transaxle control is performed.
- For TCM control items, refer to TM-92, "CVT CONTROL SYSTEM : System Description".



CVT CONTROL SYSTEM : ROM Assembly

INFOID:0000000008765752

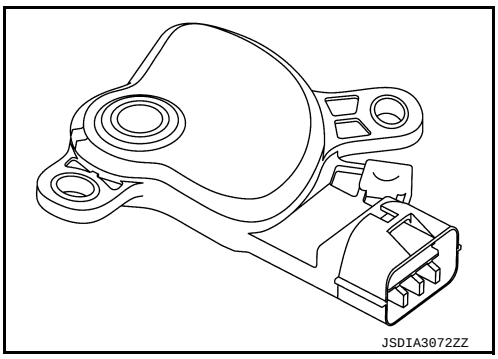
- The ROM assembly ① is installed to control valve.
- The ROM assembly stores the calibration data (characteristic value) of each solenoid valve. TCM enables accurate hydraulic control by obtaining the calibration data.



CVT CONTROL SYSTEM : Transmission Range Switch

INFOID:0000000008765753

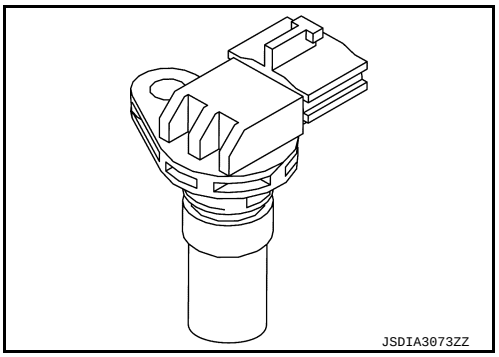
- The transmission range switch is installed to upper part of transaxle case.
- The transmission range switch detects the selector lever position.



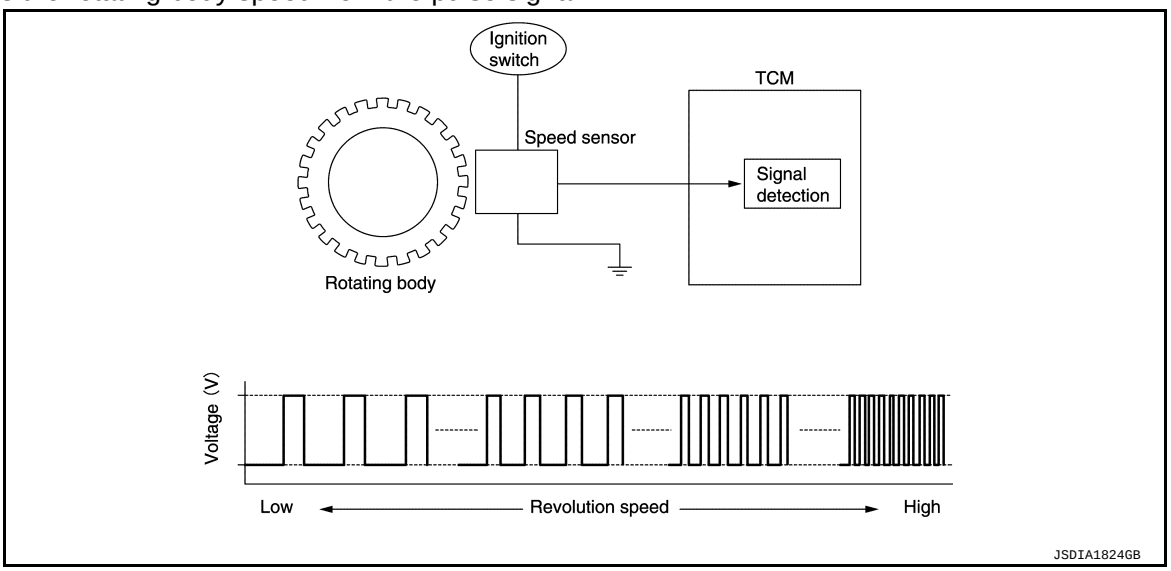
CVT CONTROL SYSTEM : Primary Speed Sensor

INFOID:0000000008765754

- The primary speed sensor is installed to side cover of transaxle.
- The primary speed sensor detects primary pulley speed.



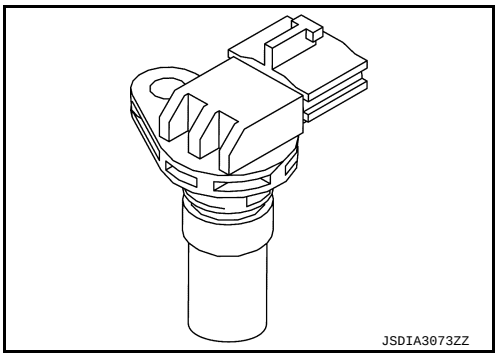
- The primary speed sensor generates an ON-OFF pulse signal according to the rotating body speed. TCM judges the rotating body speed from the pulse signal.



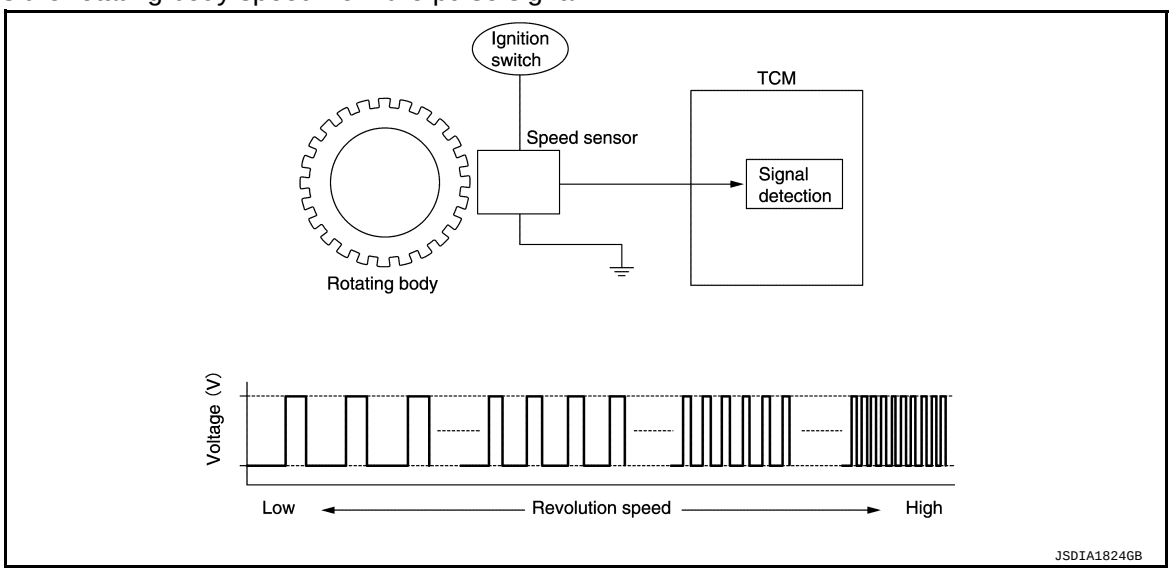
CVT CONTROL SYSTEM : Secondary Speed Sensor

INFOID:0000000008765755

- The secondary speed sensor is installed to side cover of transaxle.
- The secondary speed sensor detects secondary pulley speed.



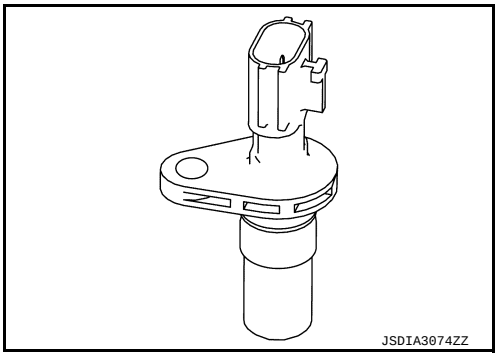
- The secondary speed sensor generates an ON-OFF pulse signal according to the rotating body speed. TCM judges the rotating body speed from the pulse signal.



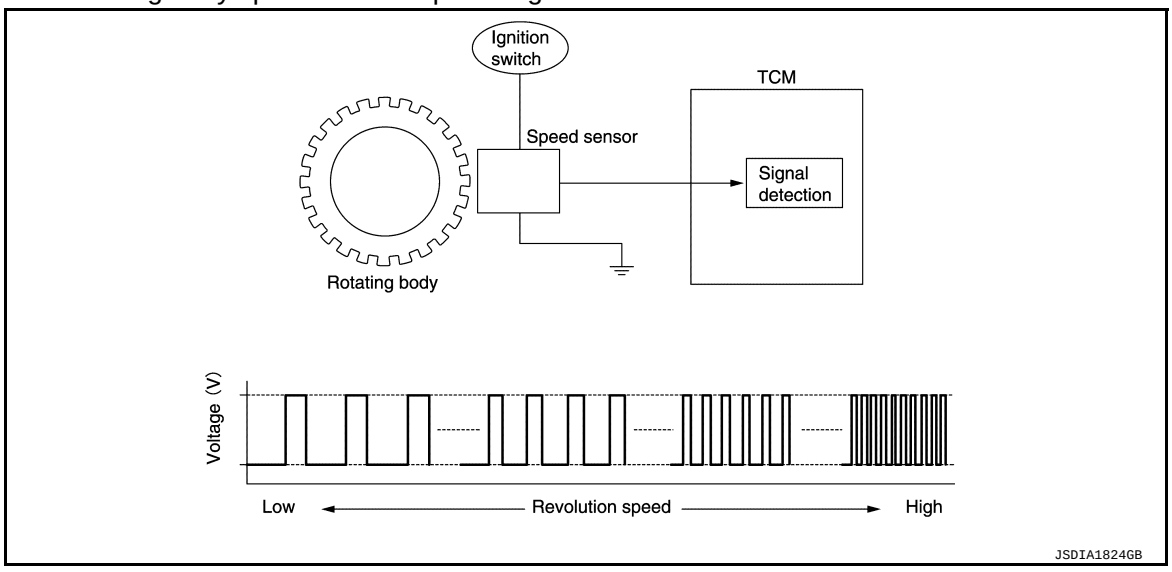
CVT CONTROL SYSTEM : Output Speed Sensor

INFOID:0000000008765756

- The output speed sensor is installed to the back side of transaxle case.
- The output speed sensor detects final gear speed. TCM evaluates the vehicle speed from the final gear revolution.



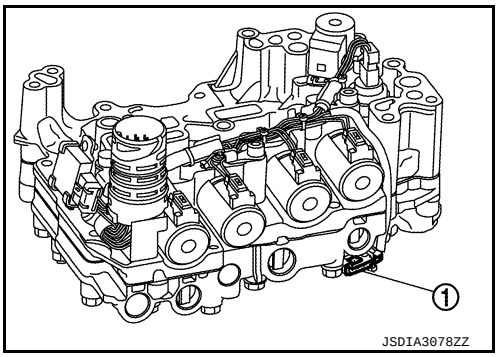
- The output speed sensor generates an ON-OFF pulse signal according to the rotating body speed. TCM judges the rotating body speed from the pulse signal.



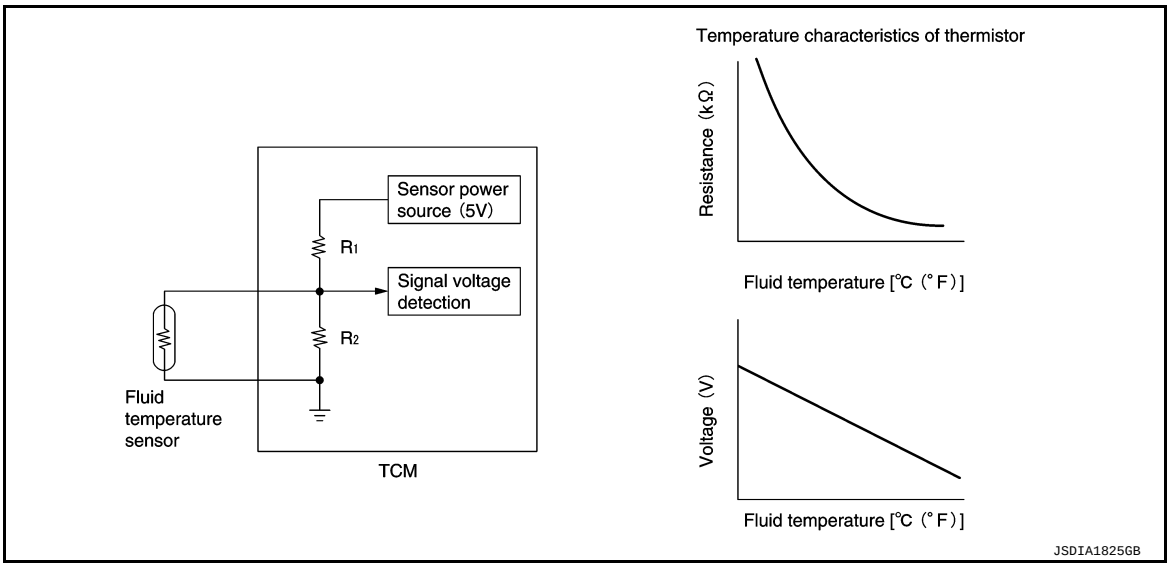
CVT CONTROL SYSTEM : CVT Fluid Temperature Sensor

INFOID:0000000008765757

- The CVT fluid temperature sensor ① is installed to control valve.
- The CVT fluid temperature sensor detects CVT fluid temperature in oil pan.



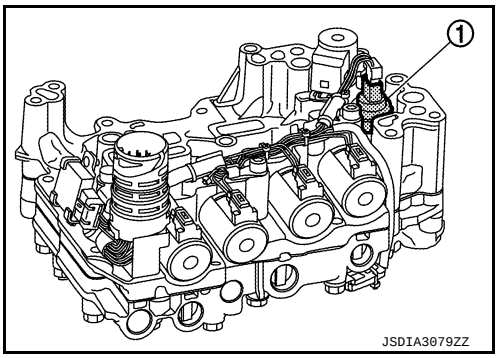
- The fluid temperature sensor uses a thermistor, and changes the signal voltage by converting changes in the CVT fluid temperature to a resistance value. TCM evaluates the CVT fluid temperature from the signal voltage value.



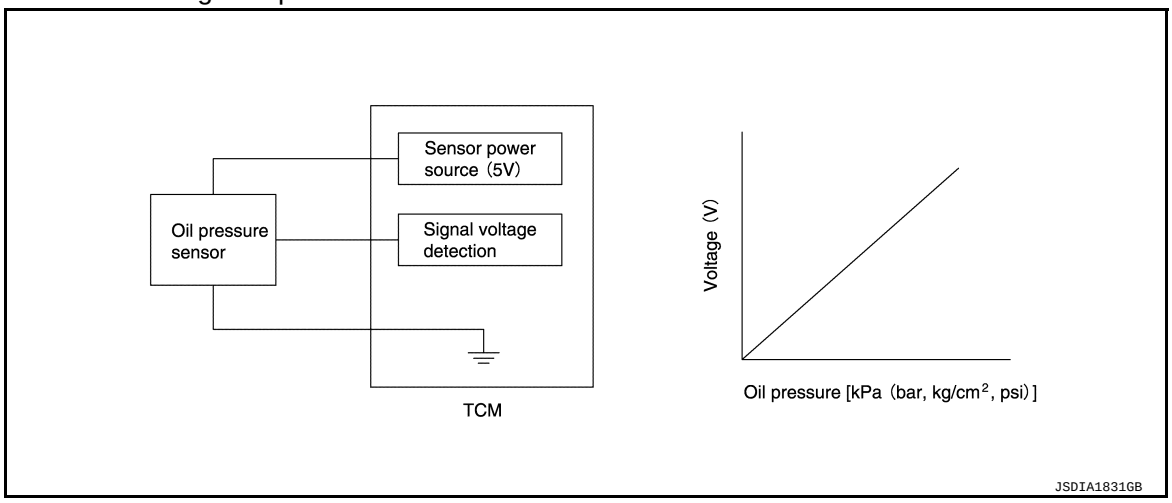
CVT CONTROL SYSTEM : Secondary Pressure Sensor

INFOID:0000000008765758

- The secondary pressure sensor ① is installed to control valve.
- The secondary pressure sensor detects the pressure applied to the secondary pulley.



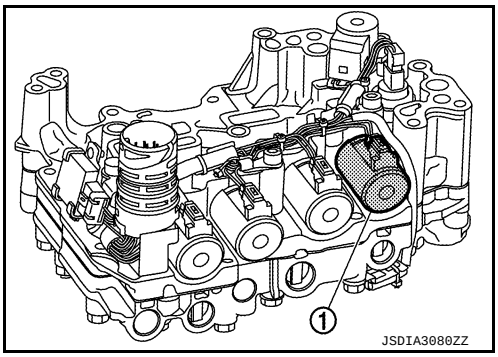
- When pressure is applied to the ceramic device in the secondary pressure sensor, the ceramic device is deformed, resulting in voltage change. TCM evaluates the secondary pressure from its voltage change. Voltage is increased along with pressure increase.



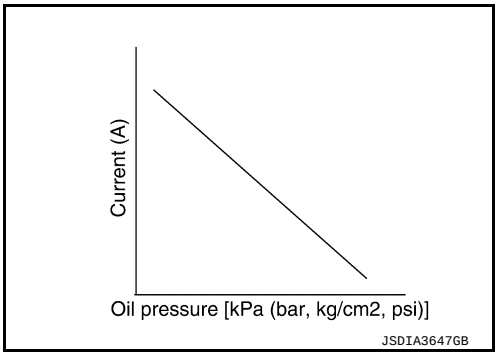
CVT CONTROL SYSTEM : Primary Pressure Solenoid Valve

INFOID:0000000008765759

- The primary pressure solenoid valve ① is installed to control valve.
- The primary pressure solenoid valve controls the primary pressure control valve. For information about the primary pressure control valve, refer to TM-87, "TRANSAXLE : Component Description".



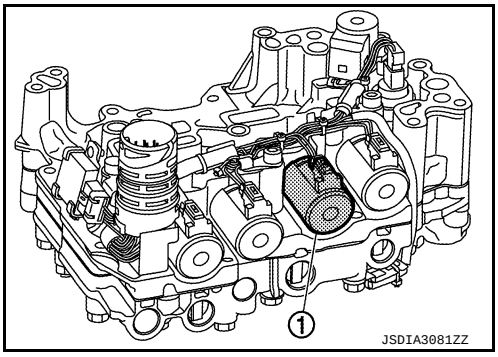
- The primary pressure solenoid valve uses the linear solenoid valve [N/H (normal high) type].
  NOTE:
  - The principle of the linear solenoid valve utilizes the fact that the force pressing on the valve spool installed inside the coil increases nearly in proportion to the current. This allows it to produce a fluid pressure that is proportional to this pressing force.
  - The N/H (normal high) produces hydraulic control when the coil is not energized.



CVT CONTROL SYSTEM : Low Brake Solenoid Valve

INFOID:0000000008765760

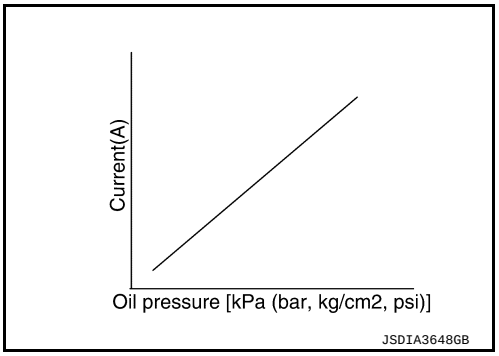
- The low brake solenoid valve ① is installed to control valve.
- The low brake solenoid valve adjusts the tightening pressure of the low brake.



- The low brake solenoid valve uses the linear solenoid valve [N/L (normal low) type].

NOTE:

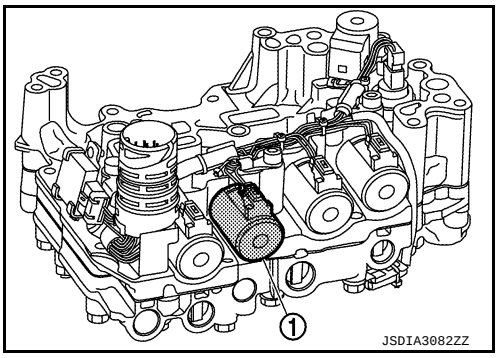
- The principle of the linear solenoid valve utilizes the fact that the force pressing on the valve spool installed inside the coil increases nearly in proportion to the current. This allows it to produce a fluid pressure that is proportional to this pressing force.
- The N/L (normal low) type does not produce hydraulic control when the coil is not energized.



CVT CONTROL SYSTEM : High Clutch & Reverse Brake Solenoid Valve

INFOID:0000000008765761

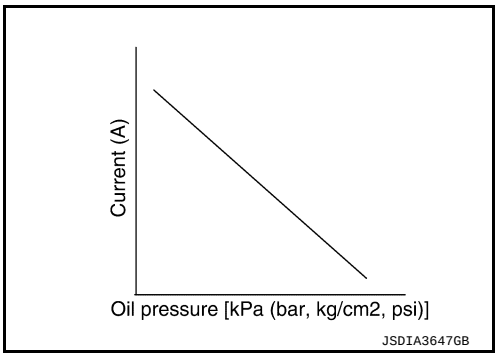
- The high clutch & reverse brake solenoid valve ① is installed to control valve.
- The high clutch & reverse brake solenoid valve adjusts the tightening pressure of the high clutch and reverse brake.



- The high clutch & reverse brake solenoid valve uses the linear solenoid valve [N/H (normal high) type].

NOTE:

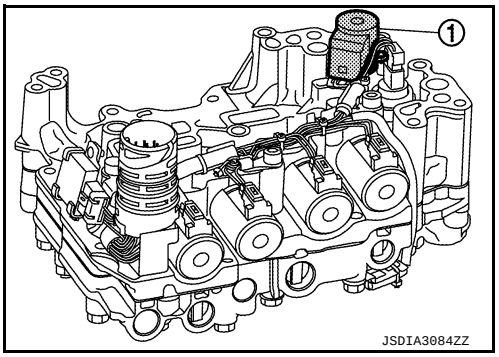
- The principle of the linear solenoid valve utilizes the fact that the force pressing on the valve spool installed inside the coil increases nearly in proportion to the current. This allows it to produce a fluid pressure that is proportional to this pressing force.
- The N/H (normal high) produces hydraulic control when the coil is not energized.



CVT CONTROL SYSTEM : Torque Converter Clutch Solenoid Valve

INFOID:0000000008765762

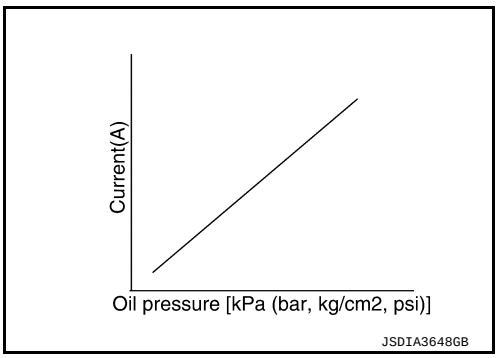
- The torque converter clutch solenoid valve ① is installed to control valve.
- The torque converter clutch solenoid valve controls the torque converter clutch control valve. For information about the torque converter clutch control valve, refer to TM-87, "TRANSAXLE : Component Description".



- The torque converter clutch solenoid valve utilizes a linear solenoid valve [N/L (normal low) type].

NOTE:

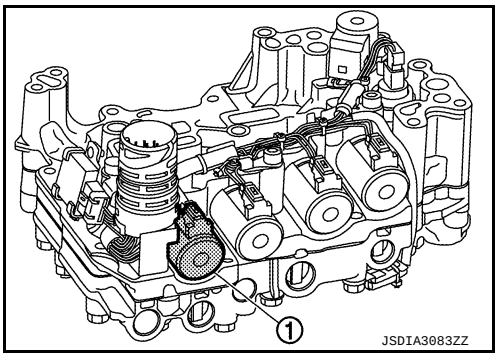
- The principle of the linear solenoid valve utilizes the fact that the force pressing on the valve spool installed inside the coil increases nearly in proportion to the current. This allows it to produce a fluid pressure that is proportional to this pressing force.
- The N/L (normal low) type does not produce hydraulic control when the coil is not energized.



CVT CONTROL SYSTEM : Line Pressure Solenoid Valve

INFOID:0000000008765763

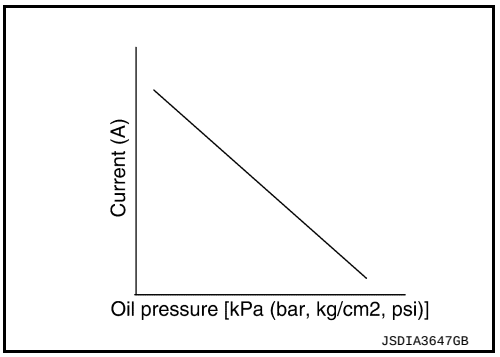
- The line pressure solenoid valve ① is installed to control valve.
- The line pressure solenoid valve controls the pressure regulator valve. For information about the pressure regulator valve, refer to TM-87, "TRANSAXLE : Component Description".



- The line pressure solenoid valve uses the linear solenoid valve [N/H (normal high) type].

NOTE:

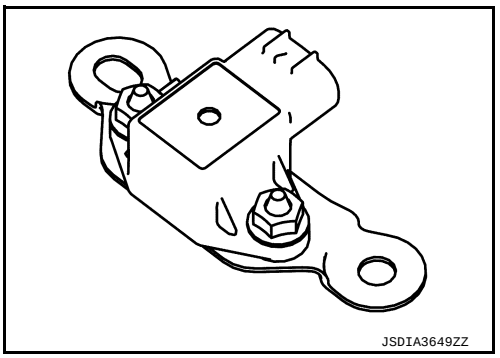
- The principle of the linear solenoid valve utilizes the fact that the force pressing on the valve spool installed inside the coil increases nearly in proportion to the current. This allows it to produce a fluid pressure that is proportional to this pressing force.
- The N/H (normal high) produces hydraulic control when the coil is not energized.



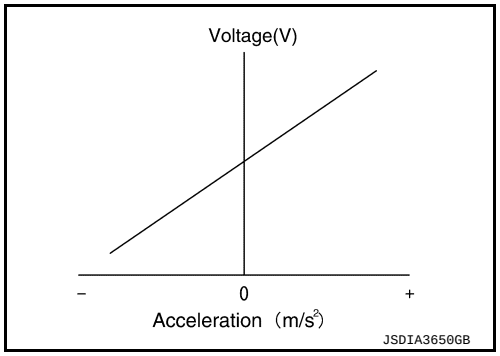
CVT CONTROL SYSTEM : G Sensor

INFOID:0000000008765764

- G sensor is installed to floor under instrument lower cover.
- G sensor detects front/rear G and inclination applied to the vehicle.



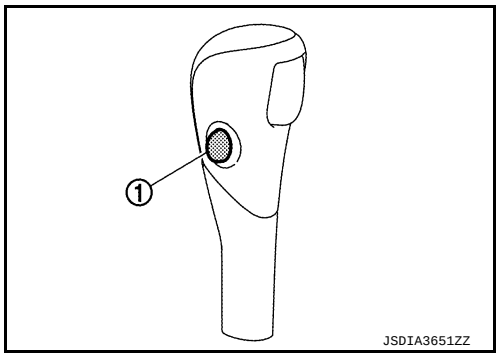
- G sensor converts front/rear G and inclination applied to the vehicle to voltage signal. TCM evaluates front/rear G and inclination angle of the vehicle from the voltage signal.



CVT CONTROL SYSTEM : Overdrive Control Switch

INFOID:0000000008765765

- The overdrive control switch ① is installed to the selector lever knob.
- When the OD OFF indicator lamp on the combination meter is OFF and the overdrive control switch is pressed, the OD OFF is active and the OD OFF indicator lamp is ON.
- When the OD OFF indicator lamp on the combination meter is ON and the overdrive control switch is pressed, the OD OFF is cancelled and the OD OFF indicator lamp is OFF.

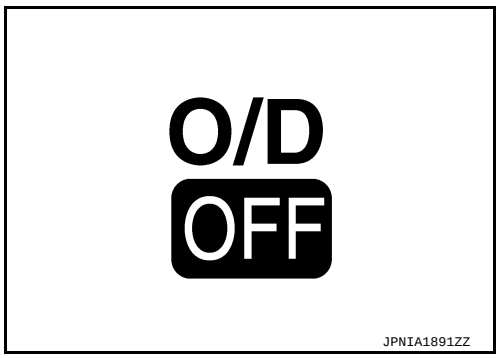


CVT CONTROL SYSTEM : OD OFF Indicator Lamp

INFOID:0000000008972673

DESIGN/PURPOSE

The OD OFF indicator lamp notifies the driver that the shift control of transaxle is in OD OFF.



BULB CHECK

For two seconds after the ignition switch is turned ON.

SIGNAL PATH

- When overdrive control switch signal is input to the combination meter, the combination meter transmits the overdrive control switch signal to the TCM via CAN communication.
- When all of the following conditions are satisfied, the TCM transmits OD OFF indicator lamp signal to the combination meter via CAN communication. The combination meter turns ON the OD OFF indicator lamp on the combination meter, according to the signal.
- TCM receives overdrive control switch via CAN communication from combination meter.
- Selector lever: D position.

LIGHTING CONDITION

When all of the following conditions are satisfied.

- Ignition switch: ON
- Selector lever: D position
- Overdrive control switch is pressed when the OD OFF indicator lamp is OFF.

SHUTOFF CONDITION

When any of the conditions listed below is satisfied.

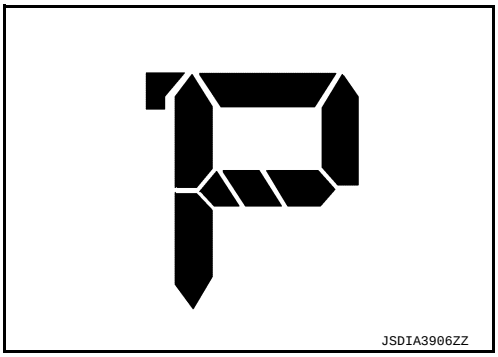
- Ignition switch: Other than ON
- Overdrive control switch is pressed when the OD OFF indicator lamp is ON.
- Selector lever is shifted to other than D position when the OD OFF indicator lamp is ON.

CVT CONTROL SYSTEM : Shift Position Indicator

INFOID:0000000008972674

PURPOSE

The shift position indicator displays the shift position of transaxle.



SIGNAL PATH

- The TCM judges the shift position by the transmission range switch signal.
- The TCM transmits the shift position signal to the combination meter via CAN communication. The combination meter shows the shift position indicator on the information display, according to the signal.

LIGHTING CONDITION

Ignition switch: ON

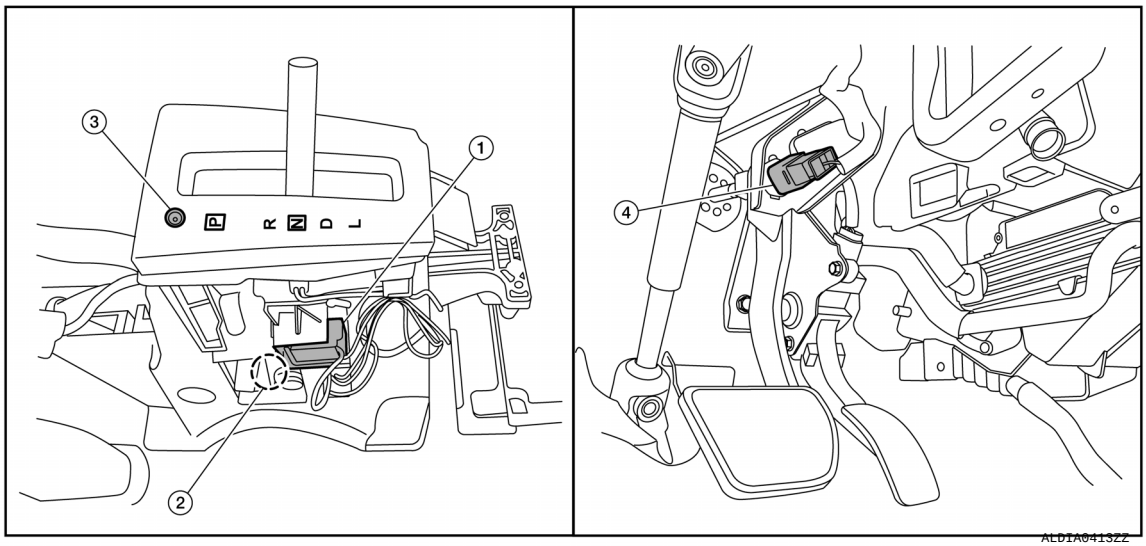
SHUTOFF CONDITION

Ignition switch: Other than ON

SHIFT LOCK SYSTEM

SHIFT LOCK SYSTEM : Component Parts Location

INFOID:0000000008992389



COMPONENT DESCRIPTION

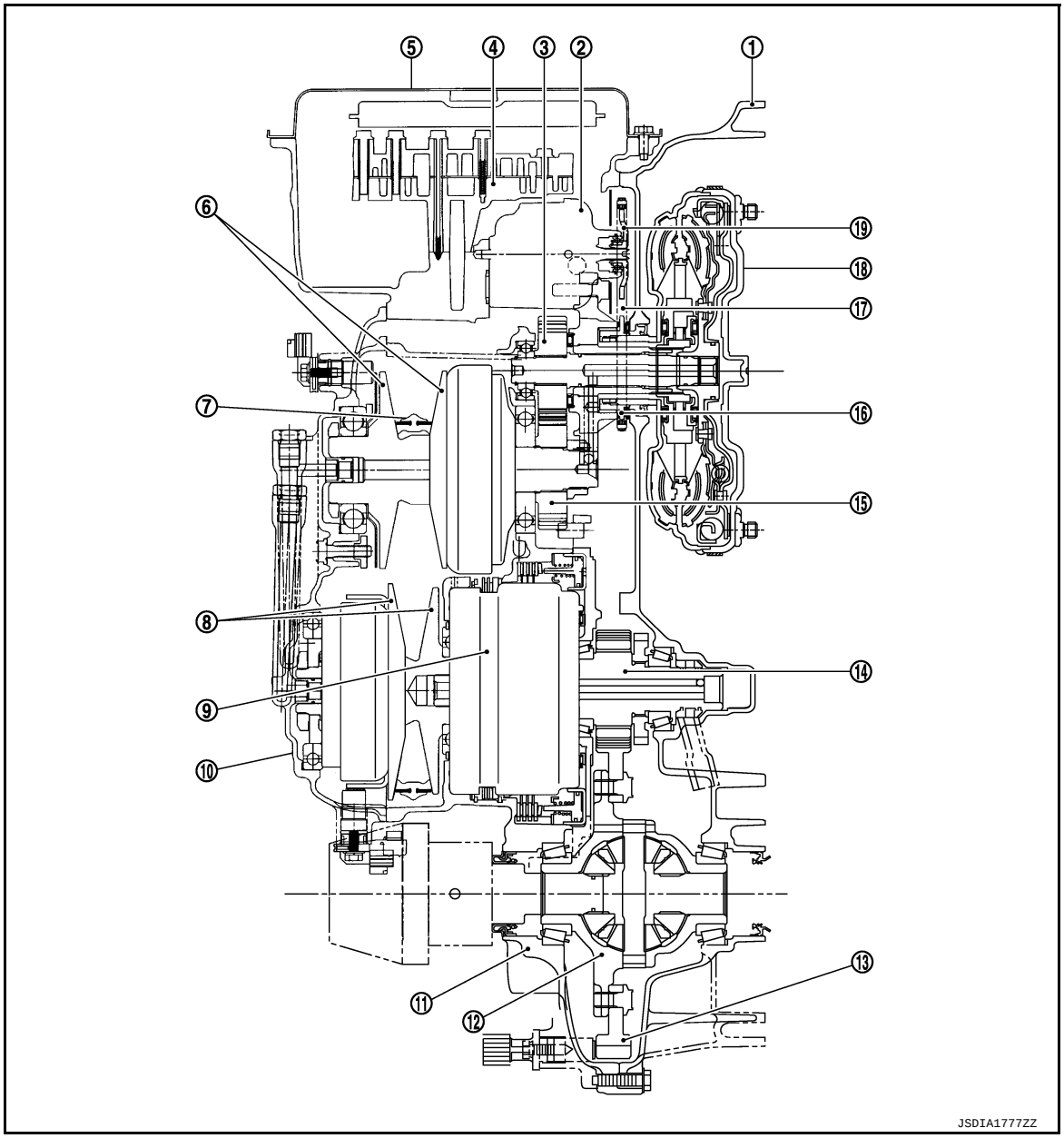
No.	Component	Function
1.	Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
2.	Park position switch	It detects that the selector lever is in “P” position.

No.	Component	Function
3.	Shift lock release button	Forcibly releases the shift lock when pressed.
4.	Stop lamp switch	• The stop lamp switch turns ON when the brake pedal is depressed. • When the stop lamp switch turns ON, the shift lock solenoid is energized.

STRUCTURE AND OPERATION
TRANSAXLE

TRANSAXLE : Cross-Sectional View

INFOID:0000000008765767



①	Converter housing	②	Oil pump	③	Counter drive gear
④	Control valve	⑤	Oil pan	⑥	Primary pulley
⑦	Steel belt	⑧	Secondary pulley	⑨	Planetary gear (auxiliary gearbox)
⑩	Side cover	⑪	Transaxle case	⑫	Differential case
⑬	Final gear	⑭	Reduction gear	⑮	Counter driven gear
⑯	Drive sprocket	⑰	Oil pump chain	⑱	Torque converter
⑲	Driven sprocket				

TRANSAXLE : Operation Status

INFOID:0000000008765768

×: Engaged or applied.

Selector lever position	Parking mechanism	Counter gear set	Low brake	High clutch	Reverse brake	Primary pulley	Secondary pulley	Steel belt	Reduction gear set
P	×	×				×	×	×	
R		×			×	×	×	×	×
N		×				×	×	×	
D		×	× (1GR)	× (2GR)		×	×	×	×
L		×	× (1GR)	× (2GR)		×	×	×	×

TRANSAXLE : Transaxle Mechanism

INFOID:0000000008765769

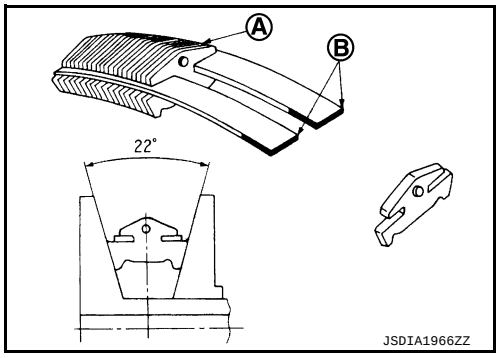
BELT & PULLEY

Mechanism

It is composed of a pair of pulleys (the groove width is changed freely in the axial direction) and the steel belt (the steel plates are placed continuously and the belt is guided with the multilayer steel rings on both sides). The groove width changes according to wrapping radius of steel belt and pulley from low status to overdrive status continuously with non-step. It is controlled with the oil pressures of primary pulley and secondary pulley.

Steel belt

It is composed of multiple steel plates Ⓐ and two steel rings Ⓑ stacked to a several number. The feature of this steel belt transmits power with compression of the steel plate in contrast with transmission of power in pulling with a rubber belt. Friction force is required with the pulley slope to transmit power from the steel plate. The force is generated with the following mechanism:

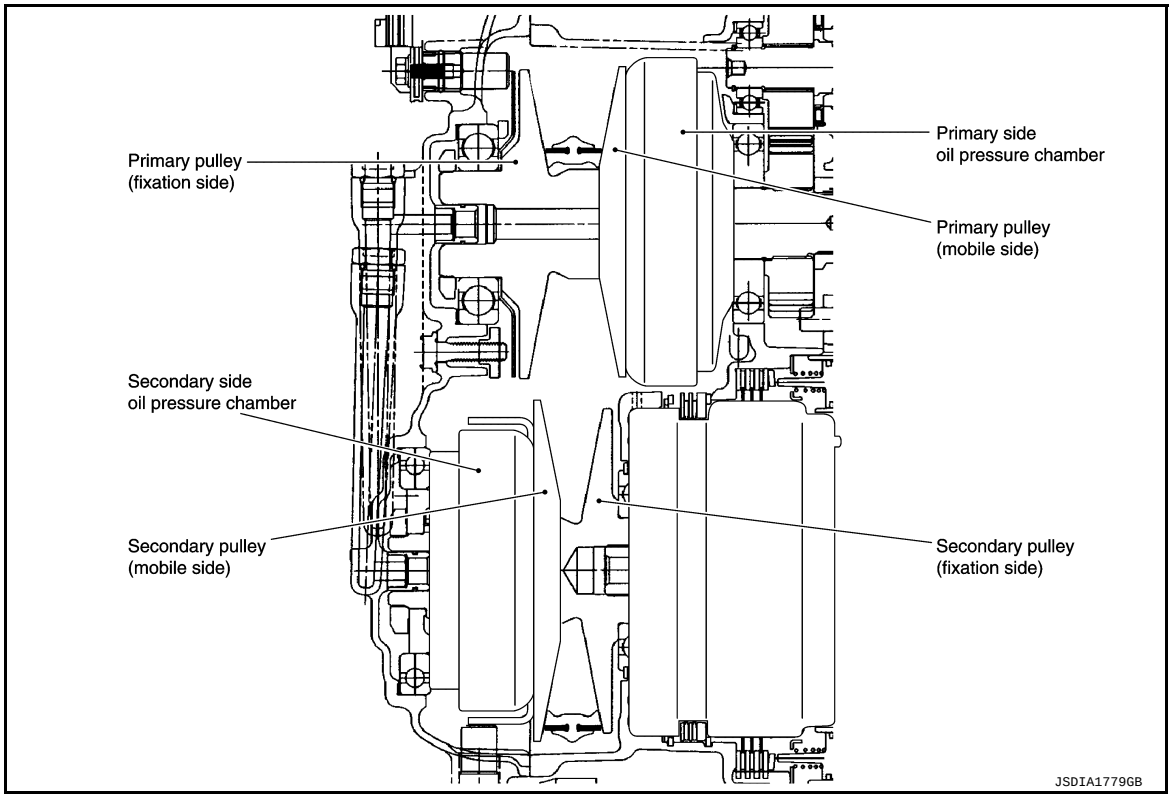


Oil pressure applies to the secondary pulley to nip the plate. ⇒The plate is pushed and extended outward. ⇒The steel ring shows withstands. ⇒Pulling force is generated on the steel ring. ⇒The plate of the primary pulley is nipped between the pulley. ⇒Friction force is generated between the steel belt and the pulley.

Therefore, responsibilities are divided by the steel plate that transmits the power with compression and the steel ring that maintains necessary friction force. In this way, the tension of the steel ring is distributed on the entire surface and stress variation is limited, resulting in good durability.

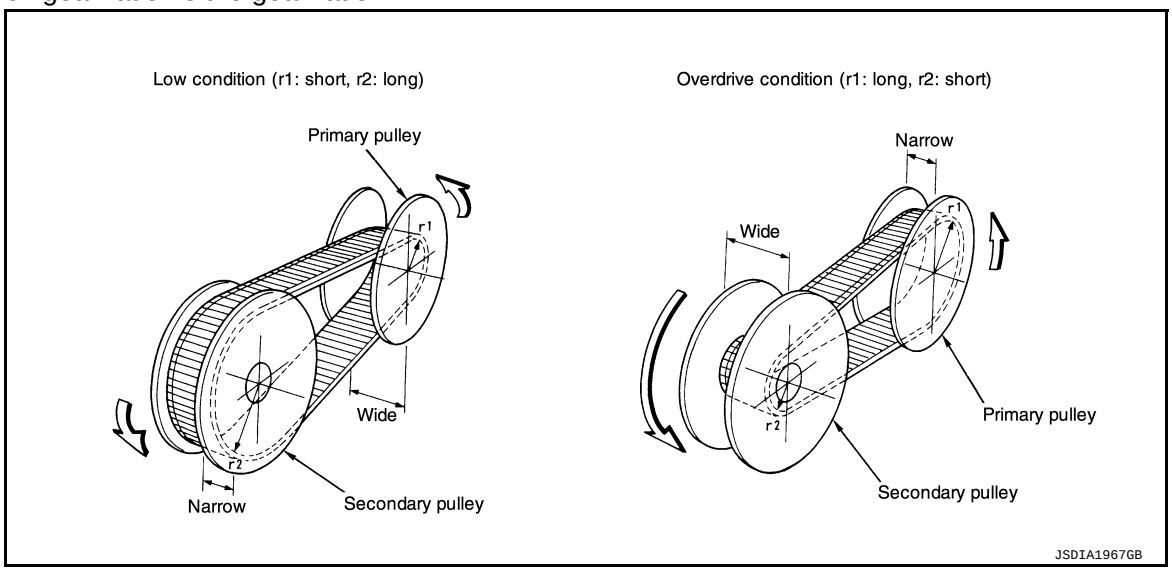
Pulley

The primary pulley (input shaft side) and the secondary pulley (output shaft side) have the shaft with slope (fixed cone surface), movable sheave (movable cone surface that can move in the axial direction) and oil pressure chamber at the back of the movable sheave.



Pulley gear shifting operation

- Pulley gear shifting operation
  The movable sheave slides on the shaft to change the groove width of the pulley. Input signals of engine load (accelerator pedal opening), engine revolution and gear ratio (vehicle speed) change the operation pressures of the primary pulley and the secondary pulley, and controls the pulley groove width. Along with change of the pulley groove width, the belt contact radius is changed. This allows continuous and stepless gear shifting from low to overdrive. “The contact radius ratio of each pulley in contact with the belt x auxiliary gearbox gear ratio” is the gear ratio.



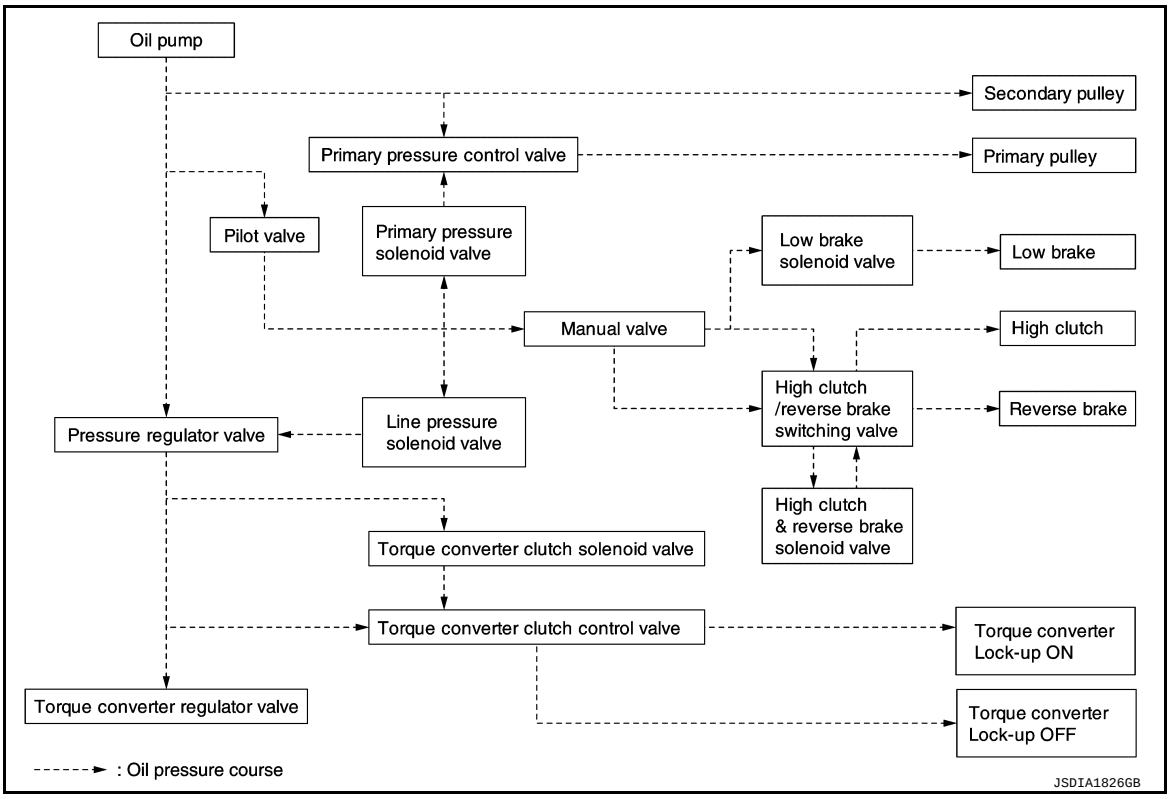
AUXILIARY GEARBOX MECHANISM

1st, 2nd and reverse gears are changed with the planetary gear mechanism.

TRANSAXLE : Oil Pressure System

INFOID:0000000008765770

Oil pressure required for operation of the transaxle transmission mechanism is generated by oil pump, oil pressure control valve, solenoid valve, etc.



TRANSAXLE : Component Description

INFOID:0000000008765771

Part name	Function
Torque converter	It is composed of the cover converter, turbine assembly, stator, pump impeller assembly, etc. It increases the engine torque and transmits the power to the transaxle.
Oil pump	Through the oil pump drive chain, it uses the vane oil pump driven by the engine. It generates necessary oil pressure to circulate fluid and to operate the clutch and brake.
Counter gear set	The power from the torque converter is transmitted to the primary pulley through the counter drive gear and the counter driven gear.
Belt & pulley (Continuously variable transmission)	It is composed of the primary pulley, secondary pulley, steel belt, etc. and the mechanism performs shifting, changes the gear ratio and transmits the power with oil pressure from the control valve.
Auxiliary gearbox (stepped transmission)	It is composed of the planetary gear, multi-disc clutch, multi-disc brake, etc. and the mechanism performs shifting (1-2 gear shifting and reverse) with oil pressure from the control valve.
Reduction gear set	Conveys power from the transmission mechanism to the reduction gear and the final gear.
Parking mechanism	When the shift lever is changed to P position, the mechanism fixes the parking gear (integrated with the reduction gear) and the fixes the output shaft.
Control valve	Controls oil pressure from the oil pump to the pressure suitable for the line pressure control system, shift control system, lock-up control system and lubrication system.
Pressure regulator valve	Adjusts the discharge pressure from the oil pump to the optimum pressure (line pressure) corresponding to the driving condition.
Torque converter regulator valve	Adjusts the feed pressure to the torque converter to the optimum pressure corresponding to the driving condition.
Pilot valve	Adjusts line pressure and produces a constant pressure (pilot pressure) necessary for activating each solenoid valve.

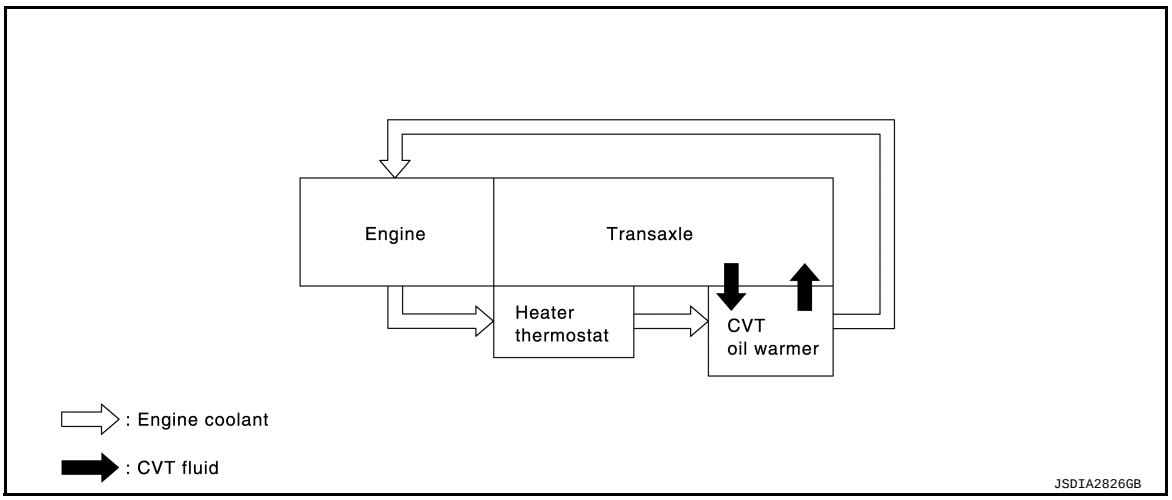
Part name	Function
Manual valve	Distributes the clutch and brake operation pressures (pilot pressure) corresponding to each shift position.
High clutch/reverse brake switching valve	Switches the circuit for the high clutch and the reverse brake.
Torque converter clutch control valve	It is operated with the torque converter clutch solenoid valve and it adjusts the tightening pressure and non-tightening pressure of the torque converter clutch piston of the torque converter.
Primary pressure control valve	It is operated with the primary pressure solenoid valve and adjusts the feed pressure to the primary pulley.
Primary pressure solenoid valve	TM-78, "CVT CONTROL SYSTEM : Primary Pressure Solenoid Valve"
Low brake solenoid valve	TM-78, "CVT CONTROL SYSTEM : Low Brake Solenoid Valve"
High clutch & reverse brake solenoid valve	TM-79, "CVT CONTROL SYSTEM : High Clutch & Reverse Brake Solenoid Valve"
Torque converter clutch solenoid valve	TM-79, "CVT CONTROL SYSTEM : Torque Converter Clutch Solenoid Valve"
Line pressure solenoid valve	TM-80, "CVT CONTROL SYSTEM : Line Pressure Solenoid Valve"

FLUID COOLER & FLUID WARMER SYSTEM

FLUID COOLER & FLUID WARMER SYSTEM : System Description

INFOID:0000000008765772

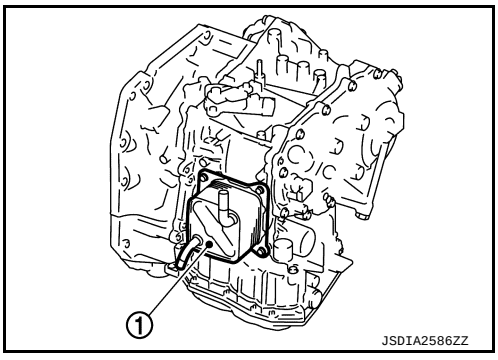
CVT FLUID COOLER SCHEMATIC



COMPONENT DESCRIPTION

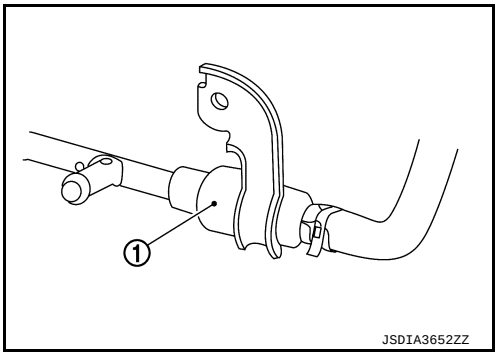
CVT Oil Warmer

- The CVT oil warmer ① is installed on the front part of transaxle assembly.
- When engine is started while engine and CVT are cold, engine coolant temperature rises more quickly than CVT fluid temperature. CVT oil warmer is provided with two circuits for CVT and engine coolant respectively so that warmed engine coolant warms CVT quickly. This helps shorten CVT warming up time, improving fuel economy.
- A cooling effect is obtained when CVT fluid temperature is high.



Heater Thermostat

- The heater thermostat ① is installed to front part of transaxle assembly.
- The heater thermostat open and close with set temperature.



SHIFT LOCK SYSTEM

SHIFT LOCK SYSTEM : System Description

INFOID:0000000008765773

- The shift lock is the mechanism provided to prevent quick start of a vehicle by incorrect operation of a drive when the selector lever is in “P” position.
- Selector lever can be shifted from the “P” position to another position when the following conditions are satisfied.

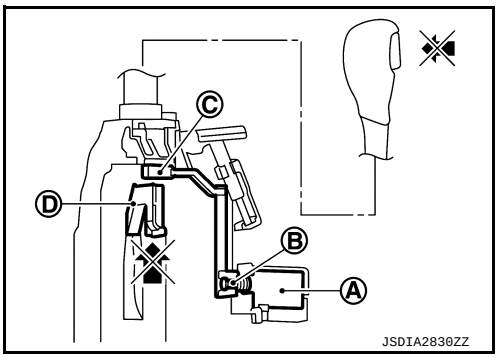
- Ignition switch is ON.
- Stop lamp switch ON (brake pedal is depressed)
- Press the selector button.

SHIFT LOCK OPERATION AT P POSITION

When brake pedal is not depressed (no selector operation allowed)

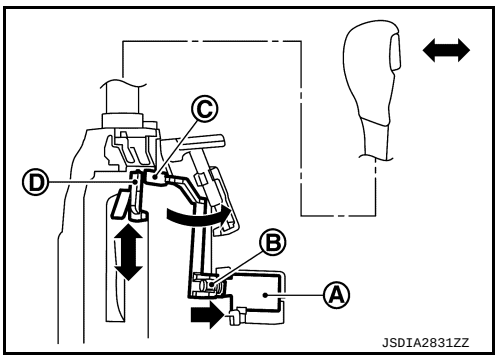
When the brake pedal is not depressed with the ignition switch ON, the shift lock solenoid Ⓐ is OFF (not energized) and the solenoid rod Ⓑ is extended with spring.

The connecting lock lever Ⓒ is located at the position shown in the figure when the solenoid rod is extended. It prevents the movement of the detent rod Ⓓ. The selector lever cannot be shifted from the “P” position for this reason.



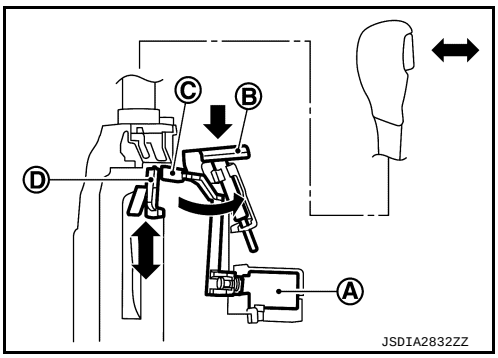
When brake pedal is depressed (selector lever operation allowed)

The shift lock solenoid Ⓐ is turned ON (energized) when the brake pedal is depressed with the ignition switch ON. The solenoid rod Ⓑ is compressed with the electromagnetic force. The connecting lock lever Ⓒ rotates when the solenoid rod is compressed. Therefore, the detent rod Ⓓ can be moved. The selector lever can be shifted to other positions for this reason.



P POSITION HOLD MECHANISM (IGNITION SWITCH LOCK)

The shift lock solenoid Ⓐ is not energized when the ignition switch is in any position other than ON. The shift mechanism is locked and “P” position is held. The operation cannot be performed from “P” position if the brake pedal is depressed with the ignition switch ON when the operation system of shift lock solenoid is malfunctioning. However, the lock lever Ⓒ is forcibly rotated and the shift lock is released when the shift lock release button Ⓑ is pressed from above. The selector operation from “P” position can be performed.



Ⓓ : Detent rod

CAUTION:

Use the shift lock release button only when the selector lever cannot be operated even if the brake pedal is depressed with the ignition switch ON.

KEY LOCK SYSTEM

KEY LOCK SYSTEM : System Description

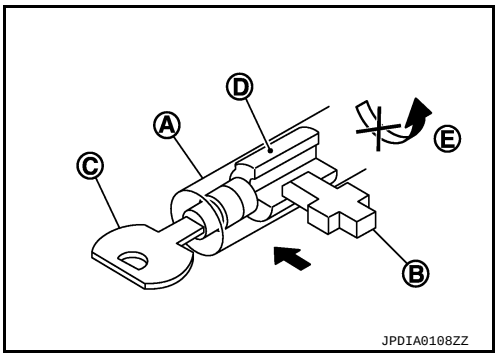
INFOID:0000000008765774

KEY LOCK MECHANISM

The key is not set to LOCK when the selector lever is not selected to P position. This prevents the key from being removed from the key cylinder.

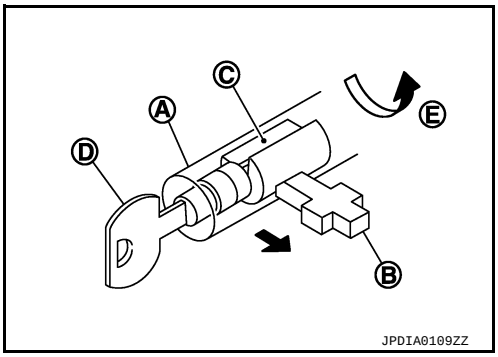
Key lock status

The slider Ⓑ in the key cylinder Ⓐ is moved to the left side of the figure when the selector lever is in any position other than “P” position. The rotator Ⓓ that rotates together with the key Ⓒ cannot be rotated for this reason. The key cannot be removed from the key cylinder because it cannot be turned to LOCK Ⓔ.



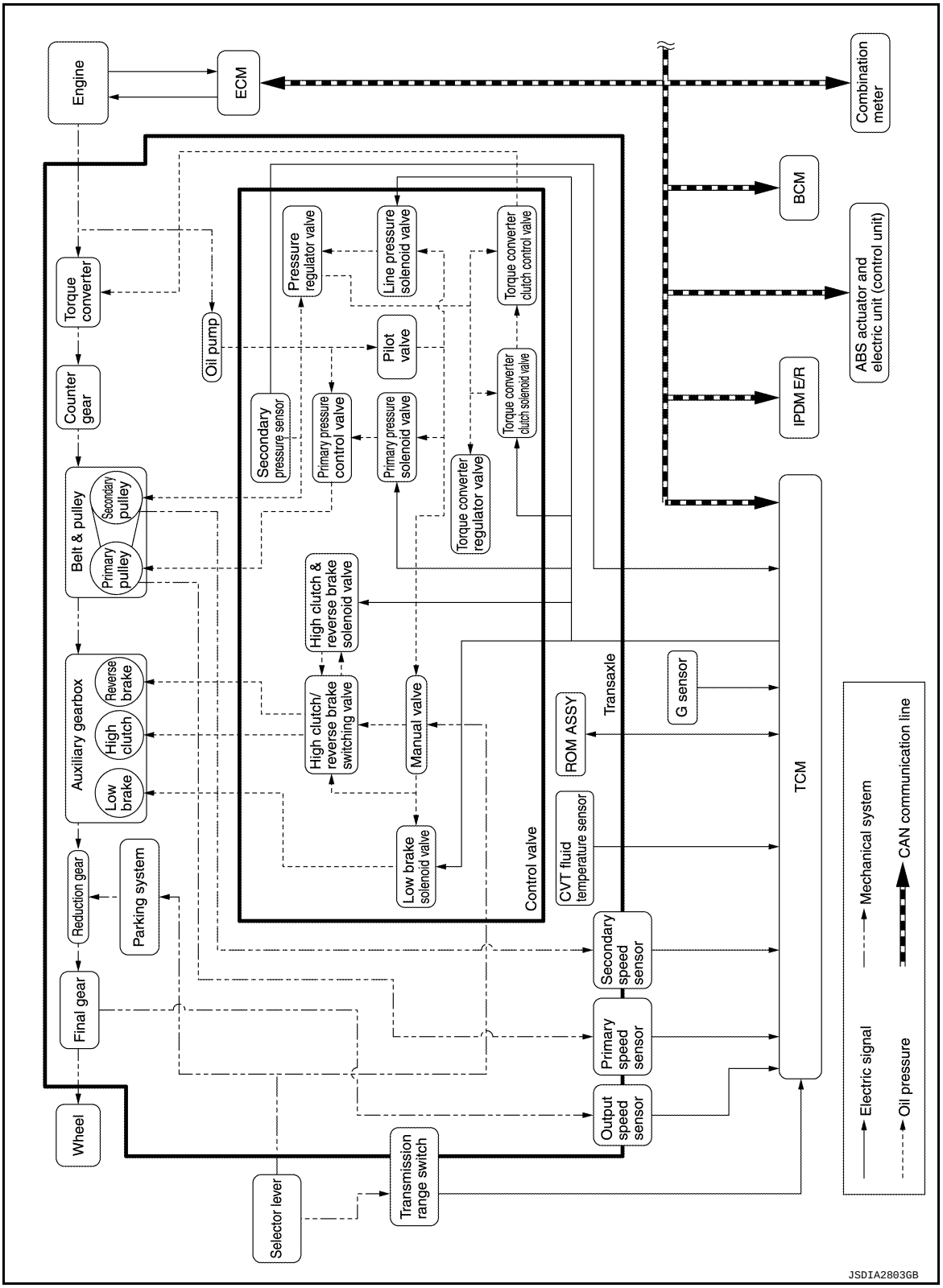
Key unlock status

The slider Ⓑ in the key cylinder Ⓐ is moved to the right side of the figure when the selector lever is in “P” position and the finger is removed from the selector button. The rotator Ⓒ can be rotated for this reason. The key Ⓓ can be removed from the key cylinder because it can be turned to LOCK Ⓔ.



SYSTEM
CVT CONTROL SYSTEM
CVT CONTROL SYSTEM : System Diagram

INFOID:0000000008765775



CVT CONTROL SYSTEM : System Description

INFOID:0000000008765776

DESCRIPTION

- CVT detects the vehicle driving status from switches, sensors and signals, and controls the vehicle so that the optimum shift position and shift timing may always be achieved. It also controls the vehicle to reduce shift and lockup shock, etc.
- If a malfunction occurs on the electric system, activate the fail-safe mode only to drive the vehicle.

MAIN CONTROL CONTENTS OF TCM

Controls	Reference
Line pressure control	TM-96, "LINE PRESSURE CONTROL : System Description"
Shift control	TM-97, "SHIFT CONTROL : System Description"
Select control	TM-99, "SELECT CONTROL : System Description"
Lock-up control	TM-100, "LOCK-UP CONTROL : System Description"
Idle neutral control	TM-101, "IDLE NEUTRAL CONTROL : System Description"
ECO mode control	DMS-25, "ECO MODE CONTROL : System Description"
SPORT mode control	DMS-60, "SPORT MODE CONTROL : System Description"
Fail-safe	TM-93, "CVT CONTROL SYSTEM : Fail-Safe"
Self-diagnosis function	TM-107, "CONSULT Function"
Communication function with CONSULT	TM-107, "CONSULT Function"

LIST OF CONTROL ITEMS AND INPUT/OUTPUT

Control Item		Shift control	Line pressure control	Select control	Lock-up control	Fail-safe function*
Input	Engine torque signal (CAN communication)	×	×	×	×	×
	Engine speed signal (CAN communication)	×	×	×	×	×
	Accelerator pedal position signal (CAN communication)	×	×	×	×	×
	Closed throttle position signal (CAN communication)	×	×		×	
	Stop lamp switch signal (CAN communication)	×	×	×	×	
	Secondary pressure sensor	×	×	×		×
	CVT fluid temperature sensor		×	×	×	×
	Primary speed sensor	×	×		×	×
	Secondary speed sensor	×	×	×	×	×
	Output speed sensor	×	×	×	×	×
	Transmission range switch	×	×	×	×	×
	Overdrive control switch signal (CAN communication)	×				
	ECO mode switch signal (CAN communication)	×				
	SPORT mode switch signal (CAN communication)	×				

Control Item		Shift control	Line pressure control	Select control	Lock-up control	Fail-safe function*
Output	Line pressure solenoid valve	×	×	×		×
	Primary pressure solenoid valve	×				×
	Torque converter clutch solenoid valve				×	×
	High clutch & reverse brake solenoid valve	×		×		×
	Low brake solenoid valve	×		×		×
	Shift position indicator (CAN communication)			×		
	OD OFF indicator lamp signal (CAN communication)	×				
	ECO mode indicator lamp signal (CAN communication)	×				
	SPORT mode indicator lamp signal (CAN communication)	×				

*: If these input/output signals show errors, TCM activates the fail-safe function.

CVT CONTROL SYSTEM : Fail-Safe

INFOID:0000000008998195

TCM has a fail-safe mode. The mode functions so that operation can be continued even if the signal circuit of the main electronically controlled input/output parts is damaged.
If the vehicle shows following behaviors including “poor acceleration”, a malfunction of the applicable system is detected by TCM and the vehicle may be in a fail-safe mode. At this time, check the DTC code and perform inspection and repair according to the malfunction diagnosis procedures.

Fail-safe function

DTC	Vehicle behavior	Conditions of vehicle
P062F	• Not changed from normal driving	—
P0705	• Shift position indicator on combination meter is not displayed • Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0706	• Shift position indicator on combination meter is not displayed • Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0711	• Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
	• Selector shock is large • Start is slow	Engine coolant temperature when engine start:-35°C (-31°F) ≤ Temp. < 10°C (50°F)
	• Selector shock is large • Start is slow	Engine coolant temperature when engine start: Temp. < -35°C (-31°F)
P0712	• Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
	• Selector shock is large • Start is slow	Engine coolant temperature when engine start:-35°C (-31°F) ≤ Temp. < 10°C (50°F)
	• Selector shock is large • Start is slow	Engine coolant temperature when engine start: Temp. < -35°C (-31°F)

DTC	Vehicle behavior	Conditions of vehicle
P0713	• Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
	• Selector shock is large • Start is slow	Engine coolant temperature when engine start:-35°C (-31°F) ≤ Temp. < 10°C (50°F)
	• Selector shock is large • Start is slow	Engine coolant temperature when engine start: Temp. < -35°C (-31°F)
P0715	• Selector shock is large • Start is slow • Acceleration is slow • Vehicle speed is not increased • Lock-up is not performed	—
P0720	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0740	• Lock-up is not performed	—
P0743	• Lock-up is not performed	—
P0744	• Lock-up is not performed	—
P0746	• Selector shock is large • Start is slow • Acceleration is slow • Vehicle speed is not increased • Lock-up is not performed	—
P0846	• Start is slow • Acceleration is slow	—
P0847	• Acceleration is slow	—
P0848	• Start is slow • Acceleration is slow	—
P0863	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0890	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0962	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0963	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0965	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0966	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0967	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—

DTC	Vehicle behavior	Conditions of vehicle
P0998	• Start is slow	—
P0999	• Start is slow	Wire disconnection
	• Vehicle speed is not increased	Voltage shorting
P099B	• Start is slow	—
P099C	• Start is slow	Wire disconnection
	• Vehicle speed is not increased	Voltage shorting
P1586	• Not changed from normal driving	—
P1588	• Not changed from normal driving	—
P2765	• Selector shock is large • Start is slow • Acceleration is slow • Vehicle speed is not increased • Lock-up is not performed	—
P2857	• Start is slow	—
P2858	• Vehicle speed is not increased	—
P2859	• Vehicle speed is not increased	—
P285A	• Start is slow	—
U0073	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
U0100	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
U0140	• Not changed from normal driving	—
U0141	• Not changed from normal driving	—
U0155	• Not changed from normal driving	—
U0300	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
U1000	• Not changed from normal driving	—
U1117	• Not changed from normal driving	—

CVT CONTROL SYSTEM : Protection control

INFOID:0000000008998196

The TCM becomes the protection control status temporarily to protect the safety when the safety of TCM and transmission is lost. It automatically returns to the normal status if the safety is secured.
The TCM has the following protection control.

CONTROL FOR WHEEL SPIN

Control	When a wheel spin is detected, the engine output and gear ratio are limited and the line pressure is increased. At the 1GR, the clutch pressure is increased.
Vehicle behavior in control	If the accelerator is kept depressing during wheel spin, the engine revolution and vehicle speed are limited to a certain degree. From the 1GR, upshift to a certain gear ratio is only allowed.
Normal return condition	Wheel spin convergence returns the control to the normal control.

CONTROL WHEN FLUID TEMPERATURE IS HIGH

Control	When the CVT fluid temperature is high, the gear shift permission maximum revolution and the maximum torque are reduced than usual to prevent increase of the oil temperature.
Vehicle behavior in control	Power performance may be lowered, compared to normal control.
Normal return condition	The control returns to the normal control when CVT fluid temperature is lowered.

TORQUE IS REDUCED WHEN DRIVING WITH THE REVERSE GEAR

Control	Engine output is controlled according to a vehicle speed while reversing the vehicle.
Vehicle behavior in control	Power performance may be lowered while reversing the vehicle.
Normal return condition	Torque returns to normal by positioning the selector lever in a range other than “R” position.

REVERSE PROHIBIT CONTROL

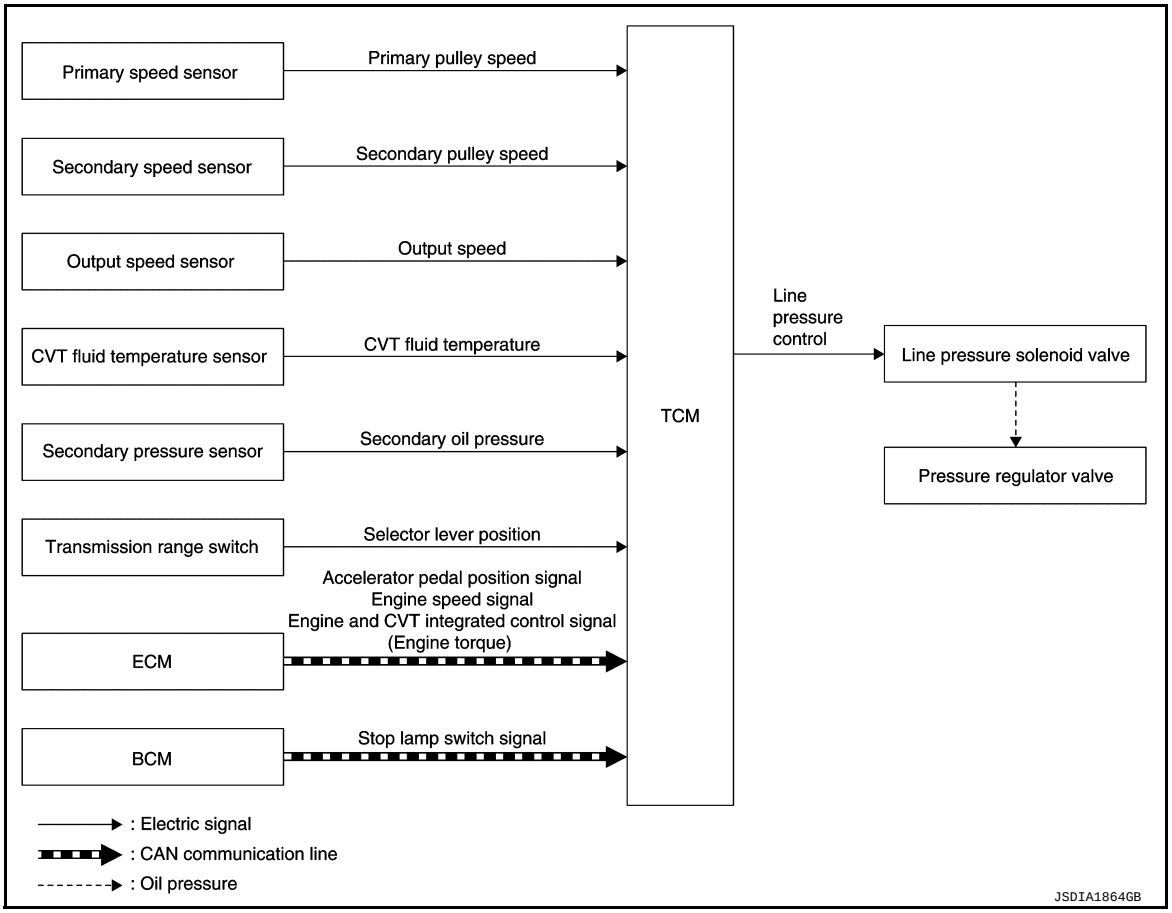
Control	The reverse brake is controlled to avoid becoming engaged when the selector lever is set in “R” position while driving in forward direction at more than the specified speed.
Vehicle behavior in control	If the selector lever is put at “R” position when driving with the forward gear, the gear becomes neutral, not reverse.
Normal return condition	The control returns to normal control when the vehicle is driven at low speeds. (The reverse brake becomes engaged.)

LINE PRESSURE CONTROL

LINE PRESSURE CONTROL : System Description

INFOID:0000000008765780

SYSTEM DIAGRAM



DESCRIPTION

Highly accurate line pressure control (secondary pressure control) reduces friction for improvement of fuel economy.

Normal Oil Pressure Control

Appropriate line pressure (secondary pressure) suitable for driving condition are determined based on the accelerator pedal position, engine speed, primary pulley (input) speed, secondary pulley (output) speed, vehicle speed, input torque, stop lamp switch signal, transmission range switch signal, lock-up signal, power voltage, target shift ratio, oil temperature and oil pressure.

Secondary Pressure Feedback Control

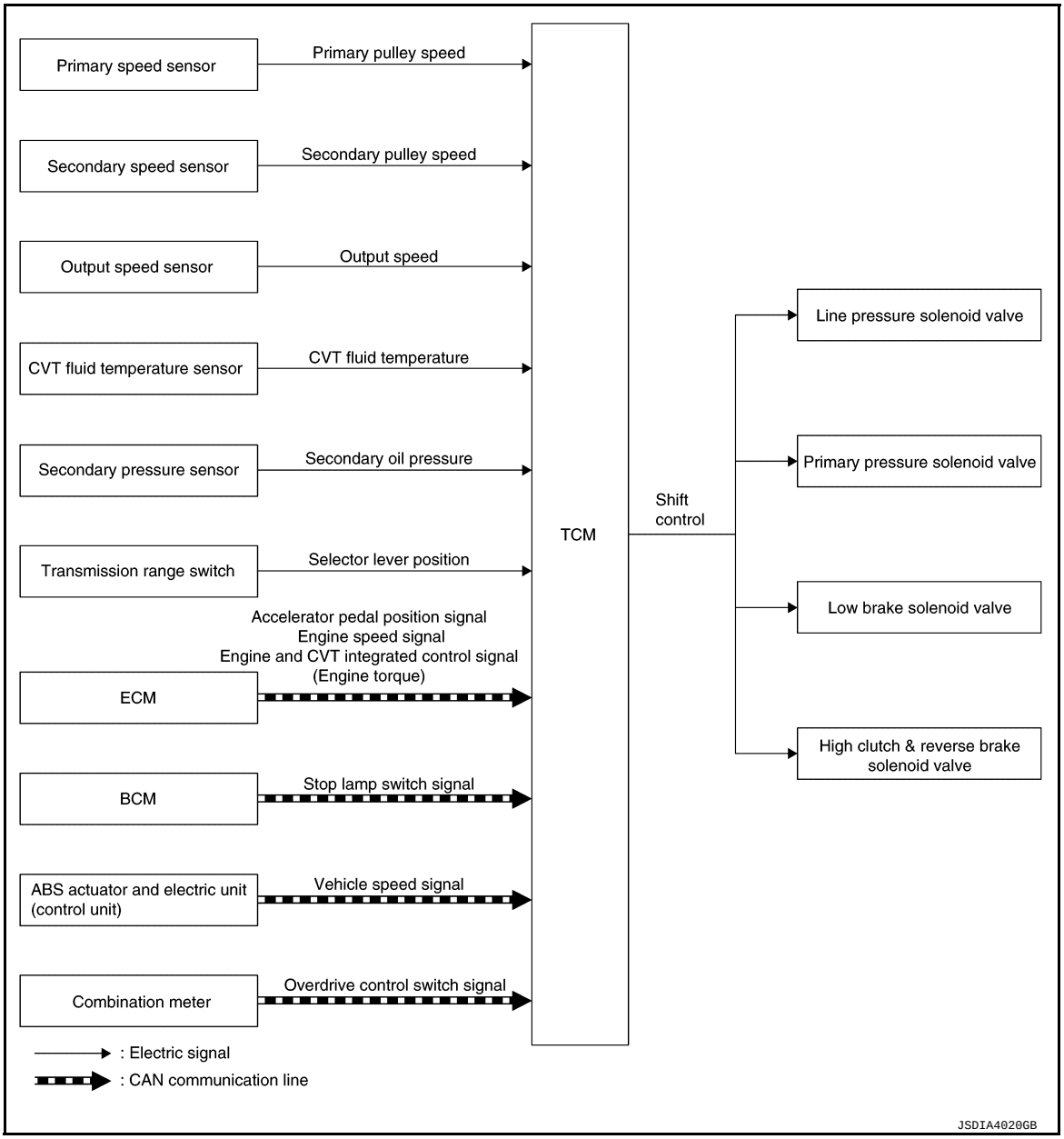
In normal oil pressure control and oil pressure control in shifting, highly accurate secondary pressure is determined by detecting the secondary pressure using an oil pressure sensor and by feedback control.

SHIFT CONTROL

SHIFT CONTROL : System Description

INFOID:0000000008765781

SYSTEM DIAGRAM

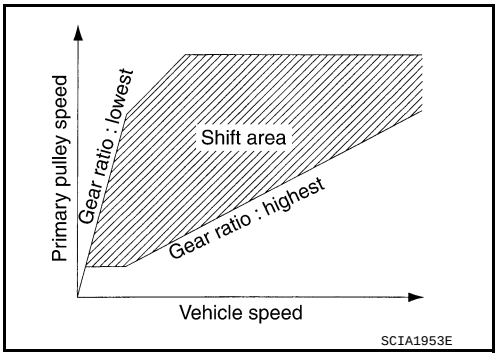


DESCRIPTION

To select the gear ratio that can give the driving force to meet driver's intent or vehicle situation, the vehicle driving condition such as vehicle speed or accelerator pedal position is detected and the most appropriate gear ratio is selected and the shifting method before reaching the speed is determined. The information is output to the primary pressure solenoid valve to control the line pressure input/output to the primary pulley, to determine the primary pulley (movable pulley) position and to control the gear position.

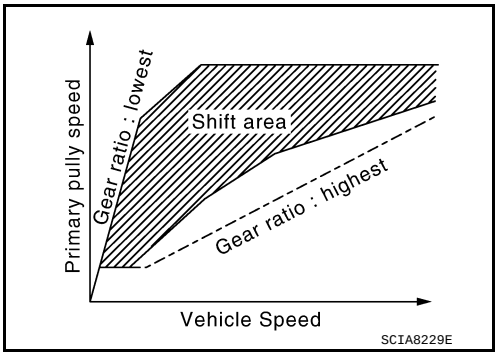
D Position (OD ON)

Gear shifting is performed in all shifting ranges from the lowest to the highest gear ratio.



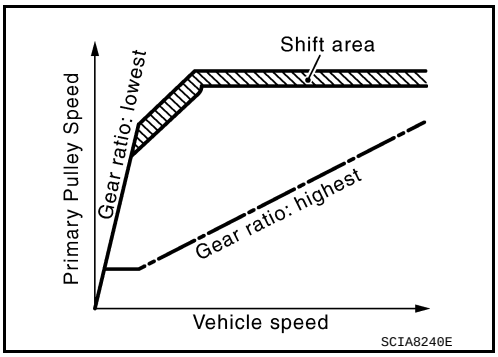
D Position (OD OFF)

The gear ratio is generally high by limiting the shifting range on the high side, and this always generates a large driving power.



L Position

By limiting the shifting range only to the lowest of the gear ratio, a large driving force and engine brake are obtained.

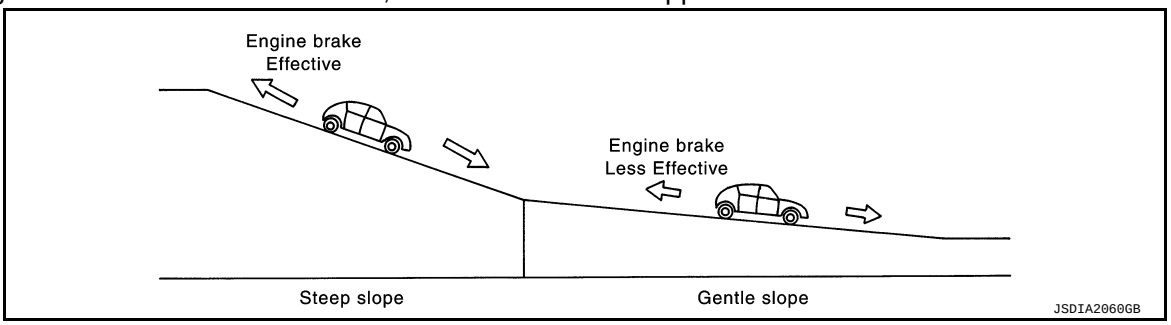


Hill Climbing And Descending Control

If a downhill is detected with the accelerator pedal is released, the system performs downshift to increase the engine brake force so that vehicle may not be accelerated more than necessary. If a climbing hill is detected, the system improves the acceleration performance in re-acceleration by limiting the gear shift range on the high side.

NOTE:

For engine brake control on a downhill, the control can be stopped with CONSULT.



Control In Acceleration

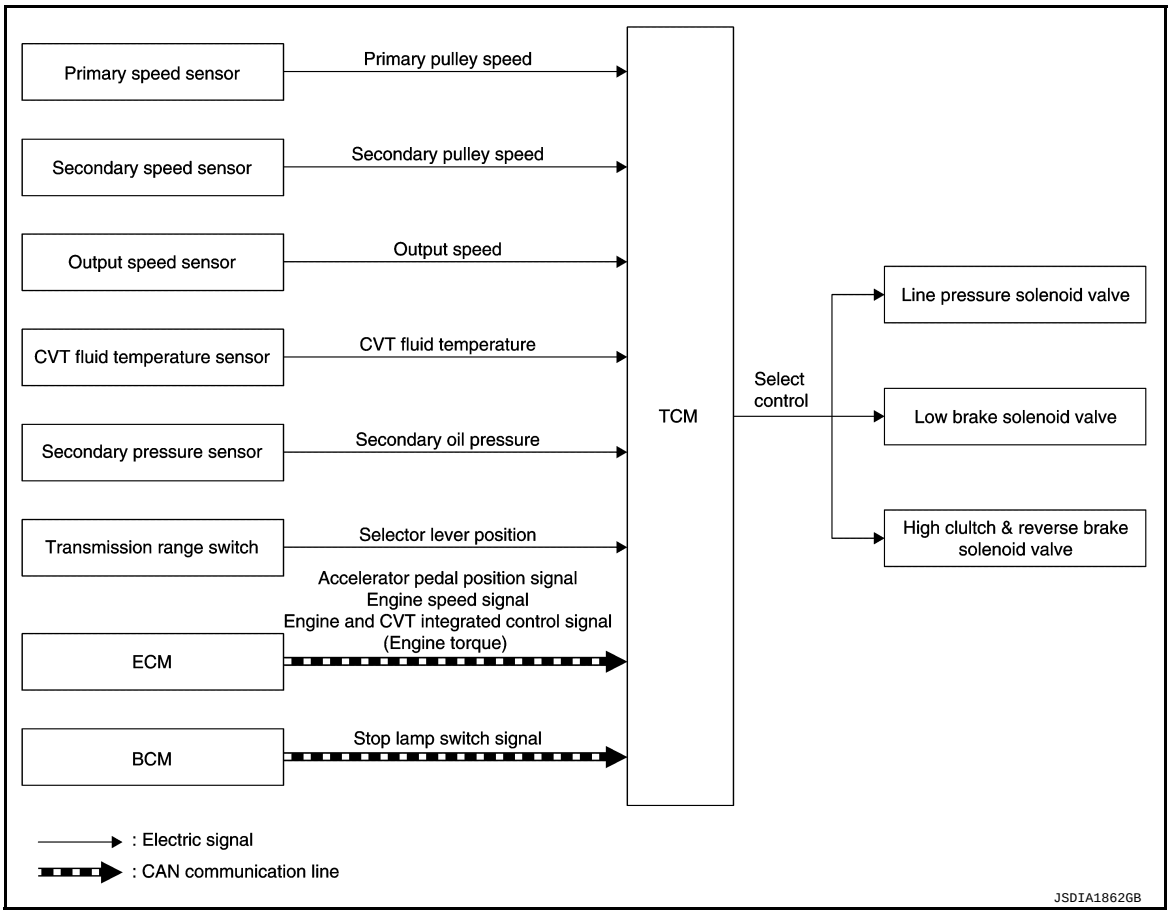
From change of the vehicle speed or accelerator pedal position, the acceleration request level of the driver or driving scene is evaluated. In start or acceleration during driving, the gear shift characteristics with linearity of revolution increase and vehicle speed increase are gained to improve the acceleration feel.

SELECT CONTROL

SELECT CONTROL : System Description

INFOID:0000000008765782

SYSTEM DIAGRAM



DESCRIPTION

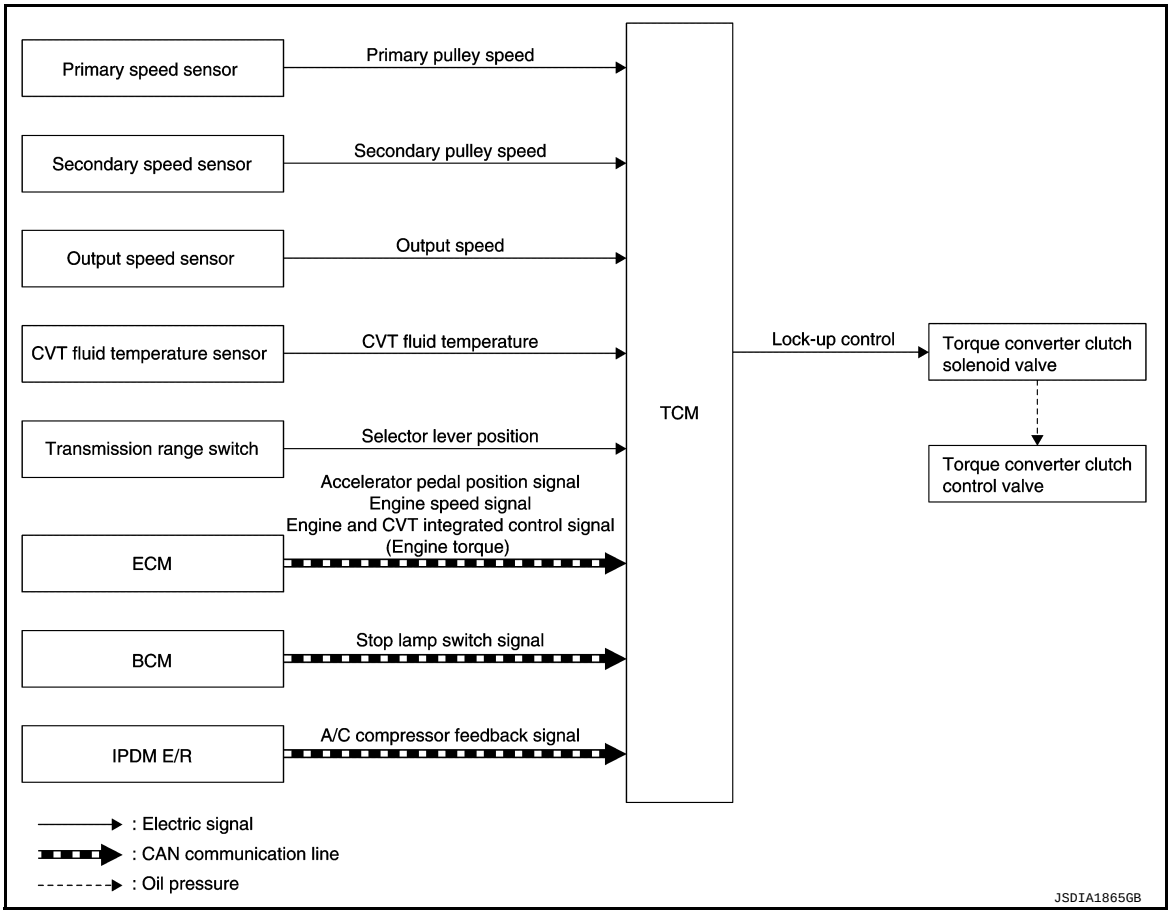
Based on accelerator pedal angle, engine speed, primary pulley speed, and the secondary pulley speed, the optimum operating pressure is set to reduce impact of a selector lever operation while shifting from “N” (“P”) to “D” (“R”) position.

LOCK-UP CONTROL

LOCK-UP CONTROL : System Description

INFOID:0000000008765783

SYSTEM DIAGRAM



DESCRIPTION

- Controls for improvement of the transmission efficiency by engaging the torque converter clutch in the torque converter and eliminating slip of the converter. Achieves comfortable driving with slip control of the torque converter clutch.
- The oil pressure feed circuit for the torque converter clutch piston chamber is connected to the torque converter clutch control valve. The torque converter clutch control valve is switched by the torque converter clutch solenoid valve with the signal from TCM. This controls the oil pressure circuit, which is supplied to the torque converter clutch piston chamber, to the release side or engagement side.
- If the CVT fluid temperature is low or the vehicle is in fail-safe mode due to malfunction, lock-up control is prohibited.

Lock-up engagement

In lock-up engagement, the torque converter clutch solenoid valve makes the torque converter clutch control valve locked up to generate the lock-up apply pressure. This pushes the torque converter clutch piston for engagement.

Lock-up release condition

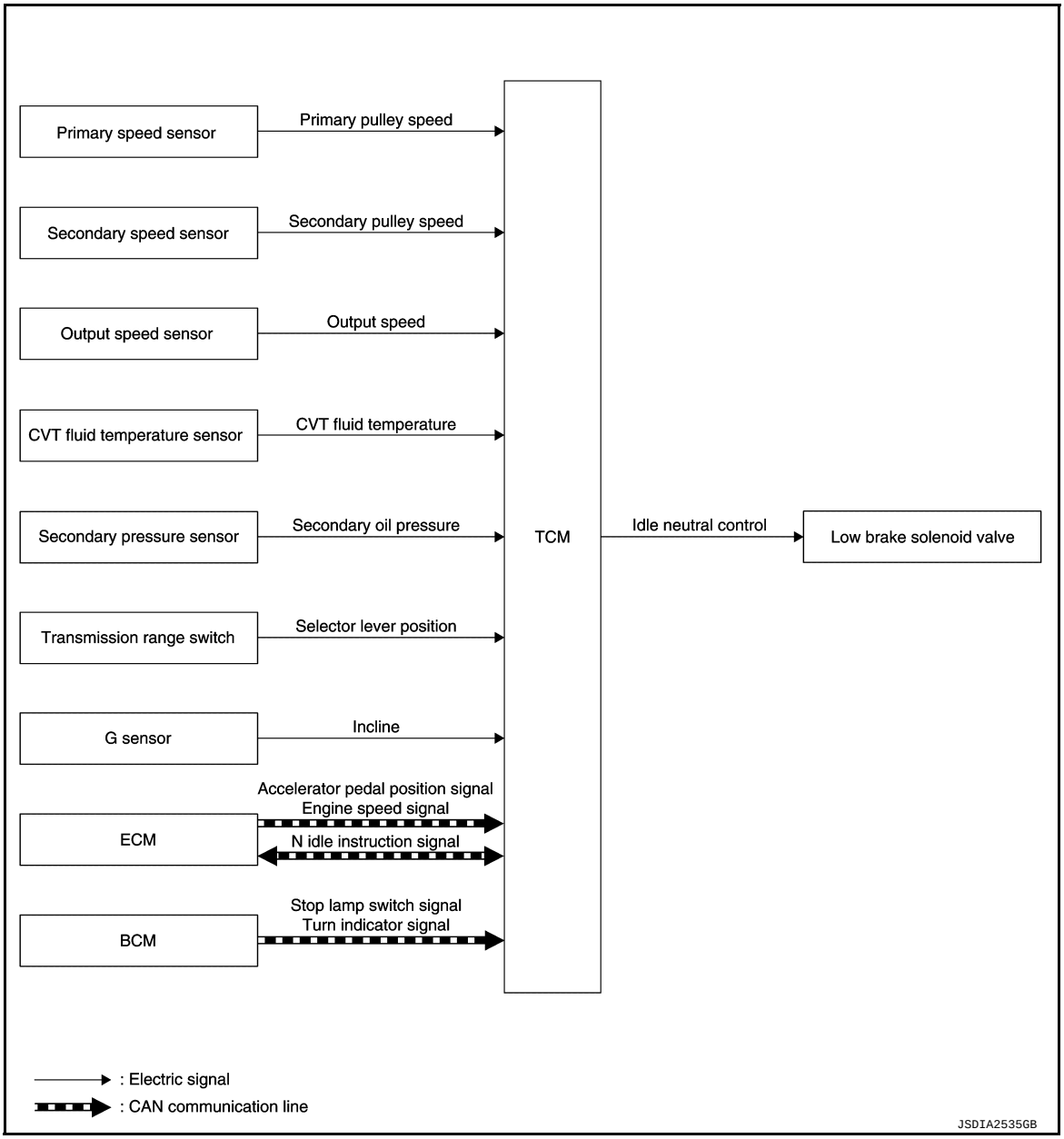
In lock-up release, the torque converter clutch solenoid valve makes the torque converter clutch control valve non-locked up to drain the lock-up apply pressure. This does not engage the torque converter clutch piston.

IDLE NEUTRAL CONTROL

IDLE NEUTRAL CONTROL : System Description

INFOID:0000000008765784

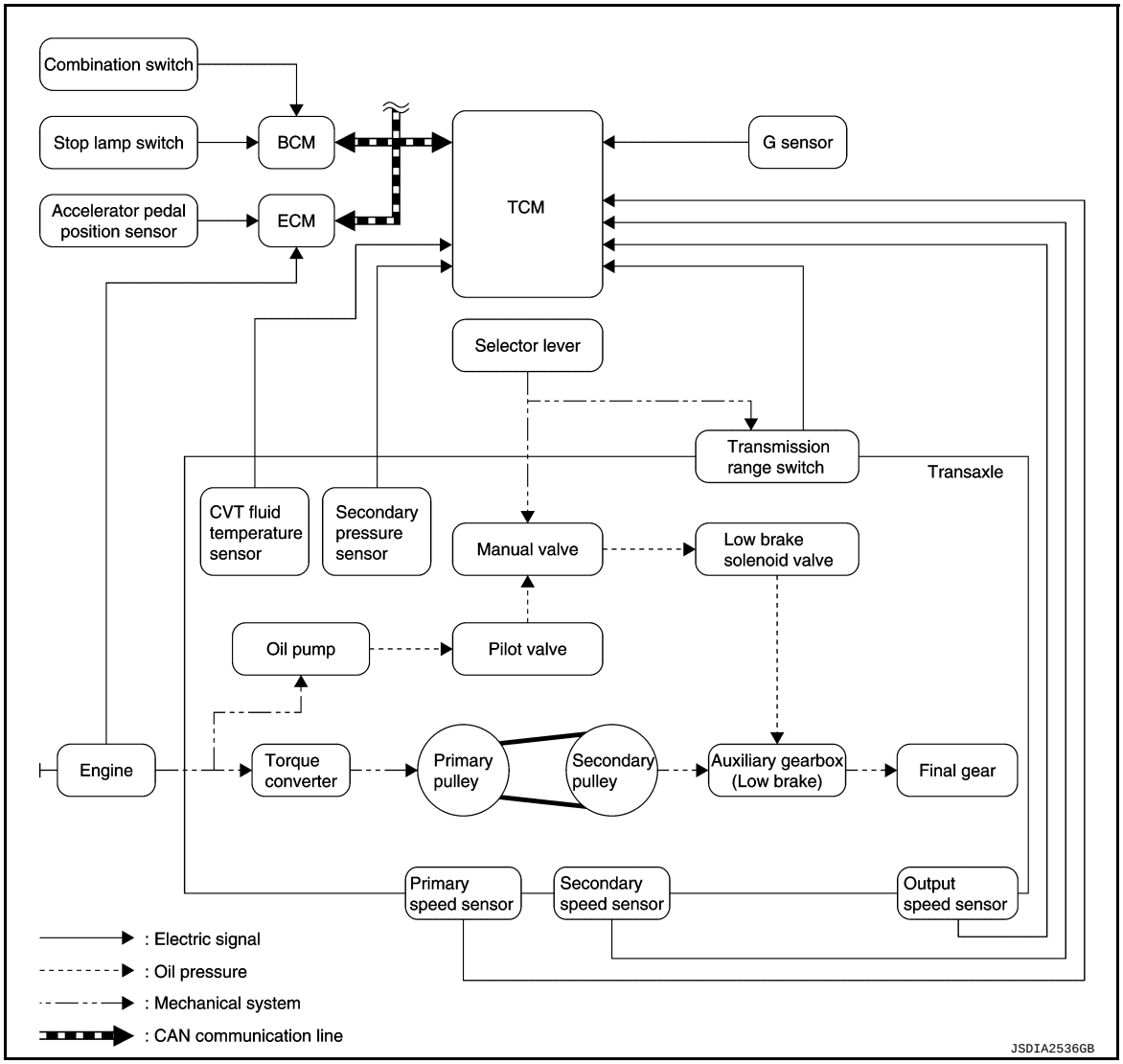
SYSTEM DIAGRAM



DESCRIPTION

If a driver has no intention of starting the vehicle in D position, TCM operates the low brake solenoid valve and controls the oil pressure of the low brake to be low pressure. Therefore, the low brake is in the release (slip)

status and the power transmission route of transaxle is the same status as the N position. In this way, the transaxle is in idling status and load to the engine can be reduced to improve fuel economy.



Idle Neutral Control Start Condition

Idle neutral control is started when all of the following conditions are fulfilled. However, during idle neutral control, idle neutral control is stopped when any of the following conditions is not met.

Driving environment	: Flat road or road with mild gradient
Selector lever position	: “D” position
Vehicle speed	: 0 km/h (0 MPH)
Accelerator pedal position	: 0.0/8
Brake pedal	: Depressed
Engine speed	: Idle speed
Turn signal lamp/hazard signal lamp	: Not activated

NOTE:

Stops or prohibits the idle neutral control when the TCM and ECM detect that the vehicle is in one of the following conditions.

- Engine coolant temperature and CVT fluid temperature are the specified temperature or more, or the specified temperature or less.
- When a transaxle malfunction occurs.
- When the vehicle detects DTC and is in the fail-safe mode.

Idle Neutral Control Resume Condition

When the idle neutral control finishes, if the vehicle is driven at more than the specified speed and the idle neutral control start conditions are satisfied, the idle neutral control starts again. If the vehicle has a malfunction, the idle neutral control does not start.

ECO MODE CONTROL

ECO MODE CONTROL : System Description

INFOID:0000000008954734

- Driving mode that selects the shift schedule with priority on fuel economy which gives low engine revolution.
- The gear shift line is not changed with the control mode change for the following conditions:
- When the selector lever is at “L” position.
- When the selector lever is at D position and overdrive is OFF.
- For details on ECO mode control, refer to DMS-25, "ECO MODE CONTROL : System Description".

FAIL-SAFE

If a malfunction occurs in the system of CVT during ECO mode, the ECO mode indicator lamp turns OFF and the control switches to the normal mode control.

SPORT MODE CONTROL

SPORT MODE CONTROL : System Description

INFOID:0000000008954735

- Driving mode that keeps high engine revolution and provides direct feel and acceleration performance suitable for driving on winding road.
- The gear shift line is not changed with the control mode change for the following conditions:
- When the selector lever is at “L” position.
- When the selector lever is at D position and overdrive is OFF.
- For details on SPORT mode control, refer to DMS-60, "SPORT MODE CONTROL : System Description".

FAIL-SAFE

If a malfunction occurs in the system of CVT during SPORT mode, the SPORT mode indicator lamp turns OFF and the control switches to the normal mode control.

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Description

INFOID:0000000008765787

This is an onboard diagnosis system which records diagnosis information related to the exhaust gases. It detects malfunctions related to sensors and actuators. The malfunctions are indicated by means of the malfunction indicator lamp (MIL) and are stored as DTC in the ECU memory. The diagnosis information can be checked using a diagnosis tool (GST: Generic Scan Tool).

Function of OBD

INFOID:0000000008765788

The GST is connected to the diagnosis connector on the vehicle and communicates with the on-board control units to perform diagnosis. The diagnosis connector is the same as for CONSULT. Refer to GI-51, "Description".

DIAGNOSIS SYSTEM (TCM)

DIAGNOSIS DESCRIPTION

DIAGNOSIS DESCRIPTION : 1 Trip Detection Diagnosis and 2 Trip Detection Diagnosis

INFOID:0000000008765789

NOTE:
“Start the engine and turn OFF the ignition switch after warm-up.” This is defined as 1 trip.

1 TRIP DETECTION DIAGNOSIS

When initial malfunction is detected, TCM memorizes DTC. In these diagnoses, some illuminate MIL and some do not. Refer to TM-125, "DTC Index".

2 TRIP DETECTION DIAGNOSIS

When initial malfunction is detected, TCM memorizes DTC of the 1st trip. MIL does not light at this stage. <1 trip>
If the same malfunction is detected again in next driving, TCM memorizes DTC. When DTC is memorized, MIL lights. <2 trip>
“Trip” of the “2 trip detection diagnosis” indicates the driving mode that executes self-diagnosis during driving.

×: Check possible —: Check not possible

Item	DTC at the 1st trip		DTC		MIL	
	Display at the 1st trip	Display at the 2nd trip	Display at the 1st trip	Display at the 2nd trip	Illumination at the 1st trip	Illumination at the 2nd trip
1 trip detection diagnosis (Refer to TM-125, "DTC Index")	—	—	×	—	×	—
2 trip detection diagnosis (Refer to TM-125, "DTC Index")	×	—	—	×	—	×

DIAGNOSIS DESCRIPTION : DTC and DTC of 1st Trip

INFOID:0000000008765790

2 TRIP DETECTION DIAGNOSIS THAT ILLUMINATES MIL

- The DTC number of the 1st trip is the same as the DTC number.
- When a malfunction is detected at the 1st trip, TCM memorizes DTC of the 1st trip. MIL does not light at this stage. If the same malfunction is not detected at the 2nd trip (conforming to necessary driving conditions), DTC at the 1st trip is erased from TCM. If the same malfunction is detected at the 2nd trip, TCM memorizes DTC and MIL lights at the same time.
- The DTC of the 1st trip is specified in Service $01 of SAE J1979/ISO 15031-5. Since detection of DTC at the 1st trip does not illuminate MIL, warning for a problem is not given to a driver.
- For procedure to delete DTC and 1st trip DTC from TCM, refer to TM-107, "CONSULT Function".
- If DTC of the 1st trip is detected, it is necessary to check the cause according to the “Diagnosis flow”. Refer to TM-138, "Flowchart of Trouble Diagnosis".

DIAGNOSIS DESCRIPTION : Malfunction Indicator Lamp (MIL)

INFOID:0000000008765791

- TCM not only detects DTC, but also sends the MIL signal to ECM through CAN communication. ECM sends the MIL signal to the combination meter through CAN communication according to the signal, and illuminates MIL.
- For malfunction indicator lamp (MIL) description, refer to TM-105, "DIAGNOSIS DESCRIPTION : Malfunction Indicator Lamp (MIL)".

DIAGNOSIS DESCRIPTION : Counter System

INFOID:0000000008765792

RELATION BETWEEN DTC AT 1ST TRIP/DTC/MIL AND DRIVING CONDITIONS (FOR 2 TRIP DETECTION DIAGNOSIS THAT ILLUMINATES MIL)

- When initial malfunction is detected, TCM memorizes DTC of the 1st trip. MIL does not light at this stage.
- If the same malfunction is detected at the 2nd trip, TCM memorizes DTC and MIL lights at the same time.
- Then, MIL goes after driving the vehicle for 3 trips under “Driving condition B” without malfunction.
- DTC is displayed until 40 trips of “Driving condition A” are satisfied without detecting the same malfunction. DTC is erased when 40 trips are satisfied.

- When the self-diagnosis result is acceptable at the 2nd trip (conforming to driving condition B), DTC of the 1st trip is erased.

COUNTER SYSTEM LIST

Item	Driving pattern	Trip
MIL (OFF)	B	3
DTC (clear)	A	40
DTC at 1st trip (clear)	B	1

DRIVING CONDITION

Driving pattern A

Driving pattern A is the driving condition that provides warm-up.
In specific, count-up is performed when all of the following conditions are satisfied.

- Engine speed is 400 rpm or more.
- After start of the engine, the water temperature increased by 20°C (36°F) or more.
- Water temperature was 70°C (158°F) or more.
- The ignition switch was changed from ON to OFF.

NOTE:

- If the same malfunction is detected regardless of the driving condition, reset the A counter.
- When the above is satisfied without detecting the same malfunction, count up the A counter.
- When MIL goes off due to the malfunction and the A counter reaches 40, the DTC is erased.

Driving pattern B

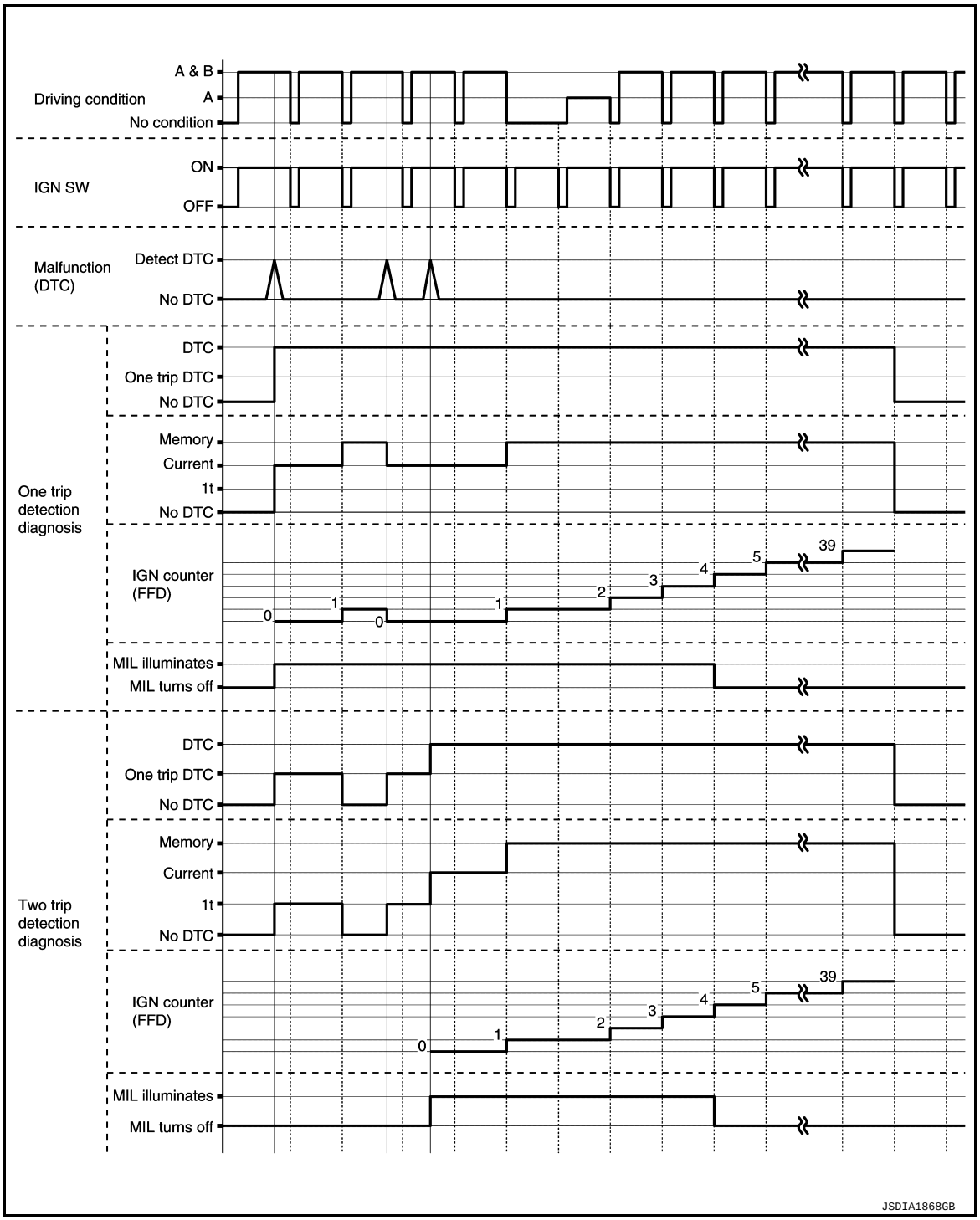
Driving pattern B is the driving condition that performs all diagnoses once.
In specific, count-up is performed when all of the following conditions are satisfied.

- Engine speed is 400 rpm or more.
- Water temperature was 70°C (158°F) or more.
- In closed loop control, vehicle speed of 70 – 120 km/h (43 – 75 MPH) continued for 60 seconds or more.
- In closed loop control, vehicle speed of 30 – 60 km/h (19 – 37 MPH) continued for 10 seconds or more.
- In closed loop control, vehicle speed of 4 km/h (2 MPH) or less and idle determination ON continued for 12 seconds or more.
- After start of the engine, 22 minutes or more have passed.
- The condition that the vehicle speed is 10km/h (6 MPH) or more continued for 10 seconds or more in total.
- The ignition switch was changed from ON to OFF.

NOTE:

- If the same malfunction is detected regardless of the driving condition, reset the B counter.
- When the above is satisfied without detecting the same malfunction, count up the B counter.
- When the B counter reaches 3 without malfunction, MIL goes off.
- When the B counter is counted once without detecting the same malfunction after TCM memorizes DTC of the 1st trip, DTC of the 1st trip is erased.

TIME CHART



CONSULT Function

INFOID:0000000008765793

APPLICABLE ITEM

Conditions	Function
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 a diagram.

Conditions	Function
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.
CALIB DATA	The calibration data status of TCM can be checked.

SELF DIAGNOSTIC RESULTS

Refer to TM-125, "DTC Index".

DTC at 1st trip and method to read DTC

- DTC (P0705, P0711, P0720, etc.) is specified by SAE J2012/ISO 15031-6.
- DTC and DTC at 1st trip are 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”.
- When the DTC at the 1st trip is detected, the “timing” is displayed as “1t”.

DTC deletion method

NOTE:

- If the battery terminal is disconnected, the TCM memory is erased. (The disconnection time varies from several seconds to several hours.
- If the ignition switch is left ON after repair, turn OFF the ignition switch and wait for 10 seconds or more. Then, turn the ignition ON again. (Engine stop)

1. Touch “TRANSMISSION” of CONSULT.
2. Touch “Self Diagnostic Result”.
3. Touch “Erase”. (DTC memorized in TCM is erased.)

IGN counter

The ignition counter is displayed in “FFD” and the number of times of satisfied “Driving pattern A” is displayed after normal recovery of DTC. Refer to TM-105, "DIAGNOSIS DESCRIPTION : Counter System".

- If malfunction (DTC) is currently detected, “0” is displayed.
- After normal recovery, every time “Driving pattern A” is satisfied, the display value increases from 1 → 2 → 3...38 → 39.
- When MIL turns OFF due to the malfunction and the counter reaches 40, the DTC is erased.
  NOTE:
  The counter display of “40” cannot be checked.

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

×: Application ▼: Optional selection

Monitored item	(Unit)	Monitor item selection		Remarks
		MAIN SIGNALS	ECU INPUT SIGNALS	
VSP SENSOR	(km/h or mph)	▼	×	Displays the vehicle speed calculated from the CVT output shaft speed.
ESTM VSP SIG	(km/h or mph)	▼	×	Displays the vehicle speed signal (ABS) received through CAN communication.
PRI SPEED SEN	(rpm)	▼	×	Displays the primary pulley speed calculated from the pulse signal of the primary speed sensor.
SEC REV SENSOR	(rpm)	▼	×	Displays the secondary pulley speed calculated from the pulse signal of the secondary speed sensor.
VHCL/S SE (REV)	(rpm)	▼	×	Displays the CVT output shaft speed calculated from the pulse signal of the output speed sensor.
ENG SPEED SIG	(rpm)	▼	×	Displays the engine speed received through CAN communication.
LINE PRESSURE SEN	(V)	▼	×	Displays the signal voltage of the line pressure sensor.

Monitored item	(Unit)	Monitor item selection		Remarks
		MAIN SIGNALS	ECU INPUT SIGNALS	
ATF TEMP SEN	(V)	▼	×	Displays the signal voltage of the CVT fluid temperature sensor.
G SENSOR	(V)	▼	×	Displays the signal voltage of the G sensor.
VIGN SEN	(V)	▼	×	Displays the battery voltage applied to TCM.
VEHICLE SPEED	(km/h or mph)	×	▼	Displays the vehicle speed recognized by TCM.
INPUT REV	(rpm)	▼	▼	Displays the input shaft speed of CVT recognized by TCM.
PRI SPEED	(rpm)	×	▼	Displays the primary pulley speed recognized by TCM.
SEC SPEED	(rpm)	▼	▼	Displays the secondary pulley speed recognized by TCM.
OUTPUT REV	(rpm)	▼	▼	Displays the output shaft speed of CVT recognized by TCM.
ENG SPEED	(rpm)	×	▼	Displays the engine speed recognized by TCM.
SLIP REV	(rpm)	×	▼	Displays the speed difference between the input shaft speed of CVT and the engine speed.
TOTAL GEAR RATIO		×	▼	Displays the total CVT gear ratio calculated from input shaft speed/output shaft speed of CVT.
PULLEY GEAR RATIO		×	▼	Displays the pulley gear ratio calculated from primary pulley speed/secondary pulley speed.
AUX GEARBOX		▼	▼	Displays the gear position of the auxiliary gearbox recognized by TCM.
G SPEED	(G)	▼	▼	Displays the acceleration and deceleration speed of the vehicle calculated from vehicle speed change.
ACCEL POSI SEN 1	(deg)	×	×	Displays the estimated throttle position received through CAN communication.
VENG TRQ	(Nm)	×	▼	Display the engine torque recognized by TCM.
PRI TRQ	(Nm)	▼	▼	Display the input shaft torque of CVT.
TRQ RTO		▼	▼	Display the torque ratio of torque converter.
LINE PRESSURE	(MPa)	×	▼	Displays the secondary pressure (line pressure) calculated from the signal voltage of the secondary pressure sensor.
FLUID TEMP	(°C or °F)	×	▼	Displays the CVT fluid temperature calculated from the signal voltage of the CVT fluid temperature sensor.
DSR REV	(rpm)	▼	▼	Displays the target primary pulley speed calculated from processing of gear shift control.
TRGT GEAR RATIO		▼	▼	Displays the target gear ratio from the input shaft to the output shaft of CVT calculated from processing of gear shift control.
TGT PLLY GR RATIO		▼	▼	Displays the target gear ratio of the pulley from processing of gear shift control.
TRGT AUX GEARBOX		▼	▼	Displays the target gear of the auxiliary gearbox calculated from processing of gear shift control.
LU PRS	(MPa)	▼	▼	Displays the target oil pressure of the torque converter clutch solenoid valve calculated from oil pressure processing of gear shift control.
LINE PRS	(MPa)	▼	▼	Displays the target oil pressure of the line pressure solenoid valve calculated from oil pressure processing of gear shift control.

Monitored item	(Unit)	Monitor item selection		Remarks
		MAIN SIGNALS	ECU INPUT SIGNALS	
TRGT PRI PRESSURE	(MPa)	▼	▼	Displays the target oil pressure of the primary pressure solenoid valve calculated from oil pressure processing of gear shift control.
TRGT HC/RB PRESS	(MPa)	▼	▼	Displays the target oil pressure of the high clutch & reverse brake solenoid valve calculated from oil pressure processing of gear shift control.
TRGT LB PRESSURE	(MPa)	▼	▼	Displays the target oil pressure of the low brake solenoid valve calculated from oil pressure processing of gear shift control.
ISOLT1	(A)	×	▼	Displays the command current from TCM to the torque converter clutch solenoid valve.
ISOLT2	(A)	×	▼	Displays the command current from TCM to the line pressure solenoid valve.
PRI SOLENOID	(A)	×	▼	Displays the command current from TCM to the primary pressure solenoid valve.
HC/RB SOLENOID	(A)	×	▼	Displays the command current from TCM to the high clutch& reverse brake solenoid valve.
L/B SOLENOID	(A)	×	▼	Displays the command current from TCM to the low brake solenoid valve.
SOLMON1	(A)	×	×	Monitors the command current from TCM to the torque converter clutch solenoid valve and displays the monitored value.
SOLMON2	(A)	×	×	Monitors the command current from TCM to the line pressure solenoid valve and displays the monitored value.
PRI SOL MON	(A)	×	×	Monitors the command current from TCM to the primary pressure solenoid valve and displays the monitored value.
HC/RB SOL MON	(A)	×	×	Monitors the command current from TCM to the high clutch& reverse brake solenoid valve and displays the monitored value.
L/B SOL MON	(A)	×	×	Monitors the current command from TCM to the low brake solenoid valve and displays the monitored value.
D POSITION SW	(On/Off)	▼	×	Displays the operation status of the transmission range switch (D position).
N POSITION SW	(On/Off)	▼	×	Displays the operation status of the transmission range switch (N position).
R POSITION SW	(On/Off)	▼	×	Displays the operation status of the transmission range switch (R position).
P POSITION SW	(On/Off)	▼	×	Displays the operation status of the transmission range switch (P position).
BRAKESW	(On/Off)	×	×	Displays the reception status of the stop lamp switch signal received through CAN communication.
L POSITION SW	(On/Off)	▼	×	Displays the operation status of the transmission range switch (L position).
IDLE SW	(On/Off)	×	×	Displays the reception status of the closed throttle position signal received through CAN communication.
SPORT MODE SW	(On/Off)	×	×	Displays the reception status of the overdrive control switch signal received through CAN communication.
STRDWNSW	(On/Off)	▼	×	• Displays the operation status of the paddle shifter (down switch). • It is displayed although not equipped.

Monitored item	(Unit)	Monitor item selection		Remarks
		MAIN SIGNALS	ECU INPUT SIGNALS	
STRUPSW	(On/Off)	▼	×	• Displays the operation status of the paddle shifter (up switch). • It is displayed although not equipped.
DOWNLVR	(On/Off)	▼	×	• Displays the operation status of the selector lever (down switch). • It is displayed although not equipped.
UPLVR	(On/Off)	▼	×	• Displays the operation status of the selector lever (up switch). • It is displayed although not equipped.
NONMMODE	(On/Off)	▼	×	• Displays if the selector lever position is not at the manual shift gate. • It is displayed although not equipped.
MMODE	(On/Off)	▼	×	• Displays if the selector lever position is at the manual shift gate. • It is displayed although not equipped.
INDLRNG	(On/Off)	▼	▼	Displays the transmission status of the shift position (L position) signal transmitted through CAN communication.
INDDRNG	(On/Off)	▼	▼	Displays the transmission status of the shift position (D position) signal transmitted through CAN communication.
INGNRNG	(On/Off)	▼	▼	Displays the transmission status of the shift position (N position) signal transmitted through CAN communication.
INGRRNG	(On/Off)	▼	▼	Displays the transmission status of the shift position (R position) signal transmitted through CAN communication.
INGPRNG	(On/Off)	▼	▼	Displays the transmission status of the shift position (P position) signal transmitted through CAN communication.
CVT LAMP	(On/Off)	▼	▼	Displays the transmission status of the OD OFF indicator lamp signal transmitted through CAN communication.
SPORT MODE IND	(On/Off)	▼	▼	Displays the transmission status of the OD OFF indicator lamp signal transmitted through CAN communication.
MMODE IND	(On/Off)	▼	▼	• Displays the transmission status of the manual mode signal transmitted through CAN communication. • It is displayed although not equipped.
SPORT MODE SW 1	(On/Off)	▼	▼	Displays the reception status of the SPORT mode switch signal received through CAN communication.
VDC ON	(On/Off)	▼	×	Displays the reception status of the VDC operation signal received through CAN communication.
TCS ON	(On/Off)	▼	×	Displays the reception status of the TCS operation signal received through CAN communication.
ABS FAIL SIGNAL	(On/Off)	▼	×	Displays the reception status of the ABS malfunction signal received through CAN communication.
ABS ON	(On/Off)	▼	×	Displays the reception status of the ABS operation signal received through CAN communication.
4WD FAIL SIGNAL	(On/Off)	▼	×	• Displays the reception status of the 4WD malfunction signal received through CAN communication. • It is displayed although not equipped.
4WD OPERATION SIG	(On/Off)	▼	×	• Displays the reception status of the 4WD operation signal received through CAN communication. • It is displayed although not equipped.

Monitored item	(Unit)	Monitor item selection		Remarks
		MAIN SIGNALS	ECU INPUT SIGNALS	
4WD-TCS SIGNAL	(On/Off)	▼	×	• Displays the reception status of the engine torque down request signal received through CAN communication. • It is displayed although not equipped.
RANGE		×	▼	Displays the gear position recognized by TCM.
M GEAR POS		×	▼	• Display the target gear of manual mode • It is displayed although not equipped.
G SEN SLOPE	(%)	▼	▼	Displays the gradient angle calculated from the G sensor signal voltage.
ENGBRKLVL	(On/Off)	▼	▼	Displays the setting of “ENGINE BRAKE ADJ.” in “Work Support”.
PVIGN VOLT	(V)	▼	×	Displays the backup voltage of TCM.
TRGT AUX GR RATIO		▼	▼	Displays the target gear ratio of the auxiliary gearbox calculated from processing of gear shift control.
ECO SW	(On/Off)	▼	▼	• Displays the reception status of the ECO mode switch signal received through CAN communication. • Models with ECO mode are displayed.
G SEN CALIBRATION	(YET/DONE)	▼	▼	Displays the status of “G SENSOR CALIBRATION” in “Work support”.
N IDLE STATUS	(On/Off)	▼	▼	Displays idle neutral status.
CVT-B		▼	▼	• Displays CVT fluid temperature count. • This monitor item does not use.
CVT-A		▼	▼	• Displays CVT fluid temperature count. • This monitor item does not use.

WORK SUPPORT

Item name	Description
ENGINE BRAKE ADJ.	Although there is no malfunction on the transaxle and the CVT system, if a customer make a complaint like “I do not feel comfortable with automatic operation of the engine brake on downhill”, the engine brake may be cancelled with “engine brake adjustment”.
CONFORM CVTF DETERIORTN	Check the degradation level of the CVT fluid under severe conditions.
G SENSOR CALIBRATION	Compensate the G sensor.
ERASE CALIBRATION DATA	Erase the calibration data memorized by TCM.
ERASE LEARNING VALUE	Erase the learning value memorized by TCM.
ERASE MEMORY DATA	Perform “erasing of the calibration data” and “erasing of the learned value” at the same time.

Engine brake adjustment

ENGINE BRAKE LEVEL
ON : Turn ON the engine brake control.
OFF : Turn OFF the engine brake control.

Check the degradation level of the CVT fluid.

CVTF degradation level data
210,000 or more : Replacement of the CVT fluid is required.
Less than 210,000 : Replacement of the CVT fluid is not required.

ECU DIAGNOSIS INFORMATION

TCM

Reference Value

INFOID:0000000008765794

CONSULT DATA MONITOR STANDARD VALUE

NOTE:

- The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.
- In CONSULT, electric shift timing or lock-up timing, i.e. operation timing of each solenoid valve, is displayed. Therefore, if there is an obvious difference between the shift timing estimated from a shift shock (or engine speed variations) and that shown on the CONSULT, the mechanism parts (including the hydraulic circuit) excluding the solenoids and sensors may be malfunctioning. In this case, check the mechanical parts following the appropriate diagnosis procedure.
- Shift point (gear position) displayed on CONSULT slightly differs from shift pattern described in Service Manual. This is due to the following reasons.

- Actual shift pattern may vary slightly within specified tolerances.
- While shift pattern described in Service Manual indicates start of each shift, CONSULT shows gear position at end of shift.
- The solenoid display (ON/OFF) on CONSULT is changed at the start of gear shifting. In contrast, the gear position display is changed at the time when gear shifting calculated in the control unit is completed.

Monitor item	Condition	Value/Status (Approx.)
VSP SENSOR	While driving	Almost same as the speedometer display.
ESTM VSP SIG	While driving	Almost same as the speedometer display.
PRI SPEED SEN	In driving (lock-up ON)	A value obtained from dividing engine speed by counter gear ratio
SEC REV SENSOR	Auxiliary gearbox: 1GR	Approximately twice the “VHCL/S SE (REV)”
	Auxiliary gearbox: 2GR	Almost same as the “VHCL/S SE (REV)”
VHCL/S SE (REV)	Auxiliary gearbox: 1GR	Approximately half of the “SEC REV SENSOR”
	Auxiliary gearbox: 2GR	Almost same as the “SEC REV SENSOR”
ENG SPEED SIG	Engine running	Almost same reading as tachometer
LINE PRESSURE SEN	• Selector lever: “N” position • At idle	0.88 – 0.92 V
ATF TEMP SEN	CVT fluid: Approx. 20°C (68°F)	2.01 – 2.05 V
	CVT fluid: Approx. 50°C (122°F)	1.45 – 1.50 V
	CVT fluid: Approx. 80°C (176°F)	0.90 – 0.94 V
G SENSOR	Vehicle is level	2.5 V
VIGN SEN	Ignition switch: ON	10 – 16 V
VEHICLE SPEED	While driving	Almost same as the speedometer display.
INPUT REV	In driving (lock-up ON)	Almost same as the engine speed.
PRI SPEED	In driving (lock-up ON)	A value obtained from dividing engine speed by counter gear ratio
SEC SPEED	Auxiliary gearbox: 1GR	Approximately twice the “OUTPUT REV”
	Auxiliary gearbox: 2GR	Almost same as “OUTPUT REV”
OUTPUT REV	Auxiliary gearbox: 1GR	Approximately half of “SEC SPEED”
	Auxiliary gearbox: 2GR	Almost same as “SEC SPEED”
ENG SPEED	Engine running	Almost same reading as tachometer
SLIP REV	While driving	Engine speed – Input speed

Monitor item	Condition	Value/Status (Approx.)
TOTAL GEAR RATIO	Auxiliary gearbox: 1GR	Counter gear ratio × Pulley ratio Auxiliary gearbox gear ratio
	Auxiliary gearbox: 2GR	Counter gear ratio × Pulley ratio
PULLEY GEAR RATIO	In driving (forward)	2.20 – 0.55
	In driving (reverse)	2.20
AUX GEARBOX	Vehicle started with selector lever in “L” position	1st
	Release the accelerator pedal after the following conditions are satisfied • Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 50 km/h (31 MPH) or more	2nd
	In gear shifting of auxiliary gearbox	1st ⇔ 2nd
G SPEED	Vehicle stopped	0.00 G
	During acceleration	The value changes to the positive side along with acceleration.
	During deceleration	The value changes to the positive side along with deceleration.
ACCEL POSI SEN 1	Accelerator pedal released	0.00 deg
	Accelerator pedal fully depressed	80.00 deg
VENG TRQ	While driving	The value changes along with acceleration/ deceleration.
PRI TRQ	While driving	The value changes along with acceleration/ deceleration.
TRQ RTO	While driving	The value changes along with acceleration/ deceleration.
LINE PRESSURE	Selector lever: “P” position	0.575 MPa
FLUID TEMP	Ignition switch ON	Displays the CVT fluid temperature.
DSR REV	While driving	It varies along with the driving condition.
TRGT GEAR RATIO	While driving	It varies along with the driving condition.
TGT PLLY GR RATIO	In driving (forward)	2.20 – 0.55
	In driving (reverse)	2.20
TRGT AUX GEARBOX	Vehicle started with selector lever in “L” position	1st
	Release the accelerator pedal after the following conditions are satisfied • Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 50 km/h (31 MPH) or more	2nd
	In gear shifting of auxiliary gearbox	Display gear position after gear shifting
LU PRS	• Engine started • Vehicle is stopped	−0.500 MPa
	• Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 20 km/h (12 MPH) or more	0.450 MPa
LINE PRS	• After engine warm up • Selector lever: “N” position • At idle	0.500 MPa
	• After engine warming up • Selector lever: “N” position • Depress the accelerator pedal fully	4.930 – 5.430 MPa
TRGT PRI PRESSURE	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	0.325 MPa

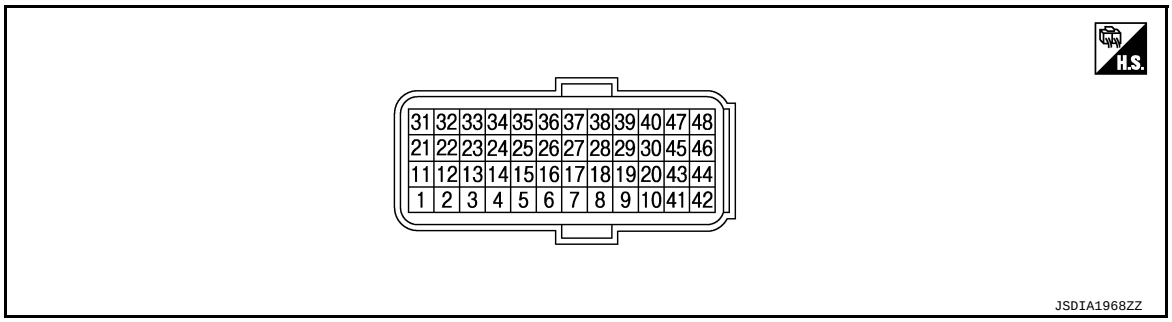
Monitor item	Condition	Value/Status (Approx.)
TRGT HC/RB PRESS	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	0.000 MPa
	Release the accelerator pedal after the following conditions are satisfied • Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 50 km/h (31 MPH) or more	0.400 MPa
TRGT LB PRESSURE	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	0.325 MPa
	Release the accelerator pedal after the following conditions are satisfied • Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 50 km/h (31 MPH) or more	0.000 MPa
ISOLT1	• Engine started • Vehicle is stopped	0.000 A
	• Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 20 km/h (12 MPH) or more	0.500 A
ISOLT2	• After engine warm up • Selector lever: “N” position • At idle	0.800 – 0.900 A
	• After engine warming up • Selector lever: “N” position • Depress the accelerator pedal fully	0.400 – 0.450 A
PRI SOLENOID	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	0.850 – 0.900 A
HC/RB SOLENOID	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	1.000 A
	Release the accelerator pedal after the following conditions are satisfied • Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 50 km/h (31 MPH) or more	0.800 – 0.850 A
L/B SOLENOID	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	0.200 – 0.250 A
	Release the accelerator pedal after the following conditions are satisfied • Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 50 km/h (31 MPH) or more	0.000 A
SOLMON1	• Engine started • Vehicle is stopped	0.000 A
	• Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 20 km/h (12 MPH) or more	0.500 A
SOLMON2	• After engine warm up • Selector lever: “N” position • At idle	0.800 – 0.900 A
	• After engine warming up • Selector lever: “N” position • Depress the accelerator pedal fully	0.400 – 0.450 A
PRI SOL MON	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	0.850 – 0.900 A

Monitor item	Condition	Value/Status (Approx.)
HC/RB SOL MON	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	1.000 A
	Release the accelerator pedal after the following conditions are satisfied • Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 50 km/h (31 MPH) or more	0.800 – 0.850 A
L/B SOL MON	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	0.200 – 0.250 A
	Release the accelerator pedal after the following conditions are satisfied • Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 50 km/h (31 MPH) or more	0.000 A
D POSITION SW	Selector lever: “D” position	On
	Other than the above	Off
N POSITION SW	Selector lever: “N” position	On
	Other than the above	Off
R POSITION SW	Selector lever: “R” position	On
	Other than the above	Off
P POSITION SW	Selector lever: “P” position	On
	Other than the above	Off
BRAKESW	Brake pedal is depressed	On
	Brake pedal is released	Off
L POSITION SW	Selector lever: “L” position	On
	Other than the above	Off
IDLE SW	Accelerator pedal is released	On
	Accelerator pedal is fully depressed	Off
SPORT MODE SW	Press the overdrive control switch	On
	Release the overdrive control switch	Off
STRDWNSW	Always	Off
STRUPSW	Always	Off
DOWNLVR	Always	Off
UPLVR	Always	Off
NONMMODE	Always	Off
MMODE	Always	Off
INDLRNG	Selector lever: “L” position	On
	Other than the above	Off
INDDRNG	Selector lever: “D” position	On
	Other than the above	Off
INDNRNG	Selector lever: “N” position	On
	Other than the above	Off
INDRRNG	Selector lever: “R” position	On
	Other than the above	Off
INDPRNG	Selector lever: “P” position	On
	Other than the above	Off
CVT LAMP	In OD OFF	On
	Other than the above	Off

Monitor item	Condition	Value/Status (Approx.)
SPORT MODE IND	In OD OFF	On
	Other than the above	Off
MMODE IND	Always	Off
SPORT MODE SW 1	Press the SPORT mode switch	On
	Release the SPORT mode switch	Off
VDC ON	VDC is activated	On
	Other than the above	Off
TCS ON	TCS is activated	On
	Other than the above	Off
ABS FAIL SIGNAL	When ABS malfunction signal is received	On
	Other than the above	Off
ABS ON	ABS is activated	On
	Other than the above	Off
4WD FAIL SIGNAL	Always	Off
4WD OPERATION SIG	Always	Off
4WD-TCS SIGNAL	Always	Off
RANGE	Selector lever: “P” and “N” positions	N/P
	Selector lever: “R” position	R
	Selector lever: “D” position (in OD ON)	D
	Selector lever: “D” position (in OD OFF)	S
	Selector lever: “L” position	L
M GEAR POS	Always	1
G SEN SLOPE	Flat road	0%
	Uphill gradient	The value changes to the positive side along with uphill gradient. (Maximum 40.45%)
	Downhill gradient	The value changes to the negative side along with downhill gradient. (Minimum – 40.45%)
ENGBRKLVL	When the engine brake level of “ENGINE BRAKE ADJ”. in “Work Support” is ON	On
	When the engine brake level of “ENGINE BRAKE ADJ”. in “Work Support” is OFF	Off
PVIGN VOLT	Ignition switch ON	10 – 16 V
TRGT AUX GR RATIO	Vehicle started with selector lever in “L” position	1.80
	Release the accelerator pedal after the following conditions are satisfied • Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 50 km/h (31 MPH) or more	1.00
ECO SW	Press the ECO mode switch	On
	Release the ECO mode switch	Off
G SEN CALIBRATION	When G sensor calibration is completed	DONE
	When G sensor calibration is not completed	YET
N IDLE STATUS	When idle neutral control is operated	On
	When idle neutral control is not operated	Off
CVT-B*	—	—
CVT-A*	—	—

*: This monitor item does not use.

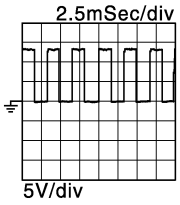
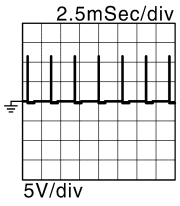
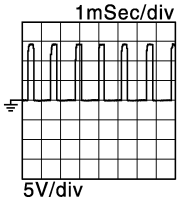
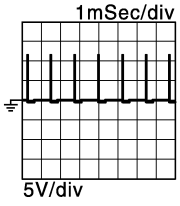
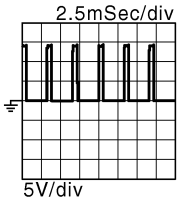
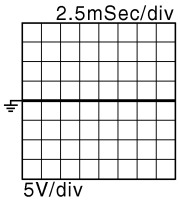
TERMINAL LAYOUT

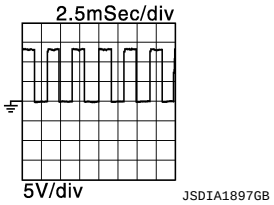


INPUT/OUTPUT SIGNAL STANDARD

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal	Input/ Output			
2 (BR)	Ground	L range switch	Input	Ignition switch ON	Selector lever: “L” position	10 – 16 V
					Other than the above	0 V
4 (W)	Ground	D range switch	Input		Selector lever: “D” position	10 – 16 V
					Other than the above	0 V
5 (LG)	Ground	N range switch	Input		Selector lever: “N” position	10 – 16 V
					Other than the above	0 V
6 (G)	Ground	R range switch	Input		Selector lever: “R” position	10 – 16 V
					Other than the above	0 V
7 (SB)	Ground	P range switch	Input		Selector lever: “P” position	10 – 16 V
					Other than the above	0 V
11 (Y)	Ground	Sensor ground	—	Always		0 V
12 (SB)	Ground	CVT fluid temperature sensor	Input	Ignition switch ON	CVT fluid: Approx. 20°C (68°F)	2.01 – 2.05 V
					CVT fluid: Approx. 50°C (122°F)	1.45 – 1.50 V
					CVT fluid: Approx. 80°C (176°F)	0.90 – 0.94 V
14 (G)	Ground	G sensor	Input	Ignition switch ON	When the vehicle stops on a flat road	2.5 V
16 (P)	Ground	Secondary pressure sensor	Input	• Selector lever: “N” position • At idle		0.88 – 0.92 V
21 (O)	—	ROM ASSY (CHIP SELECT)	—	—		—
22 (GR)	—	ROM ASSY (DATA I/O)	—	—		—
23 (P)	—	CAN-L	Input/ Output	—		—

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal	Input/ Output		
24 (V)	Ground	Output speed sensor	Input	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	200 Hz 2.5mSec/div 5V/div JSDIA1904GB
26 (R)	Ground	Sensor power supply	Output	Ignition switch: ON	5.0 V
				Ignition switch: OFF	0 V
30 (Y)	Ground	Line pressure solenoid valve	Output	• After engine warming up • Selector lever: “N” position • At idle	2.5mSec/div 5V/div JSDIA1897GB
				• After engine warming up • Selector lever: “N” position • Depress the accelerator pedal fully	2.5mSec/div 5V/div JSDIA1898GB
31 (V)	—	ROM ASSY (CLOCK)	—	—	—
33 (L)	—	CAN-H	Input/ Output	—	—
34 (R)	Ground	Secondary speed sensor	Input	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	700 Hz 1mSec/div 5V/div JSDIA1905GB
35 (O)	Ground	Primary speed sensor	Input	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	1,100 Hz 1mSec/div 5V/div JSDIA1906GB

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal	Input/ Output		
37 (L)	Ground	High clutch & reverse brake solenoid valve	Output	In driving at “L” position	
				Release the accelerator pedal after the following conditions are satisfied • Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 50 km/h (31 MPH) or more	
38 (LG)	Ground	Torque converter clutch solenoid valve	Output	• Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 20 km/h (12 MPH) or more	
				• Engine started • Vehicle is stopped	
39 (G)	Ground	Low brake solenoid valve	Output	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	
				Release the accelerator pedal after the following conditions are satisfied • Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 50 km/h (31 MPH) or more	

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal	Input/ Output		
40 (W)	Ground	Primary pressure solenoid valve	Output	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	
41 (B)	Ground	Ground	—	Always	0 V
42 (B)	Ground	Ground	—	Always	0 V
45 (V)	Ground	Power (backup)	Input	Always	10 – 16 V
46 (GR)	Ground	Power (backup)	Input	Always	10 – 16 V
47 (LG)	Ground	Power supply	Input	Ignition switch: ON	10 – 16 V
				Ignition switch: OFF	0 V
48 (W)	Ground	Power supply	Input	Ignition switch: ON	10 – 16 V
				Ignition switch: OFF	0 V

Fail-Safe

INFOID:0000000008765795

TCM has a fail-safe mode. The mode functions so that operation can be continued even if the signal circuit of the main electronically controlled input/output parts is damaged.
If the vehicle shows following behaviors including “poor acceleration”, a malfunction of the applicable system is detected by TCM and the vehicle may be in a fail-safe mode. At this time, check the DTC code and perform inspection and repair according to the malfunction diagnosis procedures.

Fail-safe function

DTC	Vehicle behavior	Conditions of vehicle
P062F	• Not changed from normal driving	—
P0705	• Shift position indicator on combination meter is not displayed • Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0706	• Shift position indicator on combination meter is not displayed • Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0711	• Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
	• Selector shock is large • Start is slow	Engine coolant temperature when engine start:-35°C (-31°F) ≤ Temp. < 10°C (50°F)
	• Selector shock is large • Start is slow	Engine coolant temperature when engine start: Temp. < -35°C (-31°F)

DTC	Vehicle behavior	Conditions of vehicle
P0712	• Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
	• Selector shock is large • Start is slow	Engine coolant temperature when engine start:-35°C (-31°F) ≤ Temp. < 10°C (50°F)
	• Selector shock is large • Start is slow	Engine coolant temperature when engine start: Temp. < -35°C (-31°F)
P0713	• Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
	• Selector shock is large • Start is slow	Engine coolant temperature when engine start:-35°C (-31°F) ≤ Temp. < 10°C (50°F)
	• Selector shock is large • Start is slow	Engine coolant temperature when engine start: Temp. < -35°C (-31°F)
P0715	• Selector shock is large • Start is slow • Acceleration is slow • Vehicle speed is not increased • Lock-up is not performed	—
P0720	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0740	• Lock-up is not performed	—
P0743	• Lock-up is not performed	—
P0744	• Lock-up is not performed	—
P0746	• Selector shock is large • Start is slow • Acceleration is slow • Vehicle speed is not increased • Lock-up is not performed	—
P0846	• Start is slow • Acceleration is slow	—
P0847	• Acceleration is slow	—
P0848	• Start is slow • Acceleration is slow	—
P0863	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0890	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0962	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0963	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0965	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—

DTC	Vehicle behavior	Conditions of vehicle
P0966	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0967	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
P0998	• Start is slow	—
P0999	• Start is slow	Wire disconnection
	• Vehicle speed is not increased	Voltage shorting
P099B	• Start is slow	—
P099C	• Start is slow	Wire disconnection
	• Vehicle speed is not increased	Voltage shorting
P1586	• Not changed from normal driving	—
P1588	• Not changed from normal driving	—
P2765	• Selector shock is large • Start is slow • Acceleration is slow • Vehicle speed is not increased • Lock-up is not performed	—
P2857	• Start is slow	—
P2858	• Vehicle speed is not increased	—
P2859	• Vehicle speed is not increased	—
P285A	• Start is slow	—
U0073	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
U0100	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
U0140	• Not changed from normal driving	—
U0141	• Not changed from normal driving	—
U0155	• Not changed from normal driving	—
U0300	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed	—
U1000	• Not changed from normal driving	—
U1117	• Not changed from normal driving	—

Protection control

INFOID:0000000008765796

The TCM becomes the protection control status temporarily to protect the safety when the safety of TCM and transmission is lost. It automatically returns to the normal status if the safety is secured.
The TCM has the following protection control.

CONTROL FOR WHEEL SPIN

Control	When a wheel spin is detected, the engine output and gear ratio are limited and the line pressure is increased. At the 1GR, the clutch pressure is increased.
Vehicle behavior in control	If the accelerator is kept depressing during wheel spin, the engine revolution and vehicle speed are limited to a certain degree. From the 1GR, upshift to a certain gear ratio is only allowed.
Normal return condition	Wheel spin convergence returns the control to the normal control.

CONTROL WHEN FLUID TEMPERATURE IS HIGH

Control	When the CVT fluid temperature is high, the gear shift permission maximum revolution and the maximum torque are reduced than usual to prevent increase of the oil temperature.
Vehicle behavior in control	Power performance may be lowered, compared to normal control.
Normal return condition	The control returns to the normal control when CVT fluid temperature is lowered.

TORQUE IS REDUCED WHEN DRIVING WITH THE REVERSE GEAR

Control	Engine output is controlled according to a vehicle speed while reversing the vehicle.
Vehicle behavior in control	Power performance may be lowered while reversing the vehicle.
Normal return condition	Torque returns to normal by positioning the selector lever in a range other than “R” position.

REVERSE PROHIBIT CONTROL

Control	The reverse brake is controlled to avoid becoming engaged when the selector lever is set in “R” position while driving in forward direction at more than the specified speed.
Vehicle behavior in control	If the selector lever is put at “R” position when driving with the forward gear, the gear becomes neutral, not reverse.
Normal return condition	The control returns to normal control when the vehicle is driven at low speeds. (The reverse brake becomes engaged.)

DTC Inspection Priority Chart

INFOID:0000000008765797

If multiple malfunction codes are detected at the same time, check each code according to the DTC check priority list below.

Priority	DTC (Diagnostic Trouble Code)	Reference
1	P0863 CONTROL UNIT (CAN)	TM-192
	U0073 COMM BUS A OFF	TM-148
	U0100 LOST COMM (ECM A)	TM-149
	U0140 LOST COMM (BCM)	TM-150
	U0141 LOST COMM (BCM A)	TM-151
	U0155 LOST COMM (IPC)	TM-152
	U0300 CAN COMM DATA	TM-153
	U1000 CAN COMM CIRC	TM-154
	U1117 LOST COMM (ABS)	TM-155

Priority	DTC (Diagnostic Trouble Code)	Reference
2	P0740 TORQUE CONVERTER	TM-178
	P0743 TORQUE CONVERTER	TM-180
	P0962 PC SOLENOID A	TM-195
	P0963 PC SOLENOID A	TM-197
	P0966 PC SOLENOID B	TM-200
	P0967 PC SOLENOID B	TM-202
	P0998 SHIFT SOLENOID F	TM-204
	P0999 SHIFT SOLENOID F	TM-206
	P099B SHIFT SOLENOID G	TM-208
	P099C SHIFT SOLENOID G	TM-210
3	P0890 TCM	TM-193
4	P062F EEPROM	TM-156
	P0705 T/M RANGE SENSOR A	TM-157
	P0706 T/M RANGE SENSOR A	TM-163
	P0711 FLUID TEMP SENSOR A	TM-168
	P0712 FLUID TEMP SENSOR A	TM-168
	P0713 FLUID TEMP SENSOR A	TM-170
	P0715 INPUT SPEED SENSOR A	TM-172
	P0847 FLUID PRESS SEN/SW B	TM-188
	P0848 FLUID PRESS SEN/SW B	TM-190
	P1586 G SENSOR	TM-212
	P1588 G SENSOR	TM-215
	P2765 INPUT SPEED SENSOR B	TM-217
5	P0720 OUTPUT SPEED SENSOR	TM-175
6	P0746 PC SOLENOID A	TM-184
	P2857 CLUTCH A PRESSURE	TM-220
	P2858 CLUTCH B PRESSURE	TM-222
	P2859 CLUTCH A PRESSURE	TM-224
	P285A CLUTCH B PRESSURE	TM-226
7	P0744 TORQUE CONVERTER	TM-182
	P0846 FLUID PRESS SEN/SW B	TM-186
	P0965 PC SOLENOID B	TM-199

DTC Index

INFOID:0000000008765798

NOTE:

- If multiple malfunction codes are detected at the same time, check each code according to the “DTC check priority list”. TM-124, "DTC Inspection Priority Chart".
- The ignition counter is displayed in “FFD”. Refer to TM-107, "CONSULT Function".

DTC[*1, *2]		Items (CONSULT screen terms)	Trip	MIL	Reference
GST	CONSULT (TRANSMISSION)				
P062F	P062F	EEPROM	1	ON	TM-156
P0705	P0705	T/M RANGE SENSOR A	2	ON	TM-157
P0706	P0706	T/M RANGE SENSOR A	2	ON	TM-163
P0711	P0711	FLUID TEMP SENSOR A	2	ON	TM-166

DTC*1, *2		Items (CONSULT screen terms)	Trip	MIL	Reference
GST	CONSULT (TRANSMISSION)				
P0712	P0712	FLUID TEMP SENSOR A	2	ON	TM-168
P0713	P0713	FLUID TEMP SENSOR A	2	ON	TM-170
P0715	P0715	INPUT SPEED SENSOR A	2	ON	TM-172
P0720	P0720	OUTPUT SPEED SENSOR	2	ON	TM-175
P0740	P0740	TORQUE CONVERTER	2	ON	TM-178
P0743	P0743	TORQUE CONVERTER	2	ON	TM-180
P0744	P0744	TORQUE CONVERTER	2	ON	TM-182
P0746	P0746	PC SOLENOID A	2	ON	TM-184
P0846	P0846	FLUID PRESS SEN/SW B	2	ON	TM-186
P0847	P0847	FLUID PRESS SEN/SW B	2	ON	TM-188
P0848	P0848	FLUID PRESS SEN/SW B	2	ON	TM-190
P0863	P0863	CONTROL UNIT (CAN)	1	ON	TM-192
P0890	P0890	TCM	1	ON	TM-193
P0962	P0962	PC SOLENOID A	2	ON	TM-195
P0963	P0963	PC SOLENOID A	2	ON	TM-197
P0965	P0965	PC SOLENOID B	2	ON	TM-199
P0966	P0966	PC SOLENOID B	2	ON	TM-200
P0967	P0967	PC SOLENOID B	2	ON	TM-202
P0998	P0998	SHIFT SOLENOID F	2	ON	TM-204
P0999	P0999	SHIFT SOLENOID F	2	ON	TM-206
P099B	P099B	SHIFT SOLENOID G	2	ON	TM-208
P099C	P099C	SHIFT SOLENOID G	2	ON	TM-210
—	P1586	G SENSOR	1	—	TM-212
—	P1588	G SENSOR	1	—	TM-215
P2765	P2765	INPUT SPEED SENSOR B	2	ON	TM-217
P2857	P2857	CLUTCH A PRESSURE	2	ON	TM-220
P2858	P2858	CLUTCH B PRESSURE	2	ON	TM-222
P2859	P2859	CLUTCH A PRESSURE	2	ON	TM-224
P285A	P285A	CLUTCH B PRESSURE	2	ON	TM-226
U0073	U0073	COMM BUS A OFF	1	ON	TM-148
U0100	U0100	LOST COMM (ECM A)	1	ON	TM-149
—	U0140	LOST COMM (BCM)	1	—	TM-150
—	U0141	LOST COMM (BCM A)	1	—	TM-151
—	U0155	LOST COMM (IPC)	1	—	TM-152
—	U0300	CAN COMM DATA	1	—	TM-153
—	U1000	CAN COMM CIRC	1	—	TM-154
—	U1117	LOST COMM (ABS)	1	—	TM-155

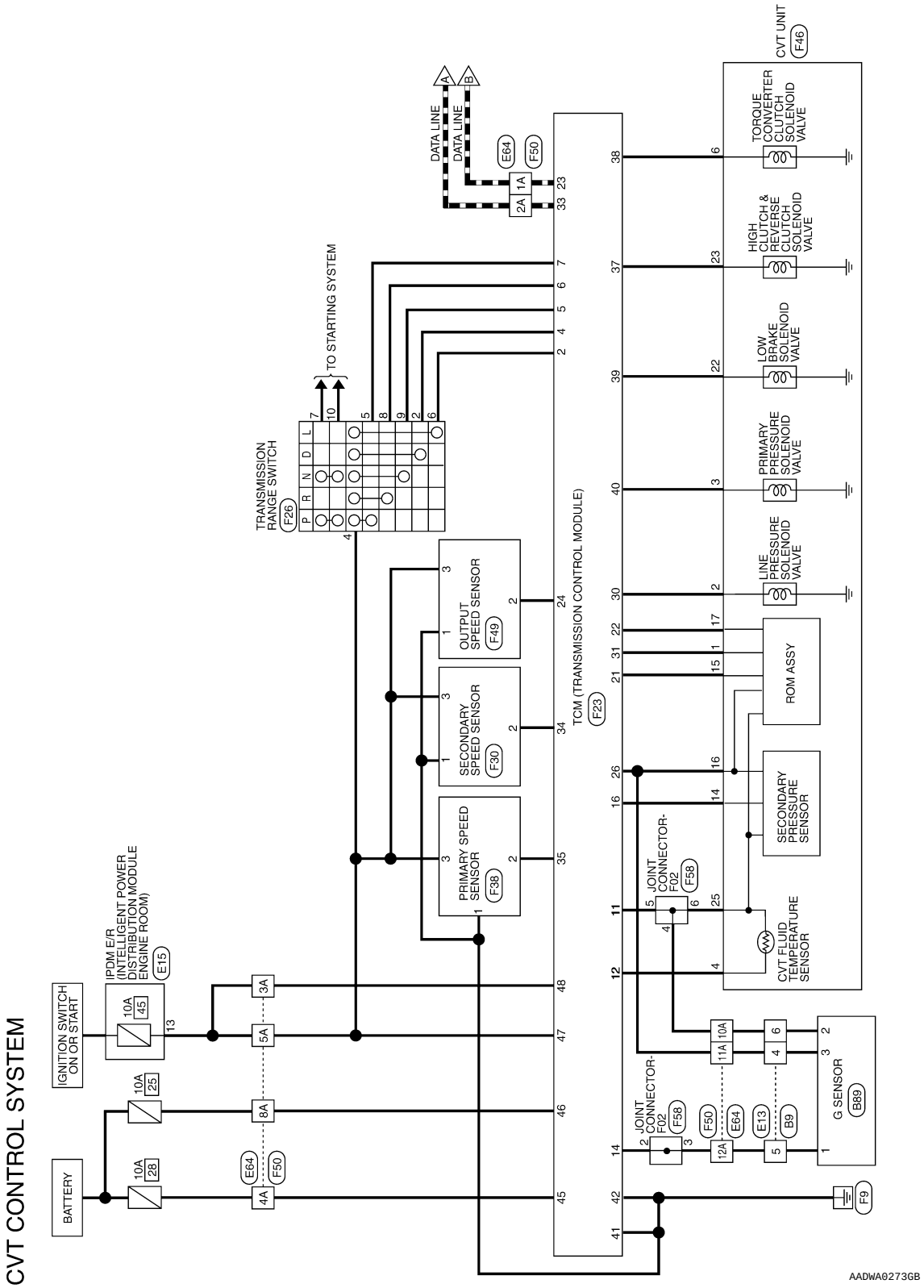
*1: These numbers are specified by SAE J2012/ISO 15031-6.
*2: The DTC number of the 1st trip is the same as the DTC number.

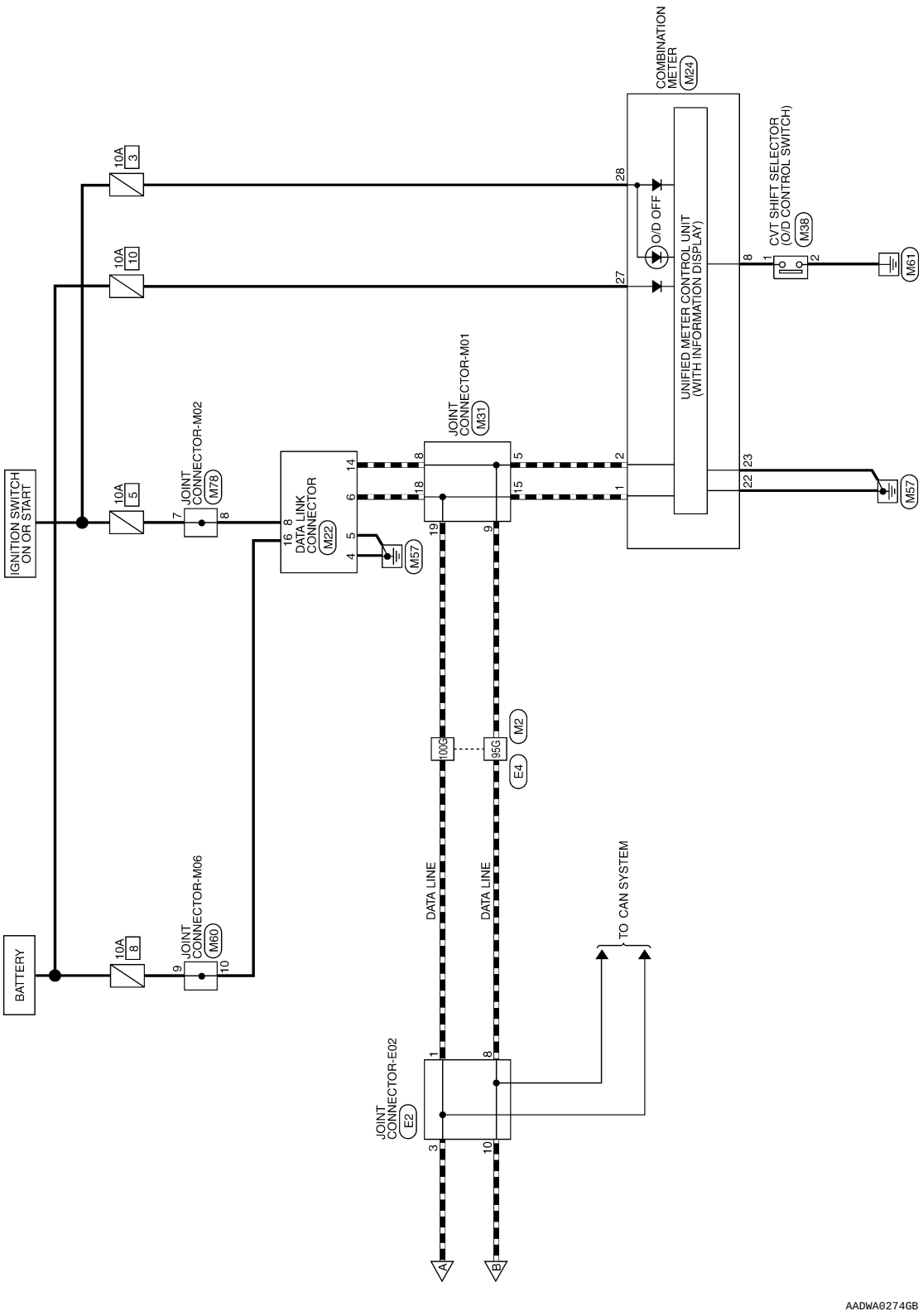
WIRING DIAGRAM

CVT CONTROL SYSTEM

Wiring Diagram

INFOID:0000000008765799

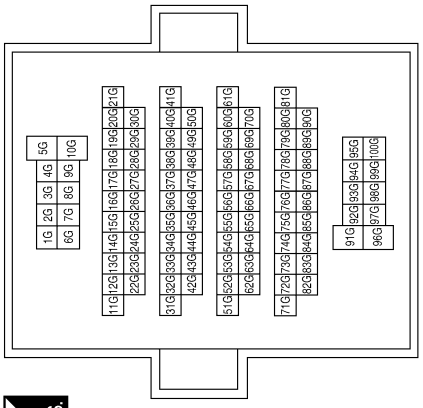



COMBINATION METER (M24)
UNIFIED METER CONTROL UNIT (WITH INFORMATION DISPLAY)
O/D OFF
CVT SHIFT SELECTOR (O/D CONTROL SWITCH) (M38)
M61
JOINT CONNECTOR-M01 (M31)
JOINT CONNECTOR-M02 (M78)
DATA LINK CONNECTOR (M22)
M57
IGNITION SWITCH ON OR START
BATTERY
10A 3
10A 10
10A 5
10A 8
JOINT CONNECTOR-M06 (M60)
100G
95G
M2
E4
DATA LINE
DATA LINE
TO CAN SYSTEM
JOINT CONNECTOR-E02 (E2)
A
B
AADWA0274GB

CVT CONTROL SYSTEM CONNECTORS

Connector No.	M2
Connector Name	WIRE TO WIRE
Connector Color	WHITE

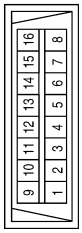
H.S.



Terminal No.	Color of Wire	Signal Name
95G	P	–
100G	L	–

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Color	WHITE

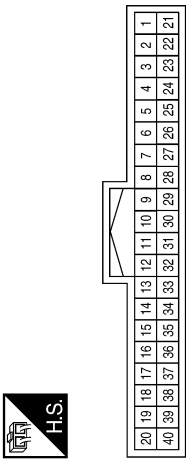
H.S.



Terminal No.	Color of Wire	Signal Name
6	L	–
14	P	–

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE

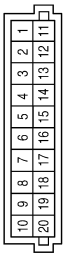
H.S.



Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	P	CAN-L
8	W	O/D OFF SW
22	B	GND2 (POWER)
23	B	GND3 (CIRCUIT)
27	LG	BAT
28	GR	IGN

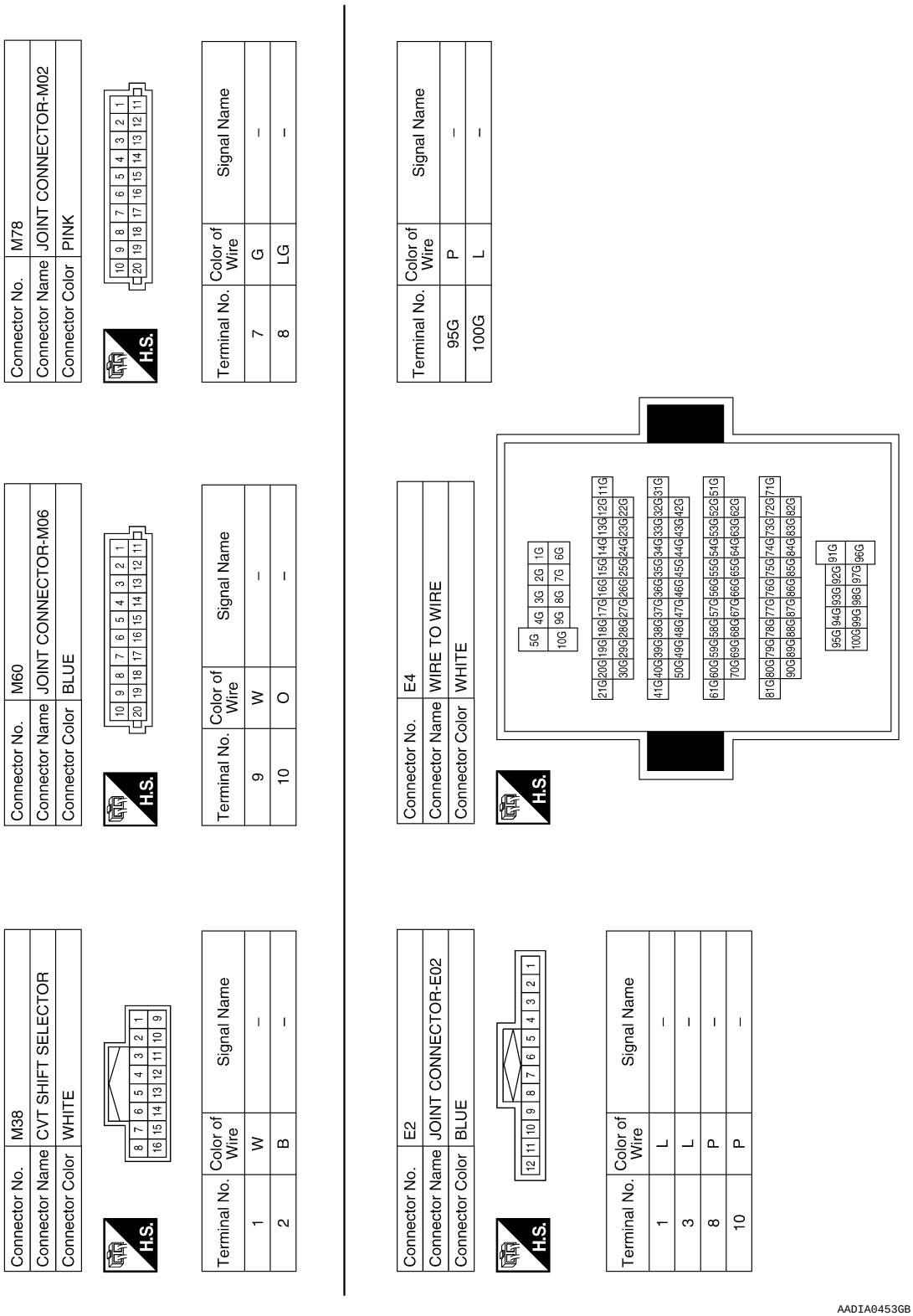
Connector No.	M31
Connector Name	JOINT CONNECTOR-M01
Connector Color	GRAY

H.S.

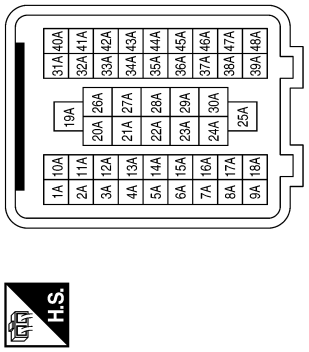


Terminal No.	Color of Wire	Signal Name
5	P	–
8	P	–
9	P	–
15	L	–
18	L	–
19	L	–

AADIA0452GB

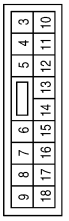

Connector No. M38
Connector Name CVT SHIFT SELECTOR
Connector Color WHITE
H.S.
8 7 6 5 4 3 2 1
16 15 14 13 12 11 10 9
Terminal No. Color of Wire Signal Name
1 W –
2 B –
Connector No. E2
Connector Name JOINT CONNECTOR-E02
Connector Color BLUE
H.S.
12 11 10 9 8 7 6 5 4 3 2 1
Terminal No. Color of Wire Signal Name
1 L –
3 L –
8 P –
10 P –
Connector No. M60
Connector Name JOINT CONNECTOR-M06
Connector Color BLUE
H.S.
10 9 8 7 6 5 4 3 2 1 11
20 19 18 17 16 15 14 13 12
Terminal No. Color of Wire Signal Name
9 W –
10 O –
Connector No. M78
Connector Name JOINT CONNECTOR-M02
Connector Color PINK
H.S.
10 9 8 7 6 5 4 3 2 1 11
20 19 18 17 16 15 14 13 12
Terminal No. Color of Wire Signal Name
7 G –
8 LG –
Connector No. E4
Connector Name WIRE TO WIRE
Connector Color WHITE
H.S.
5G 4G 3G 2G 1G
10G 9G 8G 7G 6G
21G 20G 19G 18G 17G 16G 15G 14G 13G 12G 11G
30G 29G 28G 27G 26G 25G 24G 23G 22G
41G 40G 39G 38G 37G 36G 35G 34G 33G 32G 31G
50G 49G 48G 47G 46G 45G 44G 43G 42G
61G 60G 59G 58G 57G 56G 55G 54G 53G 52G 51G
70G 69G 68G 67G 66G 65G 64G 63G 62G
81G 80G 79G 78G 77G 76G 75G 74G 73G 72G 71G
90G 89G 88G 87G 86G 85G 84G 83G 82G
95G 94G 93G 92G 91G
100G 99G 98G 97G 96G
Terminal No. Color of Wire Signal Name
95G P –
100G L –
AADIA0453GB

Connector No.	E64
Connector Name	WIRE TO WIRE
Connector Color	BLACK



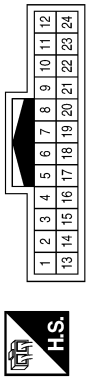
Terminal No.	Color of Wire	Signal Name
1A	P	–
2A	L	–
3A	O	–
4A	LG	–
5A	O	–
8A	V	–
10A	R	–
11A	O	–
12A	G	–

Connector No.	E43
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
13	O	A/T GEAR ECU

Connector No.	E13
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
4	O	–
5	G	–
6	R	–

AADIA0454GB

Connector No.	F23
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	–	–
2	BR	L RANGE SW
3	–	–
4	W	D RANGE SW
5	LG	N RANGE SW
6	G	R RANGE SW
7	SB	P RANGE SW
8	–	–
9	–	–
10	–	–
11	Y	SENSOR GND
12	SB	CVT FLUID TEMP SENS
13	–	–
14	G	G SENSOR
15	–	–
16	P	ATF PRESS SENS
17	–	–
18	–	–
19	–	–
20	–	–
21	O	SEL1 (CHIP SELECT)
22	GR	SEL3 (DATA I O)
23	P	CAN-L
24	V	OUTPUT SPEED SENS

Terminal No.	Color of Wire	Signal Name
25	–	–
26	R	SENS PWR SUPPLY
27	–	–
28	–	–
29	–	–
30	Y	LINE PRESS SOL VALVE
31	V	SEL2 (CLOCK)
32	–	–
33	L	CAN-H
34	R	SEC SPEED SENS
35	O	PRI SPEED SENS
36	–	–
37	L	SELECT SOL VALVE
38	LG	TCC SOLE VALVE
39	G	LOW BRAKE SOLE VALVE
40	W	PRI PRESS SOLE VALE
41	B	GND
42	B	GND
43	–	–
44	–	–
45	V	BATT
46	GR	BATT
47	LG	VIGN
48	W	VIGN

AADIA0455GB

Connector No.	F26
Connector Name	TRANSMISSION RANGE SWITCH
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	–	–
2	W	–
3	–	–
4	LG	–
5	SB	–
6	BR	–
7	GR	–
8	G	–
9	LG	–
10	BR	–

Connector No.	F30
Connector Name	SECONDARY SPEED SENSOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	–
2	R	–
3	LG	–

Connector No.	F38
Connector Name	PRIMARY SPEED SENSOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	–
2	O	–
3	LG	–

Connector No.	F46
Connector Name	CVT UNIT
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	V	–
2	Y	–
3	W	–
4	SB	–
5	–	–
6	LG	–
7	–	–
8	–	–
9	–	–
11	–	–
12	V	–

Terminal No.	Color of Wire	Signal Name
13	–	–
14	P	–
15	O	–
16	R	–
17	GR	–
18	–	–
19	–	–
20	–	–
22	G	–
23	L	–
25	Y	–

AADIA0456GB

Connector No.	F49
Connector Name	OUTPUT SPEED SENSOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1	B	–
2	V	–
3	LG	–

Connector No.	F50
Connector Name	WIRE TO WIRE
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
1A	P	–
2A	L	–
3A	W	–
4A	V	–
5A	LG	–
8A	GR	–
10A	Y	–
11A	R	–
12A	G	–

Connector No.	F58
Connector Name	JOINT CONNECTOR-F02
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
2	G	–
3	G	–
4	Y	–
5	Y	–
6	Y	–

Connector No.	B9
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
4	B	–
5	V	–
6	LG	–

Connector No.	B89
Connector Name	G SENSOR
Connector Color	BLACK

H.S.

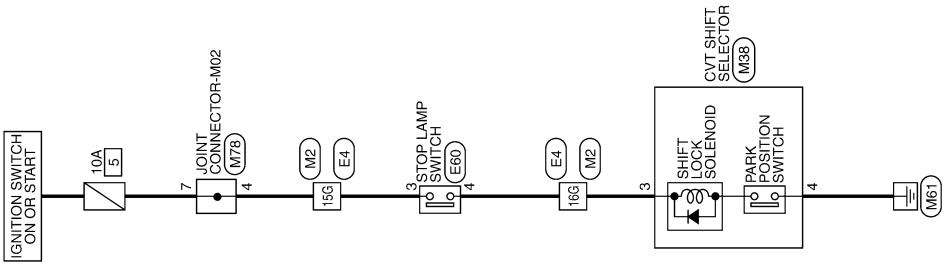
Terminal No.	Color of Wire	Signal Name
1	G	–
2	R	–
3	LG	–

AADIA0457GB

CVT SHIFT LOCK SYSTEM

Wiring Diagram

INFOID:0000000008765800



CVT SHIFT LOCK SYSTEM

AADWA0275GB

CVT SHIFT LOCK SYSTEM CONNECTORS

Connector No.	M2
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

1G	2G	3G	4G	5G
6G	7G	8G	9G	10G

11G	12G	13G	14G	15G	16G	17G	18G	19G	20G	21G
22G	23G	24G	25G	26G	27G	28G	29G	30G		

31G	32G	33G	34G	35G	36G	37G	38G	39G	40G	41G
42G	43G	44G	45G	46G	47G	48G	49G	50G		

51G	52G	53G	54G	55G	56G	57G	58G	59G	60G	61G
62G	63G	64G	65G	66G	67G	68G	69G	70G		

71G	72G	73G	74G	75G	76G	77G	78G	79G	80G	81G
82G	83G	84G	85G	86G	87G	88G	89G	90G		

91G	92G	93G	94G	95G
96G	97G	98G	99G	100G

Terminal No.	Color of Wire	Signal Name
15G	Y	–
16G	BR	–

Connector No.	M38
Connector Name	CVT SHIFT SELECTOR
Connector Color	WHITE

H.S.

8	7	6	5	4	3	2	1
16	15	14	13	12	11	10	9

Terminal No.	Color of Wire	Signal Name
3	BR	–
4	B	–

Connector No.	M78
Connector Name	JOINT CONNECTOR-M02
Connector Color	PINK

H.S.

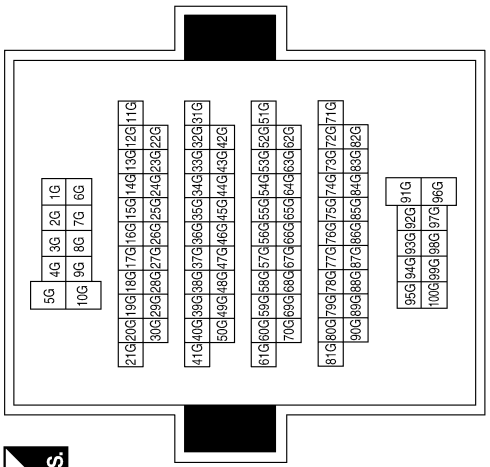
10	9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11

Terminal No.	Color of Wire	Signal Name
4	Y	–
7	G	–

AADIA0459GB

Connector No.	E4
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
15G	O	–
16G	GR	–

Connector No.	E60
Connector Name	STOP LAMP SWITCH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3	O	–
4	GR	–

AADIA0460GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Flowchart of Trouble Diagnosis

INFOID:0000000008765801

NOTE:
"DTC" includes DTC at the 1st trip.

1.OBTAIN INFORMATION ABOUT SYMPTOM

Refer to TM-139, "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

1. Before checking the malfunction, check whether any DTC exists.
2. If DTC exists, perform the following operations.

- Records the DTCs. (Print out using CONSULT and affix to the Work Order Sheet.)
- Erase DTCs.
- Check the relation between the cause found by DTC and the malfunction information from customer. TM-238, "Symptom Table" can be used effectively.

3. Check the relevant information including STI, etc.

Do malfunction information and DTC exist?

Malfunction information and DTC exist.>>GO TO 3.
Malfunction information exists but no DTC.>>GO TO 4.
No malfunction information, but DTC exists.>>GO TO 5.

3.REPRODUCE MALFUCTION SYSTEM

Check the malfunction described by the customer on the vehicle.
Check if the behavior is fail safe or normal operation. Refer toTM-121, "Fail-Safe".
Interview sheet can be used effectively when reproduce malfunction conditions. Refer to TM-139, "Question sheet".
Verify the relationship between the symptom and the conditions in which the malfunction described by the customer occurs.

>> GO TO 5.

4.REPRODUCE MALFUNCTION SYMPTOM

Check the malfunction described by the customer on the vehicle.
Check if the behavior is fail safe or normal operation. Refer toTM-121, "Fail-Safe".
Interview sheet can be used effectively when reproduce malfunction conditions.TM-139, "Question sheet".
Verify the relationship between the symptom and the conditions in which the malfunction described by the customer occurs.

>> GO TO 6.

5.PERFORM "DTC CONFIRMATION PROCEDURE"

Perform "DTC CONFIRMATION PROCEDURE" of the appropriate DTC to check if DTC is detected again.
Refer to TM-124, "DTC Inspection Priority Chart" when multiple DTCs are detected, and then determine the order for performing the diagnosis.

Is any DTC detected?

YES >> GO TO 7.
NO >> Follow GI-43, "Intermittent Incident" to check.

6.IDENTIFY MALFUNCTIONING SYSTEM WITH "DIAGNOSIS CHART BY SYMPTOM"

Use TM-238, "Symptom Table" from the symptom inspection result in step 4. Then identify where to start performing the diagnosis based on possible causes and symptoms.

>> GO TO 8.

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 3 or 4.

Is DTC or malfunction symptom reproduced?

YES-1 (DTC is reproduced.)>>GO TO 5.
YES-2 (Malfunction is reproduced.)>>GO TO 6.
NO >> Before delivering the vehicle to the customer, make sure that DTC is erased.

Question sheet

INFOID:0000000008765802

DESCRIPTION

There are many operating conditions that may cause a malfunction of the transmission parts. By understanding those conditions properly, a quick and exact diagnosis can be achieved.
In general, perception of a problem varies depending on individuals. Ask the customer about his/her concerns carefully. It is important to understand the phenomenon or status. To systemize all the information for the diagnosis, prepare the question sheet referring to the question points.
In some cases, multiple conditions that appear simultaneously may cause a DTC to be detected.

KEY POINTS

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

SEF907L

Worksheet Sample

Question sheet

Customer's name	MR/MS	Registration number		Initial year registration	Year Month day
		Vehicle type		Chassis No.	
Storage date	Year Month day	Engine		Mileage	km/Mile
Symptom	☐ Vehicle does not start (☐ R position ☐ D position ☐ L position ☐ M position)				
	☐ Upshifting does not occur ☐ Downshifting does not occur				
	☐ Lock-up malfunction				
	☐ Shift point is too high ☐ Shift point is too low				
	☐ Shift shock (☐ N ⇒ D ☐ Lock-up ☐ R, D, L and M position)				
	☐ Slip (☐ N ⇒D ☐ Lock-up ☐ R, D, L and M position)				
	☐ Noise ☐ Vibration				
	When selector lever position is shifted, shift pattern does not change.				
	☐ Other ( )				
First occurrence	☐ Recently (as from month of year)				
Frequency of occurrence	☐ Always ☐ Under certain conditions ☐ Sometimes [time(s)/day]				

Question sheet

Customer's name	MR/MS	Registration number		Initial year registration	Year Month day
		Vehicle type		Chassis No.	
Storage date	Year Month day	Engine		Mileage	km/Mile
Climate conditions		Irrelevant			
	Weather	☐ Clear ☐ Cloud ☐ Rain ☐ Snow ☐ Other ( )			
	Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold ☐ Temp. (Approx. °C/°F)			
	Relative humidity	☐ High ☐ Moderate ☐ Low			
Transaxle condition		☐ In cold-start ☐ During warm-up (approx. °C/°F) ☐ After warm-up ☐ Engine speed: rpm			
Road conditions		☐ Urban area ☐ Suburb area ☐ Highway ☐ Mountainous road (uphill or downhill)			
Operating condition, etc.		Irrelevant ☐ When engine starts ☐ During idling ☐ During driving ☐ During acceleration ☐ At constant speed driving ☐ During deceleration ☐ During cornering (RH curve or LH curve)			
Other conditions					

ADDITIONAL SERVICE WHEN REPLACING TCM

Description

INFOID:0000000008765803

When replacing the TCM, perform the following work.

CHECK LOADING OF CALIBRATION DATA
- The TCM acquires calibration data (individual characteristic value) of each solenoid that is stored in the ROM assembly (in the control valve). This enables the TCM to perform accurate control. After the TCM is replaced, check that the TCM has correctly loaded the calibration data.

CALIBRATION OF G SENSOR
- TCM stores calibration data (inherent characteristic value) of G sensor to provide accurate control. Therefore, it is required to perform calibration of G sensor after the replacement of TCM.

CAUTION:
When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM.
If the TCM is replaced in advance, perform "ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY" after "CALIBRATION OF G SENSOR".

Procedure

INFOID:0000000008765804

1. CHECK WORK CONTENTS

Replacing only the TCM>>GO TO 2.
Replacing the TCM after the transaxle assembly is replaced>>GO TO 2.
Replacing the transaxle assembly after the TCM is replaced>>GO TO 5.

2. LOADING OF CALIBRATION DATA

1. Shift the selector lever to the "P" position.
2. Turn ignition switch ON.
3. Check that "P" is displayed on shift position indicator on combination meter.
   NOTE:
   Displayed approximately 4 – 5 seconds after the selector lever is moved to the "P" position.

Does the shift position indicator display "P"?

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

3. PERFORM CALIBRATION OF G SENSOR

Refer to TM-144, "Procedure".

>> WORK END

4. LOADING OF CALIBRATION DATA

Check the following items:
- Harness between the TCM and the ROM assembly inside the transaxle assembly is open or shorted.
- Disconnected, loose, bent, collapsed, or otherwise abnormal connector housing terminals

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning parts.

5. PERFORM CALIBRATION OF G SENSOR

Refer to TM-144, "Procedure".

>> Perform "ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY" after "CALIBRATION OF G SENSOR". Refer to TM-142, "Procedure".

ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

Description

INFOID:0000000008765805

When replacing the transaxle, perform the following work.

ERASING THE CALIBRATION DATA
- The TCM acquires calibration data (individual characteristic value) of each solenoid that is stored in the ROM assembly (in the control valve). This enables the TCM to perform accurate control. For this reason, after the transaxle assembly is replaced, it is necessary to erase the calibration data that is stored in the TCM and load new calibration data.

ERASING THE LEARNED VALUE DATA
- TCM learns indicated pressure for appropriate control of the transaxle assembly and records the learned values. For this reason, the leaned values stored in TCM must be erased after replacing a transaxle assembly.

ERASING CVT FLUID DEGRADATION LEVEL DATA
- TCM records the degradation level of the CVT fluid calculated from the vehicle driving status. Therefore, if the transaxle assembly is replaced, it is necessary to erase the CVT fluid degradation level data recorded by TCM.

Procedure

INFOID:0000000008765806

1. INITIALIZE TCM

With CONSULT
1. Set parking brake.
2. Turn ignition switch ON.
3. Select “Work Support” in “TRANSMISSION”.
4. Select “ERASE MEMORY DATA”.
5. While maintaining the conditions below, touch “Start”.

- Vehicle stop status
- With engine stopped
- Selector lever: “R” position
- Accelerator pedal: Depressed

NOTE:
Select “Start” and complete within approximately 20 seconds.

Is “COMPLETED” displayed?

YES >> GO TO 2.
NO >> Turn the ignition switch OFF and wait for a minimum of 10 seconds then perform the work again.

2. CHECK AFTER TCM IS INITIALIZED

With CONSULT
1. Turn ignition switch OFF with the selector lever in “R” position and wait for 10 seconds or more.
2. Turn ignition switch ON with the selector lever in “R” position.
   CAUTION:
   Never start the engine.
3. Select “Special function” in “TRANSMISSION”.
4. Select “CALIB DATA”.
5. Check that indicated value of “CALIB DATA” is equal to the value shown in the following table.

Item name	Display value	Item name	Display value
UNIT CLB ID1	00	MAP NO HC/RB	00
UNIT CLB ID2	00	MAP NO L/B	00
UNIT CLB ID3	00	OFFSET2 LU	0
UNIT CLB ID4	00	OFFSET2 PL	0
UNIT CLB ID5	00	OFFSET2 PRI	0
UNIT CLB ID6	00	OFFSET2 H/R	0

Item name	Display value	Item name	Display value
UNIT CLB ID7	00	OFFSET2 L/B	0
UNIT CLB ID8	00	INIT OFFSET H/R A	0
UNIT CLB ID9	00	INIT OFFSET H/R B	0
UNIT CLB ID10	00	INIT OFFSET H/R C	0
UNIT CLB ID11	00	INIT OFFSET H/R D	0
GAIN LU	256	INIT OFFSET H/R E	0
GAIN PL	256	INIT OFFSET H/R F	0
GAIN PRI	256	INIT OFSET LB A	0
GAIN HC/RB	256	INIT OFSET LB B	0
GAIN L/B	256	INIT OFSET LB C	0
OFFSET LU	0	INIT OFSET LB D	0
OFFSET PL	0	INIT OFSET LB E	0
OFFSET PRI	0	INIT OFSET LB F	0
OFFSET HC/RB	0	LB INITIALIZE LEARN	–1
OFFSET L/B	0	HC INITIALIZE LEARN	–1
MAP NO LU	00	LB INITIALIZE TEMP	FF
MAP NO PL	00	LB INITIALIZE TEMP	FF
MAP NO PRI	00		

Is the indicated value of “CALIB DATA” equal to the value shown in the table?

YES >> GO TO 3.
NO >> GO TO 1.

3. LOADING OF CALIBRATION DATA

1. Shift the selector lever to the “P” position.
2. Check that “P” is displayed on shift position indicator on combination meter.
   NOTE:
   Displayed approximately 4 – 5 seconds after the selector lever is moved to the “P” position.

Does shift position indicator display “P”?

YES >> GO TO 5.
NO >> GO TO 4.

4. DETECT MALFUNCTIONING ITEMS

Check the following items:
- Harness between the TCM and the ROM assembly inside the transaxle assembly is open or shorted.
- Disconnected, loose, bent, collapsed, or otherwise abnormal connector housing terminals

Is the inspection result normal?

YES >> GO TO 1.
NO >> Repair or replace the malfunctioning parts.

5. ERASE THE CVT FLUID DEGRADATION LEVEL DATA

With CONSULT
1. Select “WORK SUPPORT” in “TRANSMISSION”.
2. Select “CONFORM CVTF DETERIORTN”.
3. Touch “Clear”.

>> WORK END

CALIBRATION OF G SENSOR

Description

INFOID:0000000008765807

TCM stores calibration data (inherent characteristic value) of G sensor to provide accurate control. Therefore, it is required to perform calibration of G sensor after the following work is performed.
- Removal/installation or replacement of G sensor
- Replacement of TCM

Procedure

INFOID:0000000008765808

1.PREPARATION BEFORE CALIBRATION PROCEDURE

1. Park the vehicle on a level surface.
2. Adjust air pressure of all tires to the specified pressure. WT-52, "Tire Air Pressure".

>> GO TO 2.

2.PERFORM G SENSOR CALIBRATION

With CONSULT
1. Turn ignition switch ON.
   CAUTION:
   Never start engine.
2. Select “Work Support” in “TRANSMISSION”.
3. Select “G SENSOR CALIBRATION”.
4. Touch “Start”.
   CAUTION:
   Never swing the vehicle during “G sensor calibration”.

Is “COMPLETED” displayed?

YES >> GO TO 3.
NO >> Perform steps 1 and 2 again.

3.CHECK DTC

With CONSULT
1. Turn ignition switch OFF and wait for 10 seconds.
2. Turn ignition switch ON.
3. Select “Self Diagnostic Results” in “TRANSMISSION”.

Is “P1586” or “P1588” detected?

YES >> Go to TM-125, "DTC Index".
NO >> Calibration end

STALL TEST

Work Procedure

INFOID:0000000008765811

INSPECTION

1. Check the engine oil level. Replenish if necessary. Refer to LU-7, "Inspection".
2. Check for leak of the CVT fluid. Refer to TM-244, "Inspection".
3. Drive for about 10 minutes to warm up the vehicle so that the CVT fluid temperature is 50 to 80°C (122 to 176°F).
4. Be sure to apply the parking brake and block the tires.
5. Start the engine, depress the brake pedal and put the selector lever to the D position.
6. While depressing the brake pedal, depress the accelerator pedal gradually.
7. Read the stall speed quickly. Then, release your foot from the accelerator pedal quickly.
   CAUTION:
   Never depress the accelerator pedal for 5 seconds or more during the test.

   Stall speed : Refer to TM-275, "Stall Speed".
8. Place the selector lever in the N position.
9. Cool the CVT fluid.
   CAUTION:
   Run the engine with the idle speed for at least 1 minute.
10. Put the selector lever to the R position and perform Step 6 to Step 9 again.

NARROWING-DOWN MALFUNCTIONING PARTS

	Selector lever position		Possible cause
	D	R	
Stall speed	H	O	• Low brake
	O	H	• Reverse brake
	L	L	• Engine • Torque converter one way clutch
	H	H	• Line pressure is low. • Primary pulley • Secondary pulley • Steel belt

O: Within the stall speed standard value

H: Stall speed is higher than the standard value.

L: Stall speed is lower than the standard value.

LINE PRESSURE TEST

Work Procedure

INFOID:0000000008765812

INSPECTION

1. Check the engine oil level. Replenish if necessary. LU-7, "Inspection".
2. Check for leak of the CVT fluid. Refer to TM-244, "Inspection".
3. Drive for about 10 minutes to warm up the vehicle so that the CVT fluid temperature is 50 to 80°C (122 to 176°F).
4. Be sure to apply the parking brake and block the tires.
5. Start the engine.
6. Select “Data Monitor” in “TRANSMISSION”.
7. Select “LINE PRESSURE”.
8. Measure the line pressure at both idle and the stall speed.
   CAUTION:
   Keep brake pedal pressed all the way down during measurement.

Line pressure : Refer to TM-276, "Line Pressure".

NARROWING-DOWN MALFUNCTIONING PARTS

Judgment		Possible cause
Idle speed	Low for all positions (“P”, “R”, “N”, “D”, “L”)	Possible causes include malfunctions in the pressure supply system and low oil pump output. For example • Oil pump wear • Damage of chain and sprocket • Pressure regulator valve or plug sticking or spring fatigue • Oil strainer ⇒ oil pump ⇒ pressure regulator valve passage oil leak • Engine idle speed too low
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.
	High	Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function. For example • Accelerator pedal position signal malfunction • CVT fluid temperature sensor malfunction • Line pressure solenoid malfunction (sticking in OFF state, filter clog, cut line) • Pressure regulator valve or plug sticking
Stall speed	Line pressure does not rise higher than the line pressure for idle.	Possible causes include a sensor malfunction or malfunction in the pressure adjustment function. For example • TCM malfunction • Line pressure solenoid malfunction (shorting, sticking in ON state) • Pressure regulator valve or plug sticking
	The pressure rises, but does not enter the standard position.	Possible causes include malfunctions in the pressure supply system and malfunction in the pressure adjustment function. For example • Oil pump wear • Line pressure solenoid malfunction (sticking, filter clog) • Pressure regulator valve or plug sticking
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.

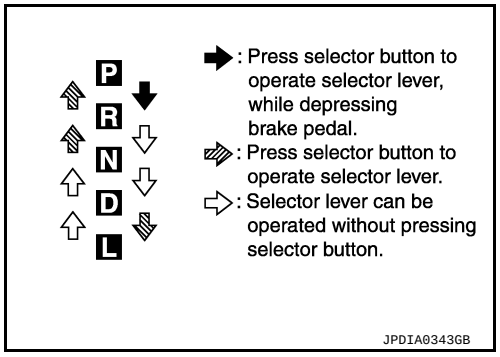
CVT POSITION

Inspection

INFOID:0000000008972829

INSPECTION

1. Turn ON the ignition switch with the selector lever at the P position.
2. Press the selector button with the brake pedal depressed, and confirm that the lever can be shifted to positions other than P. Also confirm that shifting is not allowed from the P position to other position without depressing the brake pedal.
3. Move the selector lever and check for “excessive effort”, “sticking”, “noise” or “rattle”.
4. Confirm that selector lever stops at each position with the feel of engagement when it is moved through all the positions. Check whether or not the actual position the selector lever is in matches the position shown by the transaxle body.
5. Make sure that the selector lever is shifted to all the shift positions in the manner shown in the figure.
6. When the selector button is pressed without applying forward/backward force to the selector lever at “P”, “R”, “N” and “D” positions, there should be no “sticking” on the button operation.
7. The reverse lamp lights and the reverse warning buzzer sounds at the “R” position and the reverse lamp does not light and the reverse warning buzzer does not sound at other positions. Confirm that the buzzer does not sound when selector lever is in the “P” or “N” position, in particular, with the lever pushed against the “R” position.
8. Check that the engine can be started with the selector lever in the “P” and “N” positions only.
9. Check that the transaxle is locked when the selector lever is in the P position.

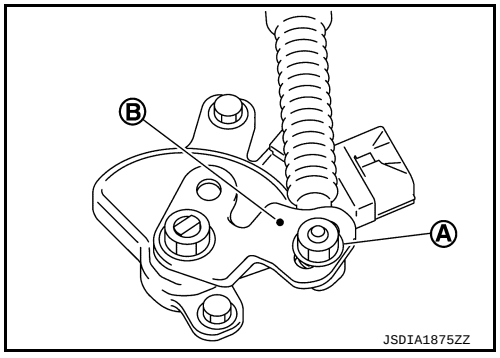


Adjustment

INFOID:0000000008972826

ADJUSTMENT

1. Shift the selector lever to the “P” position.
   CAUTION:
   Rotate the wheels at least a quarter turn and be certain the Park position mechanism is fully engaged.
2. Remove nut (A) and set manual lever (B) to the “P” position.
   CAUTION:
   Never apply force to the manual lever.
3. Tighten nuts to the specified torque. Refer to TM-250, "Exploded View".
   CAUTION:
   In tightening, fix the manual lever.



DTC/CIRCUIT DIAGNOSIS

U0073 COMMUNICATION BUS A OFF

DTC Logic

INFOID:0000000008765814

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
U0073	COMM BUS A OFF (Control Module Communication Bus A Off)	TCM communication blockage lasts for 2 seconds or more when turning ON the ignition switch. (Communication not established.)	Harness or connector (CAN communication line is error)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 5 seconds.
2. Check the DTC.

Is “U0073” detected?

YES >> Go to TM-148, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765815

For the diagnosis procedure, refer to LAN-16, "Trouble Diagnosis Flow Chart".

U0100 LOST COMMUNICATION (ECM A)

DTC Logic

INFOID:0000000008765816

DTC DETECTION LOGIC

DTC	CONSULT screen terms [Trouble diagnosis content]	DTC detection condition	Possible causes
U0100	LOST COMM (ECM A) [Lost Communication With ECM/PCM A]	When the ignition switch is ON, TCM is unable to receive the CAN communications signal from ECM continuously for 2 seconds or more.	• ECM • Harness or connector (CAN communication line is open or shorted)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for at least 5 seconds.
2. Check the DTC.

Is “U0100” detected?

YES >> Go to TM-149, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765817

For the diagnosis procedure, refer to LAN-16, "Trouble Diagnosis Flow Chart".

U0140 LOST COMMUNICATION (BCM)

DTC Logic

INFOID:0000000008765818

DTC DETECTION LOGIC

DTC	CONSULT screen terms [Trouble diagnosis content]	DTC detection condition	Possible causes
U0140	LOST COMM (BCM) [Lost Communication With Body Control Module]	When the ignition switch is ON, TCM is unable to receive the CAN communications signal from BCM continuously for 2 seconds or more.	• BCM • Harness or connector (CAN communication line is open or shorted)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another “DTC CONFIRMATION PROCEDURE” occurs just before, turn ignition 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. Start the engine and wait for at least 5 seconds.
2. Check the DTC.

Is “U0140” detected?

YES >> Go to TM-150, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765819

For the diagnosis procedure, refer to LAN-16, "Trouble Diagnosis Flow Chart".

U0141 LOST COMMUNICATION (BCM A)

DTC Logic

INFOID:0000000008765820

DTC DETECTION LOGIC

DTC	CONSULT screen terms [Trouble diagnosis content]	DTC detection condition	Possible causes
U0141	LOST COMM (BCM A) [Lost Communication With Body Control Module A]	When the ignition switch is turned ON, TCM continues no reception of the CAN communication signal from IPDM E/R for 2 seconds or more.	• IPDM E/R • Harness or connector (CAN communication line is open or shorted)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another “DTC CONFIRMATION PROCEDURE” occurs just before, turn ignition 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. Start the engine and wait for at least 5 seconds.
2. Check the DTC.

Is “U0141” detected?

YES >> Go to TM-151, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765821

For the diagnosis procedure, refer to LAN-16, "Trouble Diagnosis Flow Chart".

U0155 LOST COMMUNICATION (IPC)

DTC Logic

INFOID:0000000008765822

DTC DETECTION LOGIC

DTC	CONSULT screen terms [Trouble diagnosis content]	DTC detection condition	Possible causes
U0155	LOST COMM (IPC) [Lost Communication With Instrument Panel Cluster (IPC) Control Module]	When the ignition switch is ON, TCM is unable to receive the CAN communications signal from the combination meter continuously for 2 seconds or more.	• Combination meter • Harness or connector (CAN communication line is open or shorted)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another “DTC CONFIRMATION PROCEDURE” occurs just before, turn ignition 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. Start the engine and wait for at least 5 seconds.
2. Check the DTC.

Is “U0155” detected?

YES >> Go to TM-152, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765823

For the diagnosis procedure, refer to LAN-16, "Trouble Diagnosis Flow Chart".

U0300 CAN COMMUNICATION DATA

DTC Logic

INFOID:0000000008765824

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
U0300	CAN COMM DATA (Internal Control Module Software Incompatibility)	When the ignition switch is ON, the data length transmitted from each control unit is shorter than the specified length and the status continues for 2 seconds or more.	Control unit other than TCM

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

With CONSULT
1. Start the engine and wait for 5 seconds or more.
2. Check the DTC.

Is “U0300” detected?

YES >> Go to TM-153, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765825

1.CONTROL UNIT CHECK

Check the number of control units replaced before “U0300” is detected.

Is one control unit replaced?

YES >> The specification of the control unit replaced may be incorrect. Check the part number and the specification.
NO >> GO TO 2.

2.CONTROL UNIT CHECK

With CONSULT
1. Remove one of the control unit replaced.
2. Assemble the old control unit before replacement.
3. Turn ignition switch ON, and wait for 2 seconds or more.
4. Select “Self Diagnostic Results” in “TRANSMISSION”.

Is “U0300”detected?

YES >> Turn OFF the ignition switch and check other control units in the same manner.
NO >> The specification of the control unit removed may be incorrect. Check the part number and the specification.

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000008765826

CAN (Controller Area Network) is a serial communication line for real-time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent malfunction detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independently). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic

INFOID:0000000008765827

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
U1000	CAN COMM CIRCUIT (CAN Communication Line)	When the ignition switch is ON, TCM cannot send the CAN communication signal continuously for 2 seconds or more.	Harness or connector (CAN communication line is open or shorted)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

With CONSULT
1. Start the engine and wait for at least 5 seconds.
2. Check the DTC.

Is “U1000” detected?

YES >> Go to TM-154, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765828

For the diagnosis procedure, refer to LAN-16, "Trouble Diagnosis Flow Chart".

U1117 LOST COMMUNICATION (ABS)

DTC Logic

INFOID:0000000008765829

DTC DETECTION LOGIC

DTC	CONSULT screen terms [Trouble diagnosis content]	DTC detection condition	Possible causes
U1117	LOST COMM (ABS) [Lost Communication With ABS]	When the ignition switch is ON, TCM is unable to receive the CAN communications signal from ABS actuator and electric unit (control unit) continuously for 2 seconds or more.	• ABS actuator and electric unit (control unit) • Harness or connector (CAN communication line is open or shorted)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

If another “DTC CONFIRMATION PROCEDURE” occurs just before, turn ignition 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. Start the engine and wait for 5 seconds or more.
2. Check the DTC.

Is “U1117” detected?

YES >> Go to TM-155, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765830

For the diagnosis procedure, refer to LAN-16, "Trouble Diagnosis Flow Chart".

P062F EEPROM

DTC Logic

INFOID:0000000008765831

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P062F	EEPROM (Internal Control Module EEPROM Error)	Flash ROM error is detected when turning ON the ignition switch.	• TCM (flash ROM) • Harness or connector [TCM power supply (back-up) circuit is open or shorted]

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.
2. Check the DTC.

Is “P062F” detected?

YES >> Go to TM-156, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765832

1.CHECK INTERMITTENT INCIDNT

Refer to GI-43, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the TCM. Refer to TM-257, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

P0705 TRANSMISSION RANGE SENSOR A

DTC Logic

INFOID:0000000008765833

DTC DETECTION LOGIC

DTC	CONSULT screen terms [Trouble diagnosis content]	DTC detection condition	Possible causes
P0705	T/M RANGE SENSOR A [Transmission Range Sensor A Circuit (PRNDL Input)]	Two or more range signals simultaneously stay ON continuously for 5 seconds under the following diagnosis condition 1 and 2: • Diagnosis condition 1 (continued for 5 seconds or more) - TCM power supply voltage: More than 11 V • Diagnosis condition 2 (continued for 2 seconds or more) - Vehicle speed: Less than 3 km/h (2 MPH) - Accelerator pedal position: 0.6/8 or less - Idle switch: ON - Stop lamp switch: ON	• Harness or connector (Short circuit between transmission range switch and TCM) • Transmission range switch

DTC CONFIRMATION PROCEDURE

CAUTION:

Be careful of the driving speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.
2. Maintain the following conditions.

Accelerator pedal position	: 0.0/8
Brake pedal	: Depressed
Vehicle speed	: 0 km/h (0 MPH)

3. Shift the selector lever through entire positions from “P” to “L”. (Hold the selector lever at each position for 10 seconds or more.)
4. Check the first trip DTC.

Is “P0705” detected?

YES >> Go to TM-157, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765834

1.CHECK TCM INPUT SIGNALS

With CONSULT
1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Select “D POSITION SW”, “N POSITION SW”, “R POSITION SW”, “P POSITION SW” and “L POSITION SW”.
4. Shift selector lever through entire positions from “P” to “L” and check ON/OFF of each monitor item.

Monitor item	Condition	Condition
D POSITION SW	Selector lever: “D” position	On
	Other than the above	Off
N POSITION SW	Selector lever: “N” position	On
	Other than the above	Off
R POSITION SW	Selector lever: “R” position	On
	Other than the above	Off
P POSITION SW	Selector lever: “P” position	On
	Other than the above	Off
L POSITION SW	Selector lever: “L” position	On
	Other than the above	Off

Without CONSULT.
1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Turn ignition switch ON.
4. Shift selector lever from “P” to “L” and check voltage between TCM harness connector terminals and ground.

+		-	Condition	Voltage
TCM				
Connector	Terminal			
F23	2	Ground	Selector lever: “ L” position	10 – 16 V
			Other than the above	Approx. 0 V
	4		Selector lever: “D” position	10 – 16 V
			Other than the above	Approx. 0 V
	5		Selector lever: “N” position	10 – 16 V
			Other than the above	Approx. 0 V
	6		Selector lever: “R” position	10 – 16 V
			Other than the above	Approx. 0 V
	7		Selector lever: “P” position	10 – 16 V
			Other than the above	Approx. 0 V

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO-1 [“D POSITION SW” is “ON” when selector is not in “D” position. (Or connector terminal 4 is at power voltage.)]>>GO TO 2.
NO-2 [“N POSITION SW” is “ON” when selector is not in “N” position. (Or connector terminal 5 is at power voltage.)]>>GO TO 4.
NO-3 [“R POSITION SW” is “ON” when selector is not in “R” position. (Or connector terminal 6 is at power voltage.)]>>GO TO 6.
NO-4 [“P POSITION SW” is “ON” when selector is not in “P” position. (Or connector terminal 7 is at power voltage.)]>>GO TO 8.
NO-5 [“L POSITION SW” is “ON” when selector is not in “L” position. (Or connector terminal 2 is at power voltage.)]>>GO TO 10.

2.CHECK D POSITION SW CIRCUIT (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
F23	4	2	Not existed
		5	
		6	
		7	

Is the check result normal?

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

3.CHECK D POSITION SW CIRCUIT (PART 2)

1. Disconnect transmission range switch connector.
2. Turn ignition switch ON.
3. Check voltage between TCM harness connector terminal and ground.

+		-	Voltage (Approx.)
TCM			
Connector	Terminal		
F23	4	Ground	0 V

Is the check result normal?

YES >> GO TO 12.
NO >> Repair or replace malfunctioning parts.

4.CHECK N POSITION SW CIRCUIT (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
F23	5	2	Not existed
		4	
		6	
		7	

Is the check result normal?

YES >> GO TO 5.
NO >> Repair or replace malfunctioning parts.

5.CHECK N POSITION SW CIRCUIT (PART 2)

1. Disconnect transmission range switch connector.
2. Turn ignition switch ON.
3. Check voltage between TCM harness connector terminal and ground.

+		-	Voltage (Approx.)
TCM			
Connector	Terminal		
F23	5	Ground	0 V

Is the check result normal?

YES >> GO TO 12.
NO >> Repair or replace malfunctioning parts.

6.CHECK R POSITION SW CIRCUIT (PART1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
F23	6	2	Not existed
		4	
		5	
		7	

Is the check result normal?

YES >> GO TO 7.
NO >> Repair or replace malfunctioning parts.

7.CHECK R POSITION SW CIRCUIT (PART 2)

1. Disconnect transmission range switch connector.
2. Turn ignition switch ON.
3. Check voltage between TCM harness connector terminal and ground.

+		-	Voltage (Approx.)
TCM			
Connector	Terminal		
F23	6	Ground	0 V

Is the check result normal?

YES >> GO TO 12.
NO >> Repair or replace malfunctioning parts.

8.CHECK P POSITION SW CIRCUIT (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
F23	7	2	Not existed
		4	
		5	
		6	

Is the check result normal?

YES >> GO TO 9.
NO >> Repair or replace malfunctioning parts.

9.CHECK P POSITION SW CIRCUIT (PART 2)

1. Disconnect transmission range switch connector.
2. Turn ignition switch ON.
3. Check voltage between TCM harness connector terminal and ground.

+		-	Voltage (Approx.)
TCM			
Connector	Terminal		
F23	7	Ground	0 V

Is the check result normal?

YES >> GO TO 12.
NO >> Repair or replace malfunctioning parts.

10. CHECK L POSITION SWITCH CIRCUIT (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
F23	2	4	Not existed
		5	
		6	
		7	

Is the check result normal?

YES >> GO TO 11.
NO >> Repair or replace malfunctioning parts.

11. CHECK L POSITION SWITCH CIRCUIT (PART 2)

1. Disconnect transmission range switch connector.
2. Turn ignition switch ON.
3. Check voltage between TCM harness connector terminal and ground.

+		-	Voltage (Approx.)
TCM			
Connector	Terminal		
F23	2	Ground	0 V

Is the check result normal?

YES >> GO TO 12.
NO >> Repair or replace malfunctioning parts.

12. CHECK TRANSMISSION RANGE SWITCH

Check transmission range switch. Refer to TM-161, "Component Inspection".

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008765835

1. CHECK TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch connector terminals.

Transmission range switch	Condition	Continuity
Terminal		
7 – 10	Manual lever: “P” and “N” positions	Existed
	Other than the above	Not existed

Transmission range switch Terminal	Condition	Continuity
4 – 2	Manual lever: “D” position	Existed
	Other than the above	Not existed
4 – 5	Manual lever: “P” position	Existed
	Other than the above	Not existed
4 – 6	Manual lever: “L” position	Existed
	Other than the above	Not existed
4 – 8	Manual lever: “R” position	Existed
	Other than the above	Not existed
4 – 9	Manual lever: “N position	Existed
	Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of transmission range switch. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0706 TRANSMISSION RANGE SENSOR A

DTC Logic

INFOID:0000000008765836

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0706	T/M RANGE SENSOR A (Transmission Range Sensor A Circuit Range/Performance)	All range signals stay OFF continuously for 30 seconds under the following diagnosis condition 1 and 2: • Diagnosis condition 1 (continued for 30 seconds or more) - TCM power supply voltage: More than 11 V • Diagnosis condition 2 (continued for 2 seconds or more) - Vehicle speed: Less than 3 km/h (2 MPH) - Accelerator pedal position: 0.6/8 or less - Idle switch: ON - Stop lamp switch: ON	• Harness or connector (Open circuit between ignition switch and transmission range switch/open circuit between transmission range switch and TCM) • Transmission range switch • Control cable

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine.
2. Maintain the following conditions.

Accelerator pedal position	: 0.0/8
Brake pedal	: Depressed
Vehicle speed	: 0 km/h (0 MPH)

3. Shift the selector lever through entire positions from “P” to “L”. (Hold the selector lever at each position for 35 seconds or more.)
4. Check the first trip DTC.

Is “P0706” detected?

YES >> Go to TM-163, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765837

1.ADJUSTMENT OF CONTROL CABLE

Adjust control cable. Refer to TM-147, "Adjustment".

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT
1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “TRANSMISSION”.
3. Touch “Erase”.
4. Perform “DTC CONFIRMATION PROCEDURE”. Refer to TM-163, "DTC Logic".

Is “P0706” detected?

YES >> GO TO 3.

NO >> INSPECTION END

3.CHECK POWER CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect transmission range switch connector.
3. Turn ignition switch ON.
4. Check voltage between transmission range switch harness connector terminal and ground.

+		-	Voltage
Transmission range switch			
Connector	Terminal		
F26	4	Ground	10 – 16 V

Is the check result normal?

YES >> GO TO 4.
NO >> GO TO 7.

4.CHECK CIRCUIT BETWEEN TRANSMISSION RANGE SWITCH AND TCM (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between transmission range switch harness connector terminals and TCM harness connector terminals.

Transmission range switch		TCM		Continuity
Connector	Terminal	Connector	Terminal	
F26	2	F23	4	Existed
	5		7	
	6		2	
	8		6	
	9		5	

Is the check result normal?

YES >> GO TO 5.
NO >> Repair or replace malfunctioning parts.

5.CHECK CIRCUIT BETWEEN TRANSMISSION RANGE SWITCH AND TCM (PART 2)

Check continuity between transmission range switch harness connector terminals and ground.

Transmission range switch		—	Continuity
Connector	Terminal		
F26	2	Ground	Not existed
	5		
	6		
	8		
	9		

Is the check result normal?

YES >> GO TO 6.
NO >> Repair or replace malfunctioning parts.

6.CHECK TRANSMISSION RANGE SWITCH

Check transmission range switch. Refer to TM-165, "Component Inspection".

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

7. DETECT MALFUNCTIONING ITEMS

Check the following items:
- Harness open circuit or short circuit between ignition switch and IPDM E/R. Refer to PG-20, "Wiring Diagram — Ignition Power Supply —".
- Harness open circuit or short circuit between IPDM E/R and transmission range switch.
- 10A fuse (No. 45, IPDM E/R). Refer to PG-49, "IPDM E/R Terminal Arrangement".
- IPDM E/R

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008972497

1. CHECK TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch connector terminals.

Transmission range switch Terminal	Condition	Continuity
7 – 10	Manual lever: “P” and “N” positions	Existed
	Other than the above	Not existed
4 – 2	Manual lever: “D” position	Existed
	Other than the above	Not existed
4 – 5	Manual lever: “P” position	Existed
	Other than the above	Not existed
4 – 6	Manual lever: “L” position	Existed
	Other than the above	Not existed
4 – 8	Manual lever: “R” position	Existed
	Other than the above	Not existed
4 – 9	Manual lever: “N position	Existed
	Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of transmission range switch. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

INFOID:0000000008765839

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0711	FLUID TEMP SENSOR A (Transmission Fluid Temperature Sensor A Circuit Range/ Performance)	Under the following diagnosis conditions, CVT fluid temperature recognized by TCM does not change for 10 minutes or more in a temperature range. • Diagnosis condition - Selector lever: “D” position - Vehicle speed: 10 km/h (7 MPH) or more - Engine speed: 450 rpm or more - Accelerator pedal position: 1.0/8 or more - TCM power supply voltage: More than 11 V - CVT fluid temperature: Less than 10°C **NOTE:** Every time the CVT fluid temperature increases, reset the detection time and start the diagnosis again.	CVT fluid temperature sensor
		The following conditions are maintained for 5 minutes after the completion of engine diagnosis P0111, P0116, and P0196: • A/T fluid temperature – Engine coolant temperature > 37°C (131°F) • A/T fluid temperature – Engine coolant temperature < –27°C (–16.6°F)	

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine.
2. Drive the vehicle.
3. Maintain the following conditions for a total of 10 minutes or more.

Selector lever	: “D” position
Accelerator pedal position	: 1.0/8 or more
Vehicle speed	: 20 km/h (12 MPH) or more

4. Stop the vehicle.
5. Check the first trip DTC.

Is “P0711” detected?

YES >> Go to TM-167, "Diagnosis Procedure".
NO >> GO TO 3.

3.CHECK CVT FLUID TEMPERATURE SENSOR

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.
3. Check resistance between CVT unit connector terminals.

CVT unit / Terminal	Condition	Resistance (Approx.)
4 – 25	CVT fluid temperature: 20°C (68°F)	6.5 kΩ
	CVT fluid temperature: 50°C (122°F)	2.2 kΩ
	CVT fluid temperature: 80°C (176°F)	0.87 kΩ

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of CVT fluid temperature sensor. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

Diagnosis Procedure

INFOID:0000000008765840

1.CHECK CVT FLUID TEMPERATURE SENSOR

1. Turn ignition switch OFF.
2. Disconnect the CVT unit connector.
3. Check the CVT fluid temperature sensor. Refer to TM-167, "Component Inspection".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008765841

1.CHECK CVT FLUID TEMPERATURE SENSOR

Check resistance between CVT unit connector terminals.

CVT unit / Terminal	Condition	Resistance (Approx.)
4 – 25	CVT fluid temperature: 20°C (68°F)	6.5 kΩ
	CVT fluid temperature: 50°C (122°F)	2.2 kΩ
	CVT fluid temperature: 80°C (176°F)	0.87 kΩ

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of CVT fluid temperature sensor. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

INFOID:0000000008765842

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0712	FLUID TEMP SENSOR A (Transmission Fluid Temperature Sensor A Circuit Low)	The CVT fluid temperature identified by the TCM is 180°C (356°F) or more continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - Ignition switch: ON - TCM power supply voltage: More than 11 V	• Harness or connector (CVT fluid temperature sensor circuit is shorted to ground) • CVT fluid temperature sensor

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for 10 seconds or more.
2. Check the first trip DTC.

Is “P0712” detected?

YES >> Go to TM-168, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765843

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
F23	12	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning part.

2.CHECK CVT FLUID TEMPERATURE SENSOR

Check CVT fluid temperature sensor. Refer to TM-168, "Component Inspection".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008972498

1.CHECK CVT FLUID TEMPERATURE SENSOR

Check resistance between CVT unit connector terminals.

CVT unit Terminal	Condition	Resistance (Approx.)
4 – 25	CVT fluid temperature: 20°C (68°F)	6.5 kΩ
	CVT fluid temperature: 50°C (122°F)	2.2 kΩ
	CVT fluid temperature: 80°C (176°F)	0.87 kΩ

Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of CVT fluid temperature sensor. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

INFOID:0000000008765845

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0713	FLUID TEMP SENSOR A (Transmission Fluid Temperature Sensor A Circuit High)	The CVT fluid temperature identified by the TCM is −40°C (−40°F) or less continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - Ignition switch: ON - Vehicle speed: More than 10 km/h (7 MPH) - TCM power supply voltage: More than 11 V	• Harness or connector (CVT fluid temperature sensor circuit is open or shorted to power supply) • CVT fluid temperature sensor

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine.
2. Maintain the following condition for 10 seconds or more.

Vehicle speed : 20 km/h (12 MPH) or more

3. Stop the vehicle.
4. Check the first trip DTC.

Is “P0713” detected?

YES >> Go to TM-170, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765846

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminals and CVT unit harness connector terminals.

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	
F23	12	F46	4	Existed
	11		25	

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning part.

2.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (PART 2)

1. Turn ignition switch ON.
2. Check voltage between TCM harness connector terminal and ground.

TCM		—	Voltage
Connector	Terminal		
F23	12	Ground	Approx. 0 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace malfunctioning part.

3.CHECK CVT FLUID TEMPERATURE SENSOR

Check CVT fluid temperature sensor. Refer to TM-171, "Component Inspection".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008972499

1.CHECK CVT FLUID TEMPERATURE SENSOR

Check resistance between CVT unit connector terminals.

CVT unit	Condition	Resistance (Approx.)
Terminal		
4 – 25	CVT fluid temperature: 20°C (68°F)	6.5 kΩ
	CVT fluid temperature: 50°C (122°F)	2.2 kΩ
	CVT fluid temperature: 80°C (176°F)	0.87 kΩ

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of CVT fluid temperature sensor. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0715 INPUT SPEED SENSOR A

DTC Logic

INFOID:0000000008765848

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0715	INPUT SPEED SENSOR A (Input/Turbine Speed Sensor A Circuit)	The primary speed sensor value is less than 150 rpm continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - Secondary pulley speed: 1,000 rpm or more - TCM power supply voltage: More than 11 V	• Harness or connector (Primary speed sensor circuit is open or shorted) • Primary speed sensor
		The primary speed sensor value is 240 rpm or less continuously for 500 msec or more under the following diagnosis conditions: • Diagnosis conditions - 10-msec-ago primary pulley speed: 1,000 rpm or more - TCM power supply voltage: More than 11 V	

DTC CONFIRMATION PROCEDURE

CAUTION:

Be careful of the driving speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.
2. Drive the vehicle.
3. Maintain the following conditions for 10 seconds or more.

Selector lever	: “L” POSITION
Vehicle speed	: 40 km/h (25 MPH) or more

4. Stop the vehicle.
5. Check the first trip DTC.

Is “P0715” detected?

YES >> Go to TM-172, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765849

1.CHECK PRIMARY SPEED SENSOR POWER CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect primary speed sensor connector.
3. Turn ignition switch ON.
4. Check voltage between primary speed sensor harness connector terminal and ground.

+		-	Voltage
Primary speed sensor			
Connector	Terminal		
F38	3	Ground	10 – 16 V

Is the check result normal?

YES >> GO TO 2.
NO >> GO TO 6.

2. CHECK PRIMARY SPEED SENSOR GROUND CIRCUIT

Check continuity between primary speed sensor harness connector terminal and ground.

Primary speed sensor		—	Continuity
Connector	Terminal		
F38	1	Ground	Existed

Is the check result normal?

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

3. CHECK CIRCUIT BETWEEN PRIMARY SPEED SENSOR AND TCM (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between primary speed sensor harness connector terminal and TCM harness connector terminal.

Primary speed sensor		TCM		Continuity
Connector	Terminal	Connector	Terminal	
F38	2	F23	35	Existed

Is the check result normal?

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

4. CHECK CIRCUIT BETWEEN PRIMARY SPEED SENSOR AND TCM (PART 2)

Check continuity between primary speed sensor harness connector terminal and ground.

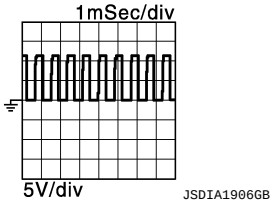
Primary speed sensor		—	Continuity
Connector	Terminal		
F38	2	Ground	Not existed

Is the check result normal?

YES >> GO TO 5.
NO >> Repair or replace malfunctioning parts.

5. CHECK TCM INPUT SIGNALS

1. Connect all of disconnected connectors.
2. Lift the vehicle.
3. Start the engine.
4. Check frequency of primary speed sensor.

+		-	Condition	Frequency (Approx.)
TCM				
Connector	Terminal			
F23	35	Ground	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	1,100 Hz 

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Replace primary speed sensor. Refer to TM-262, "Removal and Installation".

6. DETECT MALFUNCTIONING ITEMS

Check the following items:

- Harness open circuit or short circuit between the ignition switch and IPDM E/R. Refer to PG-20, "Wiring Diagram — Ignition Power Supply —".
- Harness open circuit or short circuit between IPDM E/R and primary speed sensor.
- 10A fuse (No.45, IPDM E/R). Refer to PG-49, "IPDM E/R Terminal Arrangement".
- IPDM E/R

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

P0720 OUTPUT SPEED SENSOR

DTC Logic

INFOID:0000000008765850

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0720	OUTPUT SPEED SENSOR (Output Speed Sensor Circuit)	The output speed sensor value is less than 150 rpm continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - Selector lever: “D”, “L” or “R” position - Auxiliary gearbox shifting is not in progress. - When the “D” position switch, “L” position switch or “R” position switch is ON, the output speed has not experienced 250 rpm or more. - After shifting the selector lever, the input speed has experienced less than 300 rpm. - Secondary pulley speed: 1,500 rpm or more - TCM power supply voltage: More than 11 V	• Harness or connector (Output speed sensor circuit is open or shorted) • Output speed sensor
		The output speed sensor value is 90 rpm or less continuously for 500 msec or more under the following diagnosis conditions: • Diagnosis conditions - 10-msec-ago output speed: 730 rpm or more - TCM power supply voltage: More than 11 V	

DTC CONFIRMATION PROCEDURE

CAUTION:

Be careful of the driving speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.
2. Drive the vehicle.
3. Maintain the following conditions for 10 seconds or more.

Selector lever	: “D” position
Vehicle speed	: 55 km/h (34 MPH) or more

4. Stop the vehicle.
5. Check the first trip DTC.

Is “P0720” detected?

YES >> Go to TM-175, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765851

1.CHECK OUTPUT SPEED SENSOR POWER CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect output speed sensor connector.
3. Turn ignition switch ON.

4. Check voltage between output speed sensor harness connector terminal and ground.

+		-	Voltage
Output speed sensor			
Connector	Terminal		
F49	3	Ground	10 – 16 V

Is the check result normal?

YES >> GO TO 2.
NO >> GO TO 6.

2.CHECK OUTPUT SPEED SENSOR GROUND CIRCUIT

Check the continuity between output speed sensor harness connector terminal and ground.

Output speed sensor		—	Continuity
Connector	Terminal		
F49	1	Ground	Existed

Is the check result normal?

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

3.CHECK CIRCUIT BETWEEN OUTPUT SPEED SENSOR AND TCM (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between output speed sensor harness connector terminal and TCM harness connector terminal.

Output speed sensor		TCM		Continuity
Connector	Terminal	Connector	Terminal	
F49	2	F23	24	Existed

Is the check result normal?

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

4.CHECK CIRCUIT BETWEEN OUTPUT SPEED SENSOR AND TCM (PART 2)

Check continuity between output speed sensor harness connector terminal and ground.

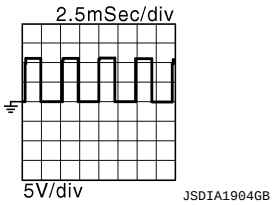
Output speed sensor		—	Continuity
Connector	Terminal		
F49	2	Ground	Not existed

Is the check result normal?

YES >> GO TO 5.
NO >> Repair or replace malfunctioning parts.

5.CHECK TCM INPUT SIGNALS

1. Connect all of disconnected connectors.
2. Lift the vehicle.
3. Start the engine.
4. Check frequency of output speed sensor.

+ TCM Connector	+ TCM Terminal	-	Condition	Frequency (Approx.)
F23	24	Ground	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	200 Hz 

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Replace output speed sensor. Refer to TM-264, "Exploded View".

6. DETECT MALFUNCTIONING ITEMS

Check the following items:
- Harness open circuit or short circuit between ignition switch and IPDM E/R. Refer to PG-20, "Wiring Diagram — Ignition Power Supply —".
- Harness open circuit or short circuit between IPDM E/R and output speed sensor.
- 10A fuse (No.45, IPDM E/R). Refer to PG-49, "IPDM E/R Terminal Arrangement".
- IPDM E/R

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

P0740 TORQUE CONVERTER

DTC Logic

INFOID:0000000008765852

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0740	TORQUE CONVERTER (Torque Converter Clutch Circuit/Open)	The TCM torque converter clutch solenoid valve current monitor reading is 200 mA or less continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - Solenoid valve output current: 750 mA or more - GND short diagnosis of the solenoid valve circuit is not satisfied. - TCM power supply voltage: More than 11 V	• Harness or connector (Torque converter clutch solenoid valve circuit is open or shorted to power supply) • Torque converter clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Be careful of the driving speed.

1. PREPARATION BEFORE OPERATION (PART 1)

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

>> GO TO 2.

2. PREPARATION BEFORE OPERATION (PART 2)

With CONSULT

1. Start the engine.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Select “FLUID TEMP”.
4. Confirm that the CVT fluid temperature is in the following range.

FLUID TEMP	: 10°C (50°F) or more

With GST

1. Start the engine.
2. Set the CVT fluid to 10°C (50°F) or more.
   NOTE:
   When the ambient temperature is 20°C (68°F), the CVT fluid usually increases to 50 to 80°C (122 to 176°F) with driving in an urban area for approximately 10 minutes.

Is the CVT fluid 10°C (50°F) or more?

YES >> GO TO 3.
NO >> 1. Warm the transaxle.
2. GO TO 3.

3. CHECK DTC DETECTION

1. Drive the vehicle.
2. Maintain the following conditions for 10 seconds or more.

Selector lever	: “D” position
Vehicle speed	: 40 km/h (25 MPH) or more

3. Stop the vehicle.
4. Check the first trip DTC.

Is “P0740” detected?

YES >> Go to TM-179, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765853

1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminal and CVT unit harness connector terminal.

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	
F23	38	F46	6	Existed

Is the check result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to TM-179, "Component Inspection".

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008765854

1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit / Terminal	—	Condition	Resistance (Approx.)
6	Ground	CVT fluid temperature: 20°C (68°F)	6.1 Ω
		CVT fluid temperature: 50°C (122°F)	6.9 Ω
		CVT fluid temperature: 80°C (176°F)	7.7 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of torque converter clutch solenoid valve. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0743 TORQUE CONVERTER

DTC Logic

INFOID:0000000008765855

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0743	TORQUE CONVERTER (Torque Converter Clutch Circuit Electrical)	The TCM torque converter clutch solenoid valve current monitor reading is 200 mA or less continuously for 480 msec or more under the following diagnosis conditions: • Diagnosis conditions - Solenoid valve output current: 750 mA or more - GND short circuit diagnosis occurs in the solenoid valve drive circuit. - TCM power supply voltage: More than 11 V	• Harness or connector (Torque converter clutch solenoid valve circuit is shorted to ground) • Torque converter clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Be careful of the driving speed.

1.PREPARATION BEFORE OPERATION (PART 1)

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

>> GO TO 2.

2.PREPARATION BEFORE OPERATION (PART 2)

With CONSULT

1. Start the engine.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Select “FLUID TEMP”.
4. Confirm that the CVT fluid temperature is in the following range.

FLUID TEMP : 10°C (50°F) or more

With GST

1. Start the engine.
2. Set the CVT fluid to 10°C (50°F) or more.

NOTE:

When the ambient temperature is 20°C (68°F), the CVT fluid usually increases to 50 to 80°C (122 to 176°F) with driving in an urban area for approximately 10 minutes.

Is the CVT fluid 10°C (50°F) or more?

YES >> GO TO 3.

NO >> 1. Warm the transaxle.
2. GO TO 3.

3.CHECK DTC DETECTION

1. Drive the vehicle.
2. Maintain the following conditions for 5 seconds or more.

Selector lever	: “D” position
Vehicle speed	: 40 km/h (25 MPH) or more

3. Stop the vehicle.
4. Check the first trip DTC.

Is “P0743” detected?

YES >> Go to TM-181, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765856

1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
F23	38	Ground	Not existed

Is the check result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to TM-181, "Component Inspection".

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008972500

1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit	—	Condition	Resistance (Approx.)
Terminal			
6	Ground	CVT fluid temperature: 20°C (68°F)	6.1 Ω
		CVT fluid temperature: 50°C (122°F)	6.9 Ω
		CVT fluid temperature: 80°C (176°F)	7.7 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of torque converter clutch solenoid valve. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0744 TORQUE CONVERTER

DTC Logic

INFOID:0000000008765858

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0744	TORQUE CONVERTER (Torque converter clutch circuit intermittent)	The torque converter slip speed is at or above a set value (40 rpm + (Vehicle speed / 2) continuously for 30 seconds or more under the following diagnosis conditions: • Diagnosis conditions - Selector lever: “D” position - Accelerator pedal position: 1.0/8 or more - Vehicle speed: 10 km/h (6 MPH) or more - Engine speed: 450 rpm or more - CVT fluid temperature: 20°C (68°F) – 180°C (356°F) - Lockup command is being given (except for slip lockup). - LU PRS: More than 0.2 MPa - TCM power supply voltage: More than 11 V	• Torque converter clutch solenoid valve • Control valve assembly • Torque converter

DTC CONFIRMATION PROCEDURE

CAUTION:

Be careful of the driving speed.

1.PREPARATION BEFORE OPERATION 1

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

>> GO TO 2.

2.PREPARATION BEFORE OPERATION 2

With CONSULT

1. Start the engine.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Select “FLUID TEMP”.
4. Confirm that the CVT fluid temperature is in the range below.

FLUID TEMP : 20°C (68°F) or more

With GST

1. Start the engine.
2. Set the CVT fluid to 20°C (68°F) or more.

   NOTE:

   When the ambient temperature is 20°C (68°F), the CVT fluid usually increases to 50 to 80°C (122 to 176°F) with driving in an urban area for approximately 10 minutes.

Is the CVT fluid 20°C (68°F) or more?

YES >> GO TO 3.

NO >> 1. Warm the transaxle.
2. GO TO 3.

3.CHECK DTC DETECTION

1. Drive the vehicle.
2. Maintain the following conditions for 40 seconds or more.

Selector lever : “D” position

Accelerator pedal position	: 1.0/8 or more
Vehicle speed	: 40 km/h (25 MPH) or more

3. Stop the vehicle.
4. Check the first trip DTC.

Is “P0744” detected?

YES >> Go to TM-183, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765859

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-146, "Work Procedure".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunction items.

2.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.
3. Check torque converter clutch solenoid valve. Refer to TM-183, "Component Inspection".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace the malfunction items.

Component Inspection

INFOID:0000000008972502

1.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit / Terminal	—	Condition	Resistance (Approx.)
6	Ground	CVT fluid temperature: 20°C (68°F)	6.1 Ω
		CVT fluid temperature: 50°C (122°F)	6.9 Ω
		CVT fluid temperature: 80°C (176°F)	7.7 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of torque converter clutch solenoid valve. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0746 PRESSURE CONTROL SOLENOID A

DTC Logic

INFOID:0000000008765861

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0746	PRESSURE CONTROL SOLENOID A (Pressure Control Solenoid A Performance/Stuck Off)	The detecting condition A or detection condition B is detected twice or more (1 second or more later after detection of the first) in the same DC under the following diagnosis conditions: • Diagnosis conditions - After the ignition switch is ON, 500 msec or more have passed. - Selector lever: Other than “P” and “N” positions - Idle is not being detected. - Engine speed: 600 rpm or more - Primary pulley speed: 500 rpm or more - Auxiliary gearbox shifting is not in progress. - Acceleration/deceleration speed: –0.05 G or more - The primary pulley speed experienced 306 rpm or more and the secondary pulley speed experienced 230 rpm or more at least once. - The output speed is 107 rpm or less or the secondary pulley speed exceeds 61 rpm. • Detection condition A - Status with the shifting ratio of the primary pulley speed/secondary pulley ratio exceeding 2.55 is 200 msec or more continuously. • Detection condition B - Status with the shifting ratio of the primary pulley speed/secondary pulley ratio exceeding 3.35 is 100 msec or more continuously.	• Line pressure solenoid valve • Control valve assembly

NOTE:
DC stands for “DRIVING CYCLE” and indicates a series of driving cycle of “Ignition switch OFF → ON → driving → OFF”.

DTC CONFIRMATION PROCEDURE

CAUTION:
Be careful of the driving speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.
2. Drive the vehicle.
3. Maintain the following conditions for 10 seconds or more.

Selector lever	: “D” position
Accelerator pedal position	: 0.1/8 or more
Vehicle speed	: 40 km/h (25 MPH) or more

4. Stop the vehicle.

5. Check the first trip DTC.

Is “P0746”detected?

YES >> Go to TM-185, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765862

1.CHECK LINE PRESSURE SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.
3. Check line pressure solenoid valve. Refer to TM-185, "Component Inspection"

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-146, "Work Procedure".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace the malfunction items.

Component Inspection

INFOID:0000000008765863

1.CHECK LINE PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit / Terminal	—	Condition	Resistance (Approx.)
2	Ground	CVT fluid temperature: 20°C (68°F)	5.3 Ω
		CVT fluid temperature: 50°C (122°F)	6.0 Ω
		CVT fluid temperature: 80°C (176°F)	6.7 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of line pressure solenoid valve. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0846 TRANSMISSION FLUID PRESSURE SEN/SW B

DTC Logic

INFOID:0000000008765864

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0846	TRANSMISSION FLUID PRESSURE SEN/SW B (Transmission Fluid Pressure Sensor/Switch B Circuit Range/Performance)	The detection conditions continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - Selector lever: “D” position - The primary pulley speed experienced 306 rpm or more and the secondary pulley speed experienced 230 rpm or more at least once. - Stop lamp switch: OFF - Wheel spin is not being detected. - The rate of change in pulley ratio: Between –0.09 and +0.09 inclusive - Solenoid valve output current: 750 mA or more - GND short diagnosis of the solenoid valve circuit is not satisfied. - TCM power supply voltage: More than 11 V • Detection conditions - After the value of “Actual secondary pressure – Target secondary pressure” exceeds 0.675 MPa: • The rate of change in vehicle speed [km/h (MPH)]: Between –49 (–30) and +49 (+30) inclusive • The rate of change in accelerator pedal angle: Between –1.3/8 and +1.3/8 inclusive	• Secondary pressure sensor • Control valve assembly

DTC CONFIRMATION PROCEDURE

CAUTION:

Be careful of the driving speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.
2. Shift the selector lever to “D” position.
3. Drive the vehicle at a constant velocity of 40 km/h (25 MPH) at lease for 10 seconds.
   CAUTION:
   At the same time, the accelerator pedal angle must be maintained constant.
4. Stop the vehicle.
5. Check the first trip DTC.

Is “P0846”detected?

YES >> Go to TM-186, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765865

1.CHECK TCM INPUT SIGNAL

1. Start the engine.
2. Check voltage between TCM connector terminal and ground.

TCM		—	Condition	Voltage (Approx.)
Connector	Terminal			
F23	16	Ground	• Selector lever: “N” position • At idle	0.88 – 0.92 V

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> There is a malfunction of secondary pressure sensor value. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0847 TRANSMISSION FLUID PRESSURE SEN/SW B

DTC Logic

INFOID:0000000008765866

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0847	TRANSMISSION FLUID PRESSURE SEN/SW B (Transmission Fluid Pressure Sensor/Switch B Circuit Low)	The secondary pressure sensor voltage is 0.09 V or less continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - CVT fluid temperature: More than –20°C (–4°F) - TCM power supply voltage: More than 11 V	• Harness or connector (Secondary pressure sensor circuit is open or shorted to ground) • Secondary pressure sensor • Control valve assembly

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

With CONSULT
1. Start the engine.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Select “FLUID TEMP”.
4. Maintain the following conditions for 10 seconds or more.

FLUID TEMP : –19°C (–2.2°F) or more

5. Check the first trip DTC.

With GST
1. Start the engine and wait for at least 10 seconds.
   CAUTION:
   When the ambient temperature is –20°C (–4°F) or less and the engine is cold, warm up the engine for approximately 5 minutes.
2. Check the first trip DTC.

Is “P0847”detected?

YES >> Go to TM-188, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765867

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminals and CVT unit harness connector terminals.

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	
F23	11	F46	25	Existed
	16		14	
	26		16	

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (PART 2)

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
F23	16	Ground	Not existed
	26		

Is the inspection result normal?

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

3. CHECK TCM INPUT SIGNALS

1. Connect all connectors removed.
2. Start the engine.
3. Check voltage between TCM connector terminal and ground.

+		-	Condition	Voltage
TCM				
Connector	Terminal			
F23	16	Ground	• Selector lever: “N” position • At idle	0.88 – 0.92 V

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> There is malfunction of secondary pressure sensor. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

DTC Logic

INFOID:0000000008765868

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0848	TRANSMISSION FLUID PRESSURE SEN/SW B (Transmission Fluid Pressure Sensor/Switch B Circuit Low)	The secondary pressure sensor voltage is 4.7 V or more continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - CVT fluid temperature: More than –20°C (–4°F) - Secondary pressure target value: 5.7 MPa or less - TCM power supply voltage: More than 11 V	• Harness or connector (Secondary pressure sensor circuit is shorted to power supply) • Secondary pressure sensor • Control valve assembly

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

With CONSULT
1. Start the engine.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Select “FLUID TEMP”.
4. Maintain the following conditions for 10 seconds or more.

FLUID TEMP : –19°C (–2.2°F) or more

5. Check the first trip DTC.

With GST
1. Start the engine and wait for at least 10 seconds.
   CAUTION:
   When the ambient temperature is –20°C (–4°F) or less and the engine is cold, warm up the engine for approximately 5 minutes.
2. Check the first trip DTC.

Is “P0848”detected?

YES >> Go to TM-190, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765869

1.CHECK SECONDARY PRESSURE SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.
3. Turn ignition switch ON.
4. Check voltage between CVT unit harness connector terminal and ground.

+		-	Voltage (Approx.)
TCM			
Connector	Terminal		
F46	16	Ground	5.0 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2. CHECK SECONDARY PRESSURE SENSOR SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		
F23	16	Other than 16	Not existed

Is the inspection result normal?

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

3. CHECK TCM INPUT SIGNALS

1. Connect all connectors removed.
2. Start the engine.
3. Check voltage between TCM connector terminal and ground.

+		-	Condition	Voltage
TCM				
Connector	Terminal			
F23	16	Ground	• Selector lever: “N” position • At idle	0.88 – 0.92 V

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> There is a malfunction of secondary pressure sensor. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0863 TCM COMMUNICATION

DTC Logic

INFOID:0000000008765870

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0863	TCM COMMUNICATION (TCM Communication Circuit)	An error is detected at the initial CAN diagnosis of TCM.	TCM

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Turn ignition switch ON.
2. Check the DTC.

Is “P0863” detected?

YES >> Go to TM-192, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765871

1.CHECK INTERMITTENT INCIDNT

Refer to GI-43, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the TCM. Refer to TM-257, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

P0890 TCM

DTC Logic

INFOID:0000000008765872

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0890	TCM (Transmission Control Module Power Relay Sense Circuit Low)	The battery voltage supplied to the TCM is less than 8.4 V continuously for 200 msec or more under the following diagnosis condition: • Diagnosis condition - TCM power supply voltage: More than 11 V	• Harness or connector (TCM power supply (back-up) circuit is open or shorted.) • TCM

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine and wait for 5 seconds or more.
2. Check the DTC.

Is “P0890” detected?

YES >> Go to TM-193, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765873

1.CHECK TCM POWER SUPPLY (BACK-UP) CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check voltage between TCM harness connector terminals and ground.

+		-	Voltage
TCM			
Connector	Terminal		
F23	45	Ground	10 – 16 V
	46		

Is the inspection result normal?

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

2.CHECK INTERMITTENT INCIDENT

Refer to GI-43, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the TCM. Refer to TM-257, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

3.DETECT MALFUNCTIONING ITEMS

Check the following items:

- Open or short circuit of harness between battery positive terminal and TCM connector terminals 45 and 46. Refer to PG-8, "Wiring Diagram — Battery Power Supply —".
- 10A fuse (No.25, fuse and fusible link block). Refer to PG-48, "Terminal Arrangement".

- 10A fuse (No.28, fuse and fusible link block). Refer to PG-48, "Terminal Arrangement".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

P0962 PRESSURE CONTROL SOLENOID A

DTC Logic

INFOID:0000000008765874

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0962	PRESSURE CONTROL SOLENOID A (Pressure Control Solenoid A Control Circuit Low)	The line pressure solenoid valve current is 200 mA or less continuously for 200 msec or more under the following diagnosis conditions: • Diagnosis conditions - Solenoid output current: 750 mA or more - GND short diagnosis of the solenoid drive circuit is satisfied. - TCM power supply voltage: More than 11 V	• Harness or connector (Line pressure solenoid valve circuit is shorted to ground) • Line pressure solenoid valve

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine and wait for 5 seconds or more.
2. Check the first trip DTC.

Is “P0962” detected?

YES >> Go to TM-195, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765875

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
F23	30	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2.CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to TM-195, "Component Inspection".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008972503

1.CHECK LINE PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit / Terminal	—	Condition	Resistance (Approx.)
2	Ground	CVT fluid temperature: 20°C (68°F)	5.3 Ω
		CVT fluid temperature: 50°C (122°F)	6.0 Ω
		CVT fluid temperature: 80°C (176°F)	6.7 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of line pressure solenoid valve. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0963 PRESSURE CONTROL SOLENOID A

DTC Logic

INFOID:0000000008765877

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0963	PC SOLENOID A (Pressure Control Solenoid A Control Circuit High)	The line pressure solenoid valve current is 200 mA or less continuously for 200 msec or more under the following diagnosis conditions: • Diagnosis conditions - Solenoid output current: 750 mA or more - GND short diagnosis of the solenoid drive circuit is not satisfied. - TCM power supply voltage: More than 11 V	• Harness or connector (Line pressure solenoid valve circuit is open or shorted to power supply) • Line pressure solenoid valve

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine and wait for 5 seconds or more.
2. Check the first trip DTC.

Is “P0963” detected?

YES >> Go to TM-197, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765878

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminal and CVT unit harness connector terminal.

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	
F23	30	F46	2	Existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2.CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to TM-197, "Component Inspection".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008972504

1.CHECK LINE PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit / Terminal	—	Condition	Resistance (Approx.)
2	Ground	CVT fluid temperature: 20°C (68°F)	5.3 Ω
		CVT fluid temperature: 50°C (122°F)	6.0 Ω
		CVT fluid temperature: 80°C (176°F)	6.7 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of line pressure solenoid valve. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0965 PRESSURE CONTROL SOLENOID B

DTC Logic

INFOID:0000000008765880

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0965	PC SOLENOID B (Pressure control solenoid B control circuit range performance)	The detection conditions continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - Selector lever: Other than “P” and “N” positions - Auxiliary gearbox shifting is not in progress. - Engine speed: More than 500 rpm • Detection condition A - Actual primary pulley ratio: 2.0 – 2.4 - Target primary pulley ratio: Less than 1.2 • Detection condition B - Actual primary pulley ratio: 0.35 – 0.75 - Target primary pulley ratio: More than 1.55	Primary pressure solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

- **Be sure to perform “TM-199, "Diagnosis Procedure"” and then perform “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before the repairs. Doing so may result in a secondary malfunction.**
- **Be careful of the driving speed.**

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.
2. Drive the vehicle.
3. Maintain the following conditions for 20 seconds or more.

Vehicle speed	: 20 km/h (13 MPH) or more

4. Stop the vehicle.
5. Check the first trip DTC.

Is “P0965”detected?

YES >> Go to TM-199, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765881

1.CHECK INTERMITTENT INCIDENT

Refer to GI-43, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace transaxle assembly. Refer to TM-272, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

P0966 PRESSURE CONTROL SOLENOID B

DTC Logic

INFOID:0000000008765882

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0966	PC SOLENOID B (Pressure Control Solenoid B Control Circuit Low)	The primary pressure solenoid valve current is 200 mA or less continuously for 480 msec or more under the following diagnosis conditions: • Diagnosis conditions - Solenoid valve output current: 750 mA or more - GND short circuit diagnosis occurs in the solenoid valve drive circuit. - TCM power supply voltage: More than 11 V	• Harness or connector (Primary pressure solenoid valve circuit shorted to ground) • Primary pressure solenoid valve

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine and wait for 5 seconds or more.
2. Check the first trip DTC.

Is “P0966” detected?

YES >> Go to TM-200, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765883

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
F23	40	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2.CHECK PRIMARY PRESSURE SOLENOID VALVE

Check primary pressure solenoid valve. Refer to TM-200, "Component Inspection".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008765884

1.CHECK PRIMARY PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit / Terminal	—	Condition	Resistance (Approx.)
3	Ground	CVT fluid temperature: 20°C (68°F)	5.3 Ω
		CVT fluid temperature: 50°C (122°F)	6.0 Ω
		CVT fluid temperature: 80°C (176°F)	6.7 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of primary pressure solenoid valve. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0967 PRESSURE CONTROL SOLENOID B

DTC Logic

INFOID:0000000008765885

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0967	PC SOLENOID B (Pressure Control Solenoid B Control Circuit High)	The primary pressure solenoid valve current is 200 mA or less continuously for 200 msec or more under the following diagnosis conditions: • Diagnosis conditions - Solenoid valve output current: 750 mA or more - GND short diagnosis of the solenoid valve circuit is not satisfied. - TCM power supply voltage: More than 11 V	• Harness or connector (Primary pressure solenoid valve circuit open or shorted to power supply) • Primary pressure solenoid valve

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine and wait for 5 seconds or more.
2. Check the first trip DTC.

Is “P0967” detected?

YES >> Go to TM-202, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765886

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminal and CVT unit harness connector terminal.

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	
F23	40	F46	3	Existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2.CHECK PRIMARY PRESSURE SOLENOID VALVE

Check primary pressure solenoid valve. Refer to TM-202, "Component Inspection".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008972505

1.CHECK PRIMARY PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit / Terminal	—	Condition	Resistance (Approx.)
3	Ground	CVT fluid temperature: 20°C (68°F)	5.3 Ω
		CVT fluid temperature: 50°C (122°F)	6.0 Ω
		CVT fluid temperature: 80°C (176°F)	6.7 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of primary pressure solenoid valve. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0998 SHIFT SOLENOID F

DTC Logic

INFOID:0000000008765888

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0998	SHIFT SOLENOID F (Shift Solenoid F Control Circuit Low)	The TCM low brake solenoid valve current monitor reading is 200 mA or less continuously for 480 msec or more under the following diagnosis conditions: • Diagnosis conditions - Solenoid valve output current: 750 mA or more - GND short circuit diagnosis occurs in the solenoid valve drive circuit. - TCM power supply voltage: More than 11 V	• Harness or connector (Low brake solenoid valve circuit shorted to ground) • Low brake solenoid valve

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.
2. Shift the selector lever to “D” position and wait for 5 seconds or more.
3. Check the first trip DTC.

Is “P0998” detected?

YES >> Go to TM-204, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765889

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
F23	39	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2.CHECK LOW BRAKE SOLENOID VALVE

Check low brake solenoid valve. Refer to TM-205, "Component Inspection".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008765890

1. CHECK LOW BRAKE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit / Terminal	—	Condition	Resistance (Approx.)
22	Ground	CVT fluid temperature: 20°C (68°F)	5.3 Ω
		CVT fluid temperature: 50°C (122°F)	6.0 Ω
		CVT fluid temperature: 80°C (176°F)	6.7 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of low brake solenoid valve. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P0999 SHIFT SOLENOID F

DTC Logic

INFOID:0000000008765891

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0999	SHIFT SOLENOID F (Shift Solenoid F Control Circuit High)	The TCM low brake solenoid valve current monitor reading is 200 mA or less continuously for 200 msec or more under the following diagnosis conditions: • Diagnosis conditions - Solenoid valve output current: 750 mA or more - GND short diagnosis of the solenoid valve circuit is not satisfied. - TCM power supply voltage: More than 11 V	• Harness or connector (Low brake solenoid valve circuit is open or shorted to power supply) • Low brake solenoid valve

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.
2. Shift the selector lever to “D” position and wait for 5 seconds or more.
3. Check the first trip DTC.

Is “P0999” detected?

YES >> Go to TM-206, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765892

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminal and CVT unit harness connector terminal.

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	
F23	39	F46	22	Existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2.CHECK LOW BRAKE SOLENOID VALVE

Check low brake solenoid valve. Refer to TM-207, "Component Inspection".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008972506

1. CHECK LOW BRAKE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit Terminal	—	Condition	Resistance (Approx.)
22	Ground	CVT fluid temperature: 20°C (68°F)	5.3 Ω
		CVT fluid temperature: 50°C (122°F)	6.0 Ω
		CVT fluid temperature: 80°C (176°F)	6.7 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of low brake solenoid valve. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P099B SHIFT SOLENOID G

DTC Logic

INFOID:0000000008765894

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P099B	SHIFT SOLENOID G (Shift Solenoid G Control Circuit Low)	The TCM high clutch & reverse brake solenoid valve current monitor reading is 200 mA or less continuously for 200 msec or more under the following diagnosis conditions: • Diagnosis conditions - Solenoid valve output current: 750 mA or more - GND short circuit diagnosis occurs in the solenoid valve drive circuit. - TCM power supply voltage: More than 11 V	• Harness or connector (High& clutch reverse brake solenoid valve circuit shorted to ground) • High clutch & reverse brake solenoid valve

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine and wait for 5 seconds or more.
2. Check the first trip DTC.

Is “P099B” detected?

YES >> Go to TM-208, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765895

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
F23	37	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2.CHECK HIGH CLUTCH & REVERSE BRAKE SOLENOID VALVE

Check high clutch & reverse brake solenoid valve. Refer to TM-208, "Component Inspection".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008765896

1.CHECK HIGH CLUTCH & REVERSE BRAKE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit / Terminal	—	Condition	Resistance (Approx.)
23	Ground	CVT fluid temperature: 20°C (68°F)	5.3 Ω
		CVT fluid temperature: 50°C (122°F)	6.0 Ω
		CVT fluid temperature: 80°C (176°F)	6.7 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of high & reverse brake solenoid valve. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P099C SHIFT SOLENOID G

DTC Logic

INFOID:0000000008765897

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P099C	SHIFT SOLENOID G (Shift Solenoid G Control Circuit High)	The TCM high clutch & reverse brake solenoid valve current monitor reading is 200 mA or less continuously for 200 msec or more under the following diagnosis conditions: • Diagnosis conditions - Solenoid valve output current: 750 mA or more - GND short diagnosis of the solenoid valve circuit is not satisfied. - TCM power supply voltage: More than 11 V	• Harness or connector (High clutch & reverse brake solenoid valve circuit is open or shorted to power supply) • High clutch & reverse brake solenoid valve

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine and wait for 5 seconds or more
2. Check the first trip DTC.

Is “P099C” detected?

YES >> Go to TM-210, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765898

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector and CVT unit connector.
3. Check continuity between TCM harness connector terminal and CVT unit harness connector terminal.

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	
F23	37	F46	23	Existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace malfunctioning parts.

2.CHECK HIGH CLUTCH & REVERSE BRAKE SOLENOID VALVE

Check high clutch & reverse brake solenoid valve. Refer to TM-210, "Component Inspection".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:0000000008972507

1.CHECK HIGH CLUTCH & REVERSE BRAKE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit / Terminal	—	Condition	Resistance (Approx.)
23	Ground	CVT fluid temperature: 20°C (68°F)	5.3 Ω
		CVT fluid temperature: 50°C (122°F)	6.0 Ω
		CVT fluid temperature: 80°C (176°F)	6.7 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of high & reverse brake solenoid valve. Replace transaxle assembly. Refer to TM-272, "Removal and Installation".

P1586 G SENSOR

DTC Logic

INFOID:0000000008765900

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P1586	G Sensor (Gravity Sensor Circuit)	When the following diagnosis conditions are satisfied and the detection conditions are satisfied twice in the same DC: • Diagnosis conditions - While driving - TCM power supply voltage: More than 11 V • Detection condition - The G sensor detection voltage is 0.7 V or less continuously for 5 seconds or more.	• Harness or connector (G sensor circuit) • G sensor
		When the following diagnosis conditions are satisfied and the detection conditions are satisfied twice in the same DC: • Diagnosis conditions - While driving - TCM power supply voltage: More than 11 V • Detection condition - The G sensor detection voltage is 3.2 V or more continuously for 5 seconds or more.	

NOTE:
DC stands for “DRIVING CYCLE” and indicates a series of driving cycle of “Ignition switch OFF → ON → driving → OFF”.

DTC CONFIRMATION PROCEDURE

CAUTION:
Be careful of the driving speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

With CONSULT
1. Start the engine.
2. Drive the vehicle for 10 seconds or more.
3. Stop the vehicle.
   CAUTION:
   Never stop the engine.
4. Repeat step 2 through 3.
5. Check the DTC.

Is “P1586” detected?

YES >> Go to TM-212, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765901

1.CHECK G SENSOR SIGNAL

With CONSULT
1. Park the vehicle on a level surface.
2. Turn ignition switch ON.

3. Select “Data Monitor” in “TRANSMISSION”.
4. Select “G SEN SLOPE”.
5. Swing the vehicle and check if the value varies between −40.45% and 40.45%.

Monitor item	Condition	Standard
G SEN SLOPE	Flat road	0%
	Uphill	Positive value (Maximum 40.45%)
	Downhill	Negative value (Minimum −40.45%)

Is the inspection result normal?

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

2.CALIBRATION OF G SENSOR (PART 1)

With CONSULT
1. Select “Self Diagnostic Results” in “TRANSMISSION”.
2. Touch “Erase”.

>> Perform “CALIBRATION OF G SENSOR”. Refer to TM-144, "Procedure".

3.CHECK SENSOR POWER SUPPLY

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

+		-	Voltage (Approx.)
G sensor			
Connector	Terminal		
B89	3	Ground	5.0 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 8.

4.CHECK CIRCUIT BETWEEN TCM AND G SENSOR (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM harness connector terminals and G sensor harness connector terminals.

TCM		G sensor		Continuity
Connector	Terminal	Connector	Terminal	
F23	11	B89	2	Existed
	14		1	

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace malfunctioning parts.

5.CHECK CIRCUIT BETWEEN TCM AND G SENSOR (PART 2)

Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
F23	14	Ground	Not existed

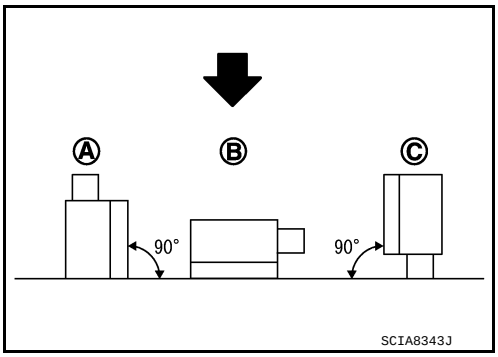
Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace malfunctioning parts.

6. CHECK G SENSOR

1. Remove G sensor. Refer to TM-259, "Removal and Installation".
2. Connect the all connectors.
3. Turn ignition switch ON.
4. Check voltage between TCM connector terminal and ground.

⬅ : Direction of gravitational force



+		-	Test condition	Voltage (Approx.)
TCM				
Connector	Terminal			
F23	14	Ground	Ⓐ: Vertical (−1G)	1.17 V
			Ⓑ: Horizontal	2.5 V
			Ⓒ: Vertical (1G)	3.83 V

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace G sensor. Refer to TM-259, "Removal and Installation".

7. CALIBRATION OF G SENSOR (PART 2)

With CONSULT

1. Install G sensor. Refer to TM-259, "Removal and Installation".
2. Select “Self Diagnostic Results” in “TRANSMISSION”.
3. Touch “Erase”.

>> Perform “CALIBRATION OF G SENSOR”. Refer to TM-144, "Procedure".

8. CHECK SENSOR POWER SUPPLY CIRCUIT (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM harness connector terminal and G sensor harness connector terminal.

TCM		G sensor		Continuity
Connector	Terminal	Connector	Terminal	
F23	26	B89	3	Existed

Is the inspection result normal?

YES >> GO TO 9.
NO >> Repair or replace malfunctioning parts.

9. CHECK SENSOR POWER SUPPLY CIRCUIT (PART 2)

Check continuity between TCM harness connector terminal and ground.

TCM		—	Continuity
Connector	Terminal		
F23	26	Ground	Not existed

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

P1588 G SENSOR

DTC Logic

INFOID:0000000008765902

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P1588	G Sensor (Gravity Sensor Circuit)	When the following diagnosis conditions are satisfied and the detection conditions are satisfied twice in the same DC: • Diagnosis condition (1 second or more) - The rate of change in G sensor detection value (mV): Between −15 and +15 inclusive • Detection condition - The rate of change in acceleration/deceleration stays 0.2677 m/s^2 (0.0273 G) or more/ −0.2677 m/s^2 (−0.0273 G) or less at least for 5 seconds or more.	G sensor

NOTE:
DC stands for “DRIVING CYCLE” and indicates a series of driving cycle of “Ignition switch OFF → ON → driving → OFF”.

DTC CONFIRMATION PROCEDURE

CAUTION:
Be careful of the driving speed.

1. PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT
1. Start the engine.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Select “G SPEED”.
4. Drive the vehicle.
5. Maintain the following conditions for 8 seconds or more.

Selector lever	: “D” position
G SPEED	: 0.05 G or more

6. Stop the vehicle.
   CAUTION:
   Never stop the engine.
7. Repeat steps 4 through 6.
8. Check the DTC.

Is “P1588” detected?

YES >> Go to TM-215, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765903

1. CHECK G SENSOR SIGNAL

With CONSULT
1. Park the vehicle on a level surface.
2. Turn ignition switch ON.

3. Select “Data Monitor” in “TRANSMISSION”.
4. Select “G SEN SLOPE”.
5. Swing the vehicle and check if the value varies between −40.45% and 40.45%.

Monitor item	Condition	Standard
G SEN SLOPE	Flat road	0%
	Uphill	Positive value (maximum 40.45%)
	Downhill	Negative value (Minimum −40.45%)

Is the inspection result normal?

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

2.CALIBRATION OF G SENSOR (PART 1)

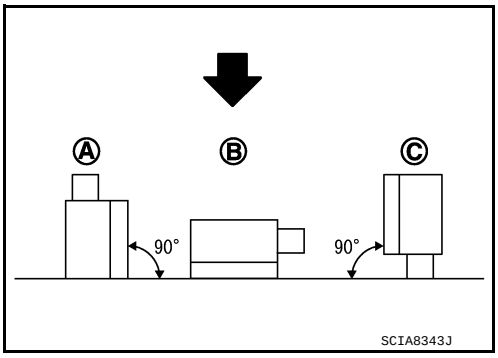
With CONSULT
1. Select “Self Diagnostic Results” in “TRANSMISSION”.
2. Touch “Erase”.

>> Perform “CALIBRATION OF G SENSOR”. Refer to TM-144, "Procedure".

3.CHECK G SENSOR

1. Remove G sensor. Refer to TM-259, "Removal and Installation".
2. Connect the all connectors.
3. Turn ignition switch ON.
4. Check voltage between TCM connector terminal and ground.

⬅ : Direction of gravitational force



+ TCM Connector	+ TCM Terminal	-	Test condition	Voltage (Approx.)
F23	14	Ground	Ⓐ: Vertical (−1G)	1.17 V
			Ⓑ: Horizontal	2.5 V
			Ⓒ: Vertical (1G)	3.83 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace G sensor. Refer to TM-259, "Removal and Installation".

4.CALIBRATION OF G SENSOR (PART 2)

With CONSULT
1. Install G sensor. Refer to TM-259, "Removal and Installation".
2. Select “Self Diagnostic Results” in “TRANSMISSION”.
3. Touch “Erase”.

>> Perform “CALIBRATION OF G SENSOR”. Refer to TM-144, "Procedure".

P2765 INPUT SPEED SENSOR B

DTC Logic

INFOID:0000000008765904

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2765	INPUT SPEED SENSOR B (Input/Turbine Speed Sensor B Circuit)	The secondary speed sensor value is less than 150 rpm continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - Primary pulley speed: 1,000 rpm or more - TCM power supply voltage: More than 11 V	• Harness or connector (Secondary speed sensor circuit is open or shorted) • Secondary speed sensor
		The secondary pulley speed sensor value is 240 rpm or less continuously for 500 msec or more under the following diagnosis conditions: • Diagnosis condition - 10-msec-ago secondary pulley speed: 1,000 rpm or more - TCM power supply voltage: More than 11 V	

DTC CONFIRMATION PROCEDURE

CAUTION:

Be careful of the driving speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.
2. Drive the vehicle.
3. Maintain the following conditions for 10 seconds or more.

Selector lever	: “D” position
Vehicle speed	: 55 km/h (34 MPH) or more

4. Stop the vehicle.
5. Check the first trip DTC.

Is “P2765” detected?

YES >> Go to TM-217, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765905

1.CHECK SECONDARY SPEED SENSOR POWER CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect secondary speed sensor connector.
3. Turn ignition switch ON.
4. Check voltage between secondary speed sensor harness connector terminal and ground.

+		-	Voltage
Secondary speed sensor			
Connector	Terminal		
F30	3	Ground	10 – 16 V

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 6.

2.CHECK SECONDARY SPEED SENSOR GROUND CIRCUIT

Check continuity between of secondary speed sensor harness connector terminal and ground.

Secondary speed sensor		—	Continuity
Connector	Terminal		
F30	1	Ground	Existed

Is the inspection result normal?

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

3.CHECK CIRCUIT BETWEEN SECONDARY SPEED SENSOR AND TCM (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between secondary speed sensor harness connector terminal and TCM harness connector terminal.

Secondary speed sensor		TCM		Continuity
Connector	Terminal	Connector	Terminal	
F30	2	F23	34	Existed

Is the inspection result normal?

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

4.CHECK CIRCUIT BETWEEN SECONDARY SPEED SENSOR AND TCM (PART 2)

Check continuity between secondary speed sensor harness connector terminal and ground.

Secondary speed sensor		—	Continuity
Connector	Terminal		
F30	2	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace malfunctioning parts.

5.CHECK TCM INPUT SIGNALS

1. Connect all of disconnected connectors.
2. Lift the vehicle.
3. Start the engine.
4. Check frequency of secondary speed sensor.

+		-	Condition	Frequency (Approx.)
TCM				
Connector	Terminal			
F23	34	Ground	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	700 Hz 

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Replace secondary speed sensor. TM-263, "Removal and Installation".

6. DETECT MALFUNCTIONING ITEMS

Check the following items:
- Harness open circuit or short circuit between ignition switch and IPDM E/R. Refer to PG-20, "Wiring Diagram — Ignition Power Supply —".
- Harness open circuit or short circuit between IPDM E/R and secondary speed sensor.
- 10A fuse (No.45, IPDM E/R). Refer to PG-49, "IPDM E/R Terminal Arrangement".
- IPDM E/R

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

P2857 CLUTCH A PRESSURE

DTC Logic

INFOID:0000000008765906

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2857	CLUTCH A PRESSURE (Clutch A Pressure Engagement Performance)	The auxiliary gearbox gear ratio is 2.232 or more for the auxiliary gearbox 1GR ratio continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - Selector lever: Other than “P”, “R” and “N” positions - Accelerator pedal position: 0.7/8 or more - Engine speed: More than 550 rpm - Output speed: More than 300 rpm - Secondary pulley speed: More than 300 rpm - Command for the 1GR of auxiliary gearbox is in progress. - Auxiliary gearbox shifting is not in progress. - TCM power supply voltage: More than 11 V	• Low brake solenoid valve • Control valve assembly

DTC CONFIRMATION PROCEDURE

CAUTION:

- **Be sure to perform “TM-220, "Diagnosis Procedure"” and then perform “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before the repairs. Doing so may result in a secondary malfunction.**
- **Be careful of the driving speed.**

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.
2. Drive the vehicle.
3. Maintain the following conditions for 10 seconds or more.

Selector lever	: “L” POSITION
Accelerator pedal position	: 0.7/8 or more
Vehicle speed	: 10 km/h (6 MPH) or more

4. Stop the vehicle.
5. Check the first trip DTC.

Is “P2857” detected?

YES >> Go to TM-220, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765907

1.CHECK INTERMITTENT INCIDENT

Refer to GI-43, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-272, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

P2858 CLUTCH B PRESSURE

DTC Logic

INFOID:0000000008765908

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2858	CLUTCH B PRESSURE (Clutch B Pressure Engagement Performance)	The auxiliary gearbox gear ratio is 2.232 or more for the auxiliary gearbox 2GR ratio continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - Selector lever: Other than “P”, “R” and “N” positions - Accelerator pedal position: 0.7/8 or more - Engine speed: More than 550 rpm - Output speed: More than 300 rpm - Secondary pulley speed: More than 300 rpm - Command for the 2GR of auxiliary gearbox is in progress. - Auxiliary gearbox shifting is not in progress. - TCM power supply voltage: More than 11 V	• High clutch & reverse brake solenoid valve • Control valve assembly

DTC CONFIRMATION PROCEDURE

CAUTION:

- **Be sure to perform “TM-222, "Diagnosis Procedure"” and then perform “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before the repairs. Doing so may result in a secondary malfunction.**
- **Be careful of the driving speed.**

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.
2. Drive the vehicle.
3. Maintain the following conditions for 10 seconds or more.

Selector lever	: “D” POSITION
Accelerator pedal position	: 0.7/8 or more
Vehicle speed	: 45 km/h (28 MPH) or more

4. Stop the vehicle.
5. Check the first trip DTC.

Is “P2858” detected?

YES >> Go to TM-222, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765909

1.CHECK INTERMITTENT INCIDENT

Refer to GI-43, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-272, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

P2859 CLUTCH A PRESSURE

DTC Logic

INFOID:0000000008765910

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2859	CLUTCH A PRESSURE (Clutch A Pressure Disengagement Performance)	The detection conditions continuously for 200 msec or more under the following diagnosis conditions: • Diagnosis conditions - Selector lever: Other than “P”, “R” and “N” positions - Vehicle speed: 10 km/h (6 MPH) or more - Engine speed: More than 550 rpm - Output speed: More than 300 rpm - Secondary pulley speed: More than 300 rpm - A lapse of 500 msec or more after the stop lamp switch is turned from ON to OFF. - Command for the 2GR of auxiliary gearbox is in progress. - Auxiliary gearbox shifting is not in progress. - TCM power supply voltage: More than 11 V • Detection conditions - Acceleration/deceleration: Less than −0.05 G - Actual auxiliary gearbox gear ratio − Auxiliary gearbox 2GR ratio ≥ 50%	• Low brake solenoid valve • Control valve assembly
		The auxiliary gearbox gear ratio is ±10% or less for the auxiliary gearbox 1GR ratio continuously for 500 msec or more under the following diagnosis conditions: • Diagnosis conditions - Selector lever: Other than “P”, “R” and “N” positions - Accelerator pedal position: 0.7/8 or more - Engine speed: More than 550 rpm - Secondary pulley speed: More than 300 rpm - Output speed: More than 300 rpm - Command for the 2GR of auxiliary gearbox is in progress. - Auxiliary gearbox shifting is not in progress. - TCM power supply voltage: More than 11 V	

DTC COFIRMATION PROCEDURE

CAUTION:

- **Be sure to perform “TM-225, "Diagnosis Procedure"” and then perform “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “TC CONFIRMATION PROCEDURE” before the repairs. Doing so may result in a secondary malfunction.**
- **Be careful of the driving speed.**

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2.CHECK DTC DETECTION

1. Start the engine.

2. Drive the vehicle.
3. Maintain the following conditions for 10 seconds or more.

Selector lever	: “D” position
Accelerator pedal position	: 0.7/8 or more
Vehicle speed	: 45 km/h (28 MPH) or more

4. Stop the vehicle
5. Check the first trip DTC.

Is “P2859” detected?

YES >> Go to TM-225, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765911

1.CHECK INTERMITTENT INCIDENT

Refer to GI-43, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-272, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

P285A CLUTCH B PRESSURE

DTC Logic

INFOID:0000000008765912

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P285A	CLUTCH B PRESSURE (Clutch B Pressure Disengagement Performance)	The detection conditions continuously for 200 msec or more under the following diagnosis conditions: • Diagnosis conditions - Selector lever: Other than “P”, “R” and “N” positions - Vehicle speed: 10 km/h (6 MPH) or more - Engine speed: More than 550 rpm - Output speed: More than 300 rpm - Secondary pulley speed: More than 300 rpm - A lapse of 500 msec or more after the stop lamp switch is turned from ON to OFF. - Command for the 1GR of auxiliary gearbox is in progress. - Auxiliary gearbox shifting is not in progress. - TCM power supply voltage: More than 11 V • Detection conditions - Acceleration/deceleration: Less than −0.05 G - Actual auxiliary gearbox gear ratio − Auxiliary gearbox 1GR ratio ≥ 50%	• High clutch & reverse brake solenoid valve • Control valve assembly
		The auxiliary gearbox gear ratio is ±10% or less for the auxiliary gearbox 2GR ratio continuously for 500 msec or more under the following diagnosis conditions: • Diagnosis conditions - Selector lever: Other than “P”, “R” and “N” positions - Accelerator pedal position: 0.7/8 or more - Engine speed: More than 550 rpm - Secondary pulley speed: More than 300 rpm - Output speed: More than 300 rpm - Command for the 1GR of auxiliary gearbox is in progress. - Auxiliary gearbox shifting is not in progress. - TCM power supply voltage: More than 11 V	

DTC CONFIRMATION PROCEDURE

CAUTION:

- **Be sure to perform “TM-227, "Diagnosis Procedure"” and then perform “DTC CONFIRMATION PROCEDURE”.**
- **Never perform “DTC CONFIRMATION PROCEDURE” before the repairs. Doing so may result in a secondary malfunction.**
- **Be careful of the driving speed.**

1. PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

1. Start the engine.

2. Drive the vehicle.
3. Maintain the following conditions for 10 seconds or more.

Selector lever	: “L” POSITION
Accelerator pedal position	: 0.7/8 or more
Vehicle speed	: 10 km/h (6 MPH) or more

4. Stop the vehicle.
5. Check the first trip DTC.

Is “P285A” detected?

YES >> Go to TM-227, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000008765913

1.CHECK INTERMITTENT INCIDENT

Refer to GI-43, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-272, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

MAIN POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000008765914

1.CHECK TCM POWER CIRCUIT (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check voltage between TCM harness connector terminals and ground.

+		-	Voltage
TCM			
Connector	Terminal		
F23	45	Ground	10 – 16 V
	46		

Is the inspection result normal?

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

2.CHECK TCM POWER CIRCUIT (PART 2)

Check voltage between TCM harness connector terminals and ground.

+		-	Condition	Voltage
TCM				
Connector	Terminal			
F23	47	Ground	Ignition switch ON	10 – 16 V
			Ignition switch OFF	0 V
	48		Ignition switch ON	10 – 16 V
			Ignition switch OFF	0 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 5.

3.CHECK TCM GROUND CIRCUIT

Check continuity between TCM harness connector terminals and ground.

TCM		—	Continuity
Connector	Terminal		
F23	41	Ground	Existed
	42		

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

4.DETECT MALFUNCTION ITEMS (PART 1)

Check the following items:

- Open or short circuit of harness between battery positive terminal and TCM connector terminals 45 and 46. Refer to PG-8, "Wiring Diagram — Battery Power Supply —".
- 10A fuse (No.33, fuse and fusible link block). Refer to PG-48, "Terminal Arrangement".
- 10A fuse (No.36, fuse and fusible link block). Refer to PG-48, "Terminal Arrangement".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

5. DETECT MALFUNCTIONING ITEMS (PART 2)

Check the following items:

- Harness open circuit or short circuit between ignition switch and IPDM E/R. Refer to PG-20, "Wiring Diagram — Ignition Power Supply —".
- Harness open circuit or short circuit between IPDM E/R and TCM.
- 10A fuse (No.45, IPDM E/R). Refer to PG-48, "Terminal Arrangement".
- IPDM E/R

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace malfunctioning parts.

OVERDRIVE CONTROL SWITCH

Component Function Check

INFOID:0000000008765915

1.CHECK SPORT INDICATOR LAMP FUNCTION

Check OD OFF indicator lamp turns ON for approx. 2 seconds when ignition switch turns ON.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Go to TM-233, "Diagnosis Procedure".

2.CHECK SPORT MODE SWITCH FUNCTION

1. Shift the selector lever to “D” position.
2. Check that OD OFF indicator lamp turns ON/OFF when overdrive control switch is operated.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to TM-230, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008765916

1.CHECK OVERDRIVE CONTROL SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect CVT shift selector connector.
3. Turn ignition switch ON.
4. Check voltage between CVT shift selector harness connector terminals.

CVT shift selector			Voltage (Approx.)
Connector	+	-	
	Terminal		
M38	1	2	5 V

Is the inspection result normal?

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

2.CHECK CVT SHIFT SELECTOR ASSEMBLY

Check continuity between CVT shift selector connector terminals.

CVT shift selector	Condition	Continuity
Terminal		
1 – 2	Overdrive control switch is depressed.	Existed
	Overdrive control switch is released.	Not existed

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> GO TO 3.

3.CHECK OVERDRIVE CONTROL SWITCH

Check overdrive control switch. Refer to TM-231, "Component Inspection (Overdrive Control Switch)".

Is the inspection result normal?

YES >> Replace CVT shift selector assembly. Refer to TM-247, "Removal and Installation".
NO >> Repair or replace malfunctioning parts.

4.CHECK GROUND CIRCUIT

Check continuity between CVT shift selector harness connector terminal and ground.

CVT shift selector		—	Continuity
Connector	Terminal		
M38	2	Ground	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace malfunctioning parts.

5. CHECK CIRCUIT BETWEEN COMBINATION METER AND CVT SHIFT SELECTOR (PART 1)

1. Turn ignition switch OFF.
2. Disconnect combination meter connector.
3. Check continuity between combination meter harness connector terminal and CVT shift selector harness connector terminal.

Combination meter		CVT shift selector		Continuity
Connector	Terminal	Connector	Terminal	
M24	8	M38	1	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace malfunctioning parts.

6. CHECK CIRCUIT BETWEEN COMBINATION METER AND CVT SHIFT SELECTOR (PART 2)

Check continuity between combination meter harness connector terminal and ground.

Combination meter		—	Continuity
Connector	Terminal		
M24	8	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace malfunctioning parts.

7. CHECK COMBINATION METER INPUT SIGNAL

1. Connect all of disconnected connectors.
2. Turn ignition switch ON.
3. Select “Data Monitor” in “METER/M&A”.
4. Select “O/D OFF SW”.
5. Check that “O/D OFF SW” turns ON/OFF when overdrive control switch is operated. Refer to MWI-20, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Replace combination meter. Refer to MWI-77, "Removal and Installation".

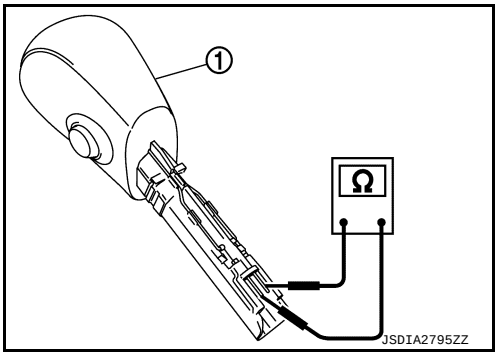
Component Inspection (Overdrive Control Switch)

INFOID:0000000008765917

1. CHECK OVERDRIVE CONTROL SWITCH

Check continuity between wires of selector lever knob ①.

Condition	Continuity
Overdrive control switch is depressed	Existed
Overdrive control switch is released	Not existed



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace selector lever knob. Refer to TM-247, "Removal and Installation".

OD OFF INDICATOR LAMP

Component Function Check

INFOID:0000000008765919

1.CHECK OD OFF INDICATOR LAMP FUNCTION

Check OD OFF indicator lamp turns ON for approx. 2 seconds when ignition switch turns ON.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to TM-233, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008765920

1.CHECK DTC (TCM)

With CONSULT
1. Turn ignition switch ON.
2. Check “Self Diagnostic Results” in “TRANSMISSION”.

Is any DTC detected?

YES >> Check DTC detected item. Refer to TM-125, "DTC Index".
NO >> GO TO 2.

2.CHECK DTC (COMBINATION METER)

With CONSULT
Check “Self Diagnostic Results” in “METER/M&A”.

Is any DTC detected?

YES >> Check DTC detected item. Refer to MWI-26, "DTC Index".
NO >> GO TO 3.

3.CHECK COMBINATION METER INPUT SIGNAL

With CONSULT
1. Shift the selector lever to “D” position.
2. Select “Data Monitor” in “METER/M&A”.
3. Select “O/D OFF IND”.
4. Check that “O/D OFF IND” turns ON/OFF when overdrive control switch is operated. Refer to MWI-20, "Reference Value".

Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-77, "Removal and Installation".
NO >> GO TO 4.

4.CHECK TCM INPUT/OUTPUT SIGNAL

With CONSULT
1. Select “Data Monitor” in “TRANSMISSION”.
2. Select “SPORT MODE SW”.
3. Check that “SPORT MODE SW” turns ON/OFF when overdrive control switch is operated. Refer to TM-113, "Reference Value".

Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-77, "Removal and Installation".
NO >> Check overdrive control switch circuit. Refer to TM-230, "Diagnosis Procedure".

SHIFT POSITION INDICATOR CIRCUIT

Component Parts Function Inspection

INFOID:0000000008765923

1.CHECK SHIFT POSITION INDICATOR

1. Start the engine.
2. Shift selector lever.
3. Check that the selector lever position and the shift position indicator on the combination meter are identical.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to TM-234, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008765924

1.CHECK TCM INPUT/OUTPUT SIGNAL

With CONSULT
1. Start the engine.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Select “RANGE”.
4. Shift selector lever.
5. Check that selector lever position, “RANGE” on the CONSULT screen, and shift position indicator display on the combination meter are identical.

Is the check result normal?

YES >> INSPECTION END
NO-1 (“RANGE” is changed but is not displayed on the shift position indicator.>>Check “Self Diagnostic Result” in “TRANSMISSION”.
NO-2 (“RANGE” and shift position indicator are different.)>>Check “Self Diagnostic Result” in “TRANSMISSION”.
NO-3 (Specific“RANGE” is not displayed on the shift position indicator.)>>Check “Self Diagnostic Result” in “METER/M&A”.

SHIFT LOCK SYSTEM

Component Function Check

INFOID:0000000008765925

1.CHECK SHIFT LOCK OPERATION (PART 1)

1. Turn ignition switch ON.
2. Shift the selector lever to park “P” position.
3. Attempt to shift the selector lever to any other position with the brake pedal released.

Can the selector lever be shifted to any other position?

YES >> Go to TM-235, "Diagnosis Procedure".
NO >> GO TO 2.

2.CHECK SHIFT LOCK OPERATION (PART 2)

Attempt to shift the selector lever to any other position with the brake pedal depressed.

Can the selector lever be shifted to any other position?

YES >> Inspection End.
NO >> Go to TM-235, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008765926

1.CHECK POWER SOURCE (PART 1)

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector.
3. Turn ignition switch ON.
4. Check the voltage between the stop lamp switch harness connector terminal and ground.

+		–	Voltage
Stop lamp switch			
Connector	Terminal		
E60	3	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 9.

2.CHECK STOP LAMP SWITCH MOUNTING POSITION

Check stop lamp switch mounting position. Refer to BR-15, "Adjustment".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Adjust stop lamp switch mounting position.

3.CHECK STOP LAMP SWITCH

Check stop lamp switch. Refer to TM-237, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace stop lamp switch.

4.CHECK CIRCUIT BETWEEN STOP LAMP SWITCH AND CVT SHIFT SELECTOR (PART 1)

1. Disconnect CVT shift selector connector.
2. Check the continuity between the stop lamp switch harness connector terminal and the CVT shift selector harness connector terminal.

Stop lamp switch		CVT shift selector		Continuity
Connector	Terminal	Connector	Terminal	
E60	4	M38	3	Yes

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace damaged parts.

5. CHECK CIRCUIT BETWEEN STOP LAMP SWITCH AND CVT SHIFT SELECTOR (PART 2)

Check the continuity between the stop lamp switch harness connector terminal and ground.

Stop lamp switch		—	Continuity
Connector	Terminal		
E60	4	Ground	No

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace damaged parts.

6. CHECK GROUND CIRCUIT

Check the continuity between the CVT shift selector harness connector terminal and ground.

CVT shift selector		—	Continuity
Connector	Terminal		
M38	4	Ground	Yes

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace damaged parts.

7. CHECK PART POSITION SWITCH

1. Disconnect park position switch connector.
2. Check park position switch. Refer to TM-237, "Component Inspection (Park Position Switch)".

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace damaged parts.

8. CHECK SHIFT LOCK SOLENOID

1. Disconnect shift lock solenoid connector.
2. Check shift lock solenoid. Refer to TM-236, "Component Inspection (Shift Lock Solenoid)".

Is the inspection result normal?

YES >> GO TO 9.
NO >> Repair or replace damaged parts.

9. DETECT MALFUNCTIONING ITEM

Check the following items:

- Open or short circuit of the harness between ignition switch and stop lamp switch connector. Refer to PG-20, "Wiring Diagram — Ignition Power Supply —"
- Ignition switch
- 10A fuse [No.5, fuse block (J/B)]. Refer to PG-47, "Terminal Arrangement".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-43, "Intermittent Incident".
NO >> Repair or replace damaged parts.

Component Inspection (Shift Lock Solenoid)

INFOID:0000000008972808

1. CHECK SHIFT LOCK SOLENOID

Apply voltage to terminals of shift lock solenoid and park position switch (shift selector) connector and check that shift lock solenoid is activated.

CAUTION:

- **Connect a fuse between the terminals when applying voltage.**

- **Never cause shorting between terminals.**

+ (fuse)	-	Condition	Status
Shift lock solenoid			
Terminal			
3	4	Apply 12 V between terminals 3 and 4 with the park position switch (shift selector) in the "P" (park) position.	Shift lock solenoid operates

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace CVT shift selector. Refer to TM-247, "Removal and Installation".

Component Inspection (Park Position Switch)

INFOID:0000000008972809

1.CHECK PARK POSITION SWITCH (SHIFT SELECTOR)

Apply voltage to terminals of shift lock solenoid and park position switch (shift selector) connector and check that shift lock solenoid is activated.

CAUTION:

- **Connect a fuse between the terminals when applying voltage.**
- **Never cause shorting between terminals.**

+ (fuse)	-	Condition	Status
Shift lock solenoid			
Terminal			
3	4	Apply 12 V between terminals 3 and 4 with the park position switch (shift selector) in the "P" (park) position.	Shift lock solenoid operates

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace CVT shift selector. Refer to TM-247, "Removal and Installation".

Component Inspection (Stop Lamp Switch)

INFOID:0000000008765930

1.CHECK STOP LAMP SWITCH

Check the continuity between the stop lamp switch connector terminals.

Stop lamp switch	Condition	Continuity
Terminal		
3 – 4	Depressed brake pedal	Yes
	Released brake pedal	No

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace stop lamp switch. Refer to BR-21, "Exploded View".

SYMPTOM DIAGNOSIS

CVT CONTROL SYSTEM

Symptom Table

INFOID:0000000008765931

The diagnosis item number indicates the order of check. Start checking in the order from 1.

Symptom diagnosis chart 1-1

Symptom		Check under on board condition (repair and part replacement)				Replace the transaxle assembly.												
						Electric system												
		Engine system	Incorrect adjustment of CVT fluid level	Line pressure is out of the standard value.	Control cable	TCM	Overdrive control switch	Primary speed sensor (P0715)	Secondary speed sensor (P2765)	Output speed sensor (P0720)	Transmission position switch (P0705, P0706)	Secondary pressure sensor (P0846, P0847, P0848)	Primary pressure solenoid valve (P0965, P0966, P0967)	Line pressure solenoid valve (P0746, P0962, P0963)	Lock-up solenoid valve (P0740, P0743, P0744)	High clutch &reverse brake solenoid valve (P099B, P099C, P2858, P285A)	Low brake solenoid valve (P0998, P0999, P2857, P2859)	CVT fluid temperature sensor (P0711, P0712, P0713)
		EC-125	TM-244	TM-146	TM-147	TM-113	TM-230							TM-125				
Driving is not possible.	The engine speed increases in “D”, “L”, or “R” position, but the vehicle cannot start.	1	1	1	1	1		1	1		1	2		1		1	1	2
	Engine stall occurs in “D”, “L”, or “R” position and the vehicle does not start.				1	1		1	1		1	1	1	1		1	1	2
	Acceleration at start is not sufficient in “D”, “L”, or “R” position.	1		2		1		1	1	1	2	2	1	1	2	1	1	1
	The engine speed increases suddenly in “D”, “L”, or “R” position during driving.		1	1								2	1	1		1	1	
	Engine brake is suddenly applied in “D” or “R” position during driving.	1		1									1	1		1	1	

Symptom		Check under on board condition (repair and part replacement)				Replace the transaxle assembly.												
						Electric system												
		Engine system	Incorrect adjustment of CVT fluid level	Line pressure is out of the standard value.	Control cable	TCM	Overdrive control switch	Primary speed sensor (P0715)	Secondary speed sensor (P2765)	Output speed sensor (P0720)	Transmission position switch (P0705, P0706)	Secondary pressure sensor (P0846, P0847, P0848)	Primary pressure solenoid valve (P0965, P0966, P0967)	Line pressure solenoid valve (P0746, P0962, P0963)	Lock-up solenoid valve (P0740, P0743, P0744)	High clutch &reverse brake solenoid valve (P099B, P099C, P2858, P285A)	Low brake solenoid valve (P0998, P0999, P2857, P2859)	CVT fluid temperature sensor (P0711, P0712, P0713)
		EC-125	TM-244	TM-146	TM-147	TM-113	TM-230							TM-125				
Shifting is not possible.	The engine races when the auxiliary gearbox is shifted from 1GR ⇔ 2GR.	2		1										1		1	1	
	Engine braking is not effective in “L” position.			1	1	1		1	1		1		2	1	1		1	
	Shifting does not occur with OD OFF.					1	1	1	1	1	1		1	1				
	Engine stall occurs immediately before stop at deceleration in “D” or “L” position.									1					1			
	During driving in “D” position, slippage occurs in lockup or lockup is not possible.					1		1	1	1	1	2	1	1	1			1

Symptom diagnosis chart 1-2

Symptom		Replace the transaxle assembly.												
		Oil pressure control		Power transmission										
		Valve body, control valve	Oil pump	Torque converter	Pulley, steel belt	Low brake	High clutch	Reverse brake	Bearings	Counter gear	Planetary gear	Reduction gear	Final gear, differential gear	Parking mechanism
							TM-272							
Driving is not possible.	The engine speed increases in “D”, “L”, or “R” position, but the vehicle cannot start.	1	1		1	1 (In “D” or “L”)		1 (In “R”)		1	1	1	1	
	Engine stall occurs in “D”, “L”, or “R” position and the vehicle does not start.	1							1	1	1	1	1	1
	Acceleration at start is not sufficient in “D”, “L”, or “R” position.	1		1		1 (In “D” or “L”)		1 (In “R”)						
	The engine speed increases suddenly in “D”, “L”, or “R” position during driving.	1	1		1	1 (In “D” or “L”)	1 (In “D” or “L”)	1 (In “R”)						
	Engine brake is suddenly applied in “D” or “R” position during driving.	1				1 (In “D” or “L”)	1 (In “D” or “L”)	1 (In “R”)						
Shifting is not possible.	The engine races when the auxiliary gearbox is shifted from 1GR ⇔ 2GR.	1	1		2	1	1							
	Engine braking is not effective in “L” position.	1	2	1	2	1	1							
	Shifting does not occur with OD OFF.													
	Engine stall occurs immediately before stop at deceleration in “D” or “L” position.	1		1										
	During driving in “D” position, slippage occurs in lockup or lockup is not possible.	1		1										

Symptom diagnosis chart 2-1

Symptom		Check under on board condition (repair and part replacement)				Replace the transaxle assembly.												
						Electric system												
		Engine system	Incorrect adjustment of CVT fluid level	Line pressure is out of the standard value.	Control cable	TCM	Overdrive control switch	Primary speed sensor (P0715)	Secondary speed sensor (P2765)	Output speed sensor (P0720)	Transmission position switch (P0705, P0706)	Secondary pressure sensor (P0846, P0847, P0848)	Primary pressure solenoid valve (P0965, P0966, P0967)	Line pressure solenoid valve (P0746, P0962, P0963)	Lock-up solenoid valve (P0740, P0743, P0744)	High clutch &reverse brake solenoid valve (P099B, P099C, P2858, P285A)	Low brake solenoid valve (P0998, P0999, P2857, P2859)	CVT fluid temperature sensor (P0711, P0712, P0713)
		EC-125	TM-244	TM-146	TM-147	TM-113	TM-230							TM-125				
Shock vibration Noise	Shock at start is large in “D”, “L”, or “R” position.			1								2		1	1			
	Shock is large when the auxiliary gearbox is shifted from 1GR → 2GR.	2		1		2							2	2		1	1	
	Shock in lockup is large during driving in “D” or “L” position.					1									1			
	Shock is large when the lever is shifted from “N” → “D” and “N” → “R” positions.	1		1		2		1	1		1			1	1	1	1	1
	Shock is large when the lever is shifted from “D” → “L” position.																	
	Vibration occurs in “D”, “L”, or “R” position during driving.	1	1	1		1				1		2			1	1	1	
	Noise occurs during driving.		1															
	Noise occurs in idling.	1	1															

Symptom		Check under on board condition (repair and part replacement)				Replace the transaxle assembly.													
						Electric system													
		Engine system	Incorrect adjustment of CVT fluid level	Line pressure is out of the standard value.	Control cable	TCM	Overdrive control switch	Primary speed sensor (P0715)	Secondary speed sensor (P2765)	Output speed sensor (P0720)	Transmission position switch (P0705, P0706)	Secondary pressure sensor (P0846, P0847, P0848)	Primary pressure solenoid valve (P0965, P0966, P0967)	Line pressure solenoid valve (P0746, P0962, P0963)	Lock-up solenoid valve (P0740, P0743, P0744)	High clutch &reverse brake solenoid valve (P099B, P099C, P2858, P285A)	Low brake solenoid valve (P0998, P0999, P2857, P2859)	CVT fluid temperature sensor (P0711, P0712, P0713)
		EC-125	TM-244	TM-146	TM-147	TM-113	TM-230							TM-125					
Other	Starter operates in “D”, “L”, or “R” position.				1	1					1								
	Starter does not operate in “P” or “N” position.				1	1					1								
	Engine stall occurs in “D”, “L”, or “R” position during stop.	1				1				1					1				
	Engine stall occurs in “P” or “N” position during stop.	1				1				1					1				
	Parking lock does not operate in “P” position.				1						1								
	Parking lock cannot be cancelled when the selector lever is shifted from “P” position to other position.				1						1								

Symptom diagnosis chart 2-2

Symptom		Replace the transaxle assembly.												
		Oil pressure control		Power transmission										
		Valve body, control valve	Oil pump	Torque converter	Pulley, steel belt	Low brake	High clutch	Reverse brake	Bearings	Counter gear	Planetary gear	Reduction gear	Final gear, differential gear	Parking mechanism
							TM-272							
Shock vibration Noise	Shock at start is large in “D”, “L”, or “R” position.	1			1	1 (In “D” or “L”)		1 (In “R”)		2	2	2	2	
	Shock is large when the auxiliary gearbox is shifted from 1GR → 2GR.	1				1	1							
	Shock in lockup is large during driving in “D” or “L” position.	1		1										
	Shock is large when the lever is shifted from “N” → “D” and “N” → “R” positions.	1				1 (“N” → “D”)		1 (“N” → “D”)						
	Shock is large when the lever is shifted from “D” → “L” position.	1				1	1							
	Vibration occurs in “D”, “L”, or “R” position during driving.	1	1	1	1	1 (In “D” or “L”)	1 (In “D” or “L”)	1 (In “R”)	1	1	1	1	1	
	Noise occurs during driving.	1	1		1				1	1	1	1	1	
	Noise occurs in idling.	1	1		1				1	1	1			
Other	Starter operates in “D”, “L”, or “R” position.													
	Starter does not operate in “P” or “N” position.													
	Engine stall occurs in “D”, “L”, or “R” position during stop.	1		1										
	Engine stall occurs in “P” or “N” position during stop.													
	Parking lock does not operate in “P” position.													1
	Parking lock cannot be cancelled when the selector lever is shifted from “P” position to other position.													1

PERIODIC MAINTENANCE

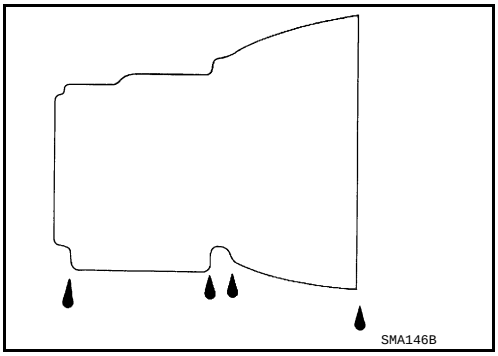
CVT FLUID

Inspection

INFOID:0000000008765932

FLUID LEAKAGE

- Check transaxle surrounding area (oil seal and plug etc.) for fluid leakage.
- If anything is found, repair or replace damaged parts and adjust CVT fluid level. Refer to TM-245, "Adjustment".



Replacement

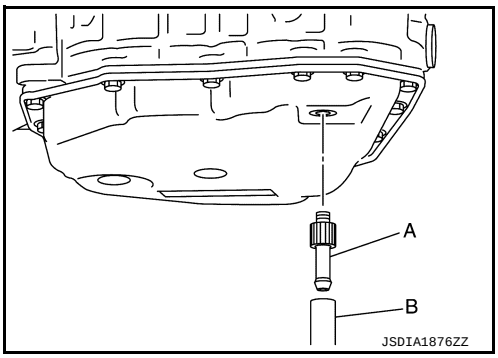
INFOID:0000000008765809

CVT fluid	**: Refer to TM-275, "General Specification".**
Fluid capacity	**: Refer to TM-275, "General Specification".**

CAUTION:

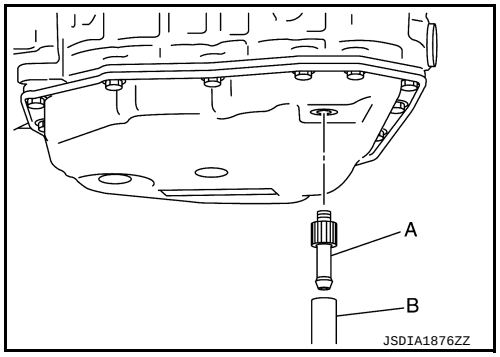
- **Use only Genuine NISSAN CVT Fluid NS-3. Using transmission fluid other than Genuine NISSAN CVT Fluid NS-3 will damage the CVT, which is not covered by the (NISSAN new vehicle limited) warranty.**
- **Always use shop paper. Never use shop cloth.**
- **Replace a drain plug gasket with new ones at the final stage of the operation when installing.**
- **Use caution when looking into the drain hole as there is a risk of dripping fluid entering the eye.**
- **After replacement, always perform CVT fluid leakage check.**

1. Select “Data Monitor” in “TRANSMISSION” using CONSULT.
2. Select “FLUID TEMP” and confirm that the CVT fluid temperature is 40°C (104°F) or less.
3. Check that the selector lever is in the “P” position, then completely engage the parking brake.
4. Lift up the vehicle.
5. Remove the drain plug and overflow tube and drain the CVT fluid from the oil pan. TM-260, "Exploded View".
6. Install the charging pipe set (KV311039S0) (A) into the drain hole.
   CAUTION:
   Tighten the charging pipe by hand.
7. Install the ATF changer hose (B) to the charging pipe.
   CAUTION:
   Press the ATF changer hose all the way onto the charging pipe until it stops.
8. Fill approximately 3 liter (3-1/8 US qt, 2-5/8 lmp qt) of the CVT fluid.
9. Remove the ATF changer hose and charging pipe, then install the drain plug.
   NOTE:
   Perform this work quickly because CVT fluid leaks.
10. Lift down the vehicle.
11. Start the engine.
12. While depressing the brake pedal, shift the selector lever to the entire position from “P” to “L”, and shift it to the “P” position.



NOTE:
Hold the lever at each position for 5 seconds.

13. Check that the CONSULT “Data monitor” in “FLUID TEMP” is 35°C (95°F) to 45°C (113°F).
14. Stop the engine.
15. Lift up the vehicle.
16. Remove the drain plug, and then drain CVT fluid from oil pan.
17. Repeat steps 6 to 16 (one time).
18. Install the overflow tube. Refer to TM-260, "Exploded View".
    CAUTION:
    Be sure to tighten to the specified torque. If it is not tightened to the specified torque, the tube may be damaged.
19. Install the charging pipe set (KV311039S0) (A) into the drain hole.
    CAUTION:
    Tighten the charging pipe by hand.
20. Install the ATF changer hose (B) to the charging pipe.
    CAUTION:
    Press the ATF changer hose all the way onto the charging pipe until it stops.
21. Fill approximately 3 liter (3-1/8 US qt, 2-5/8 lmp qt) of the CVT fluid.
22. Remove the ATF changer hose and charging pipe, then install the drain plug.
    NOTE:
    Perform this work quickly because CVT fluid leaks.
23. Lift down the vehicle.
24. Start the engine.
25. While depressing the brake pedal, shift the selector lever to the entire position from “P” to “L”, and shift it to the “P” position.
    NOTE:
    Hold the lever at each position for 5 seconds.
26. Check that the CONSULT “Data monitor” in “FLUID TEMP” is 35°C (95°F) to 45°C (113°F).
27. Lift up the vehicle.
28. Remove the drain plug and confirm that the CVT fluid is drained from the overflow tube.
    CAUTION:
    Perform this work with the vehicle idling.
    NOTE:
    If the CVT fluid is not drained, refer to “Adjustment” and refill with the CVT fluid.
29. When the flow of CVT fluid slows to a drip, tighten the drain plug to the specified torque. TM-260, "Exploded View".
    CAUTION:
    Never reuse drain plug gasket.
30. Lift down the vehicle.
31. Select “Work Support” in “TRANSMISSION” using CONSULT.
32. Select “CONFORM CVTF DETERIORTN”.
33. Touch “Erase”.
34. Stop the engine.



Adjustment

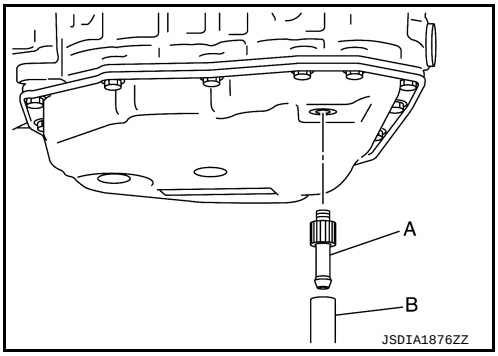
INFOID:0000000008765810

CVT fluid	**: Refer to TM-275, "General Specification".**
Fluid capacity	**: Refer to TM-275, "General Specification".**

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-3. Using transmission fluid other than Genuine NISSAN CVT Fluid NS-3 will damage the CVT, which is not covered by the (NISSAN new vehicle limited) warranty.**
- **During adjustment of the CVT fluid level, check CONSULT so that the oil temperature may be maintained from 35 to 45°C (95 to 113°F).**
- **Use caution when looking into the drain hole as there is a risk of dripping fluid entering the eye.**

1. Check that the selector lever is in the “P” position, then completely engage the parking brake.
2. Start the engine.
3. Adjust the CVT fluid temperature to be approximately 40°C (104°F).
   NOTE:
   The CVT fluid is largely affected by temperature. Therefore be sure to use CONSULT and check the “FLUID TEMP” under “TRANSMISSION” in “Data Monitor” while adjusting.
4. While depressing the brake pedal, shift the selector lever to the entire position from “P” to “L”, and shift it to the “P” position.
   NOTE:
   Hold the lever at each position for 5 seconds.
5. Lift up the vehicle.
6. Check that there is no CVT fluid leakage.
7. Remove the drain plug. Refer to TM-260, "Exploded View".
8. Install the charging pipe set (KV311039S0) (A) into the drain plug hole.
   CAUTION:
   Tighten the charging pipe by hand.
9. Install the ATF changer hose (B) to the charging pipe.
   CAUTION:
   Press the ATF changer hose all the way onto the charging pipe until it stops.
10. Fill approximately 0.5 liter (1/2 US qt, 1/2 lmp qt) of the CVT fluid.
11. Remove the ATF changer hose from the charging pipe, and check that the CVT fluid drains out from the charging pipe. If it does not drain out, perform charging again.
    CAUTION:
    Perform this work with the vehicle idling.



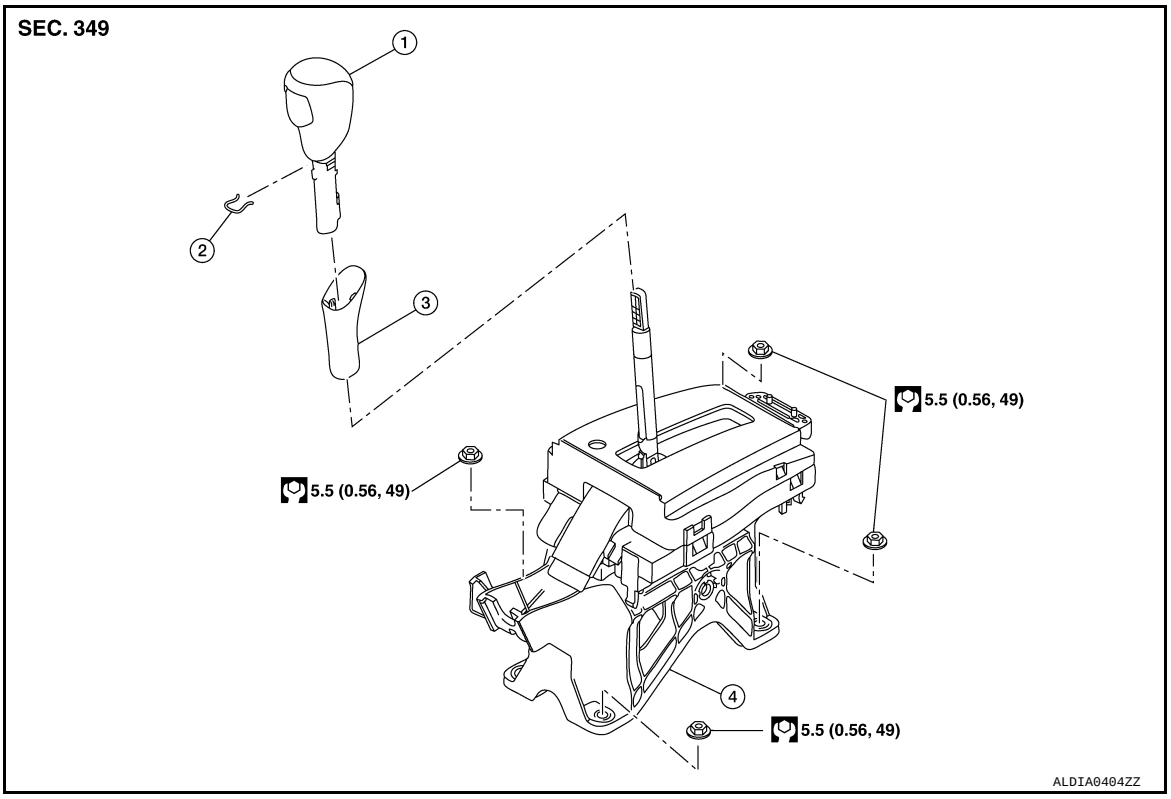
12. When the flow of CVT fluid slows to a drip, remove the charging pipe from the oil pan.
13. Tighten the drain plug to the specified torque. Refer to TM-260, "Exploded View".
    CAUTION:
    Never reuse drain plug gasket.
14. Lift down the vehicle.
15. Stop the engine.

REMOVAL AND INSTALLATION

CVT SHIFT SELECTOR

Exploded View

INFOID:0000000008765933



1.	Shift selector knob	2.	Lock pin	3.	Knob cover
4.	Position indication panel	5.	Detent switch	6.	Shift lock unit
7.	Park position switch	8.	Shift selector assembly	9.	Shift selector harness assembly
10.	Position bulb	11.	Key interlock rod	A.	With push-button ignition switch system
B.	Without push-button ignition switch system				

Removal and Installation

INFOID:0000000008765934

REMOVAL

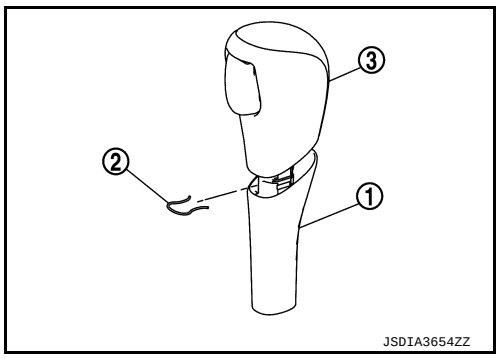
1. Turn ignition switch OFF.
2. Move the shift selector to “N” position.
3. Remove shift selector knob with the following procedure.

a. Slide the knob cover (1) down.
CAUTION:
Do not damage the knob cover.

b. Pull out the lock pin (2).

c. Pull the shift selector knob (3) and knob cover upwards to remove them.

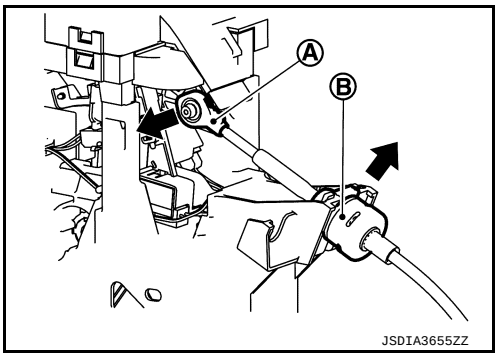
4. Remove the center console. Refer to IP-17, "Removal and Installation".
5. Remove rear floor duct (LH/RH). Refer to VTL-9, "Exploded View".



6. Move the shift selector to “P” position.
7. Remove the key interlock cable from the shift selector assembly. Refer to TM-254, "Removal and Installation". (Without push-button ignition switch)
8. Remove the control cable from the shift selector assembly with the following procedure.

a. Disconnect the tip (A) of control cable from the shift selector assembly.
b. Remove socket (B) from shift selector assembly.

9. Remove harness clips from the shift selector with a clip remover.
10. Remove shift selector nuts.
11. Remove the shift selector assembly from the vehicle.



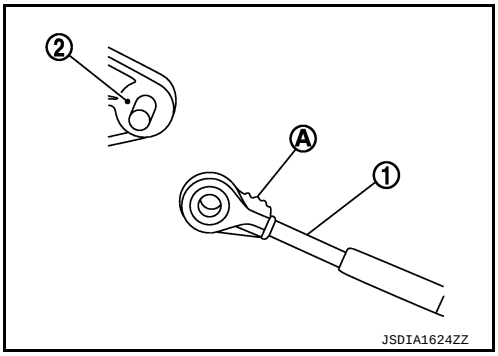
INSTALLATION

Installation is in the reverse order of removal.

NOTE:

Pay attention to the following when connecting the control cable to the shift selector assembly.

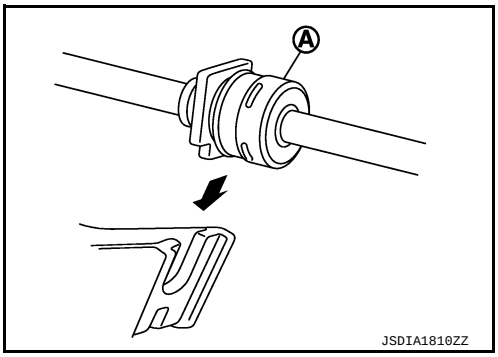
1. When connecting the control cable (1) to the shift selector assembly (2), face the grooved surface of the rib (A) up and insert the control cable until it stops.



2. Install the socket (A) onto the shift selector assembly.

CAUTION:

- **Place the socket onto the shift selector assembly, then fasten it in place from above.**
- **Check that the pulling on the socket does not disconnect it.**



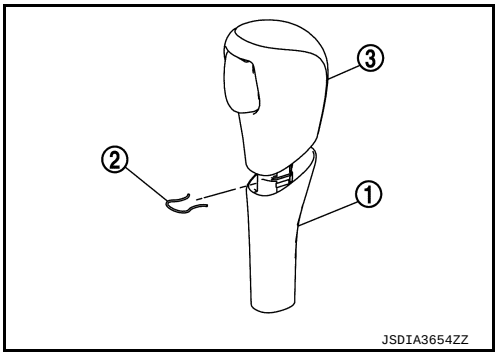
3. Follow the procedure below and place the shift selector knob onto the shift selector.

a. Install the lock pin (2) onto the shift selector knob (3).
b. Move the shift selector to “N” position.
c. Insert the shift selector knob into the shift selector until a slight touch is felt.
d. Press and hold the shift selector knob button and insert shift selector knob onto shift selector until it clicks.

CAUTION:

Do not strike the shift selector knob to press it into place.

e. After installing shift selector knob, pull the knob to check that it does not become disconnected.



Inspection

INFOID:0000000008972831

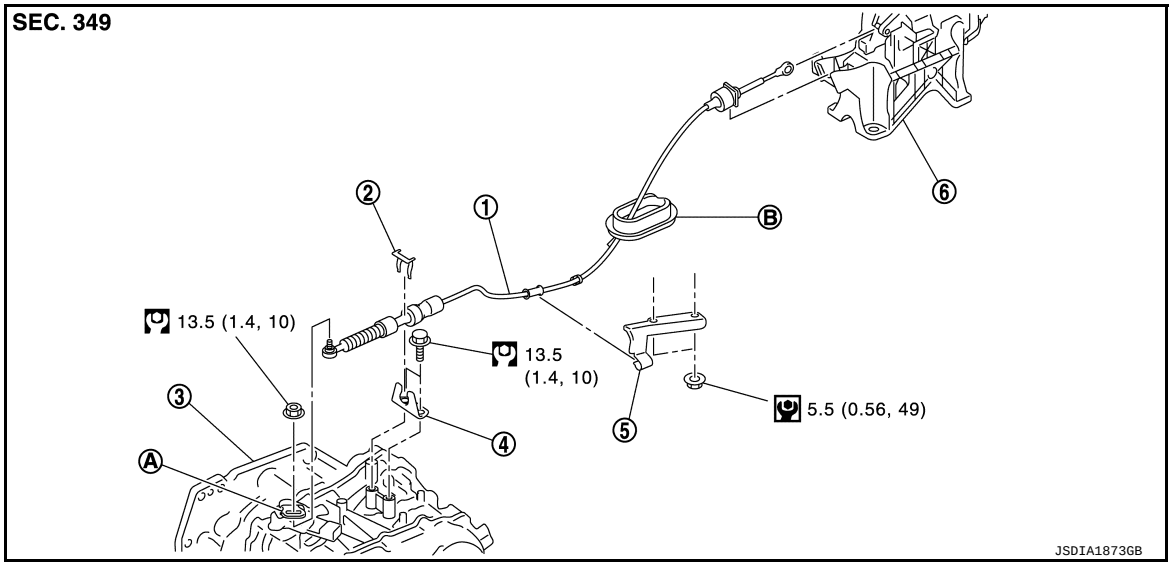
INSPECTION

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-147, "Inspection".

CONTROL CABLE

Exploded View

INFOID:0000000008765937



1. Control cable
2. Lock plate
3. Transaxle assembly
4. Bracket A
5. Bracket B
6. CVT shift selector assembly
A. Manual lever
B. Grommet

Removal and Installation

INFOID:0000000008765938

INSTALLATION

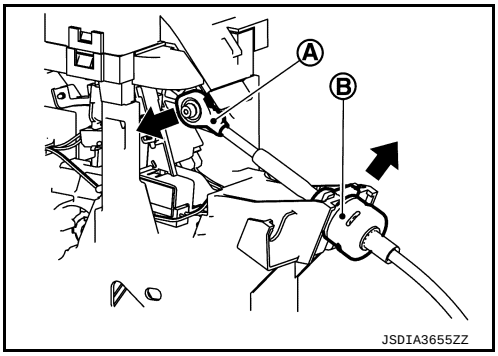
CAUTION:

Always apply the parking brake before performing removal and installation.

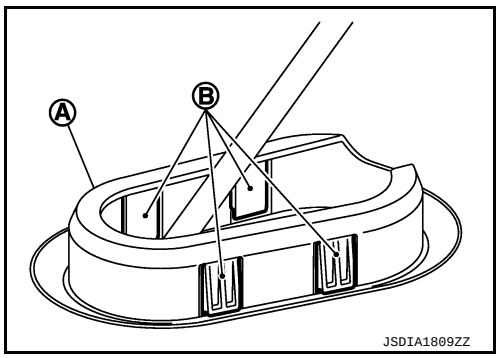
1. Apply the parking brake.
   CAUTION:
   Make sure the vehicle cannot move with the parking brake applied.
2. Remove the center console assembly. Refer to IP-17, "Removal and Installation".
3. Move the shift selector to “P” position.
4. Remove the control cable from the shift selector assembly with the following procedure.

a. Disconnect the tip (A) of control cable from the shift selector assembly.

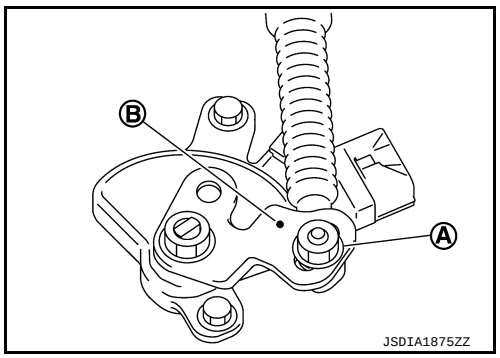
b. Remove socket (B) from shift selector assembly.



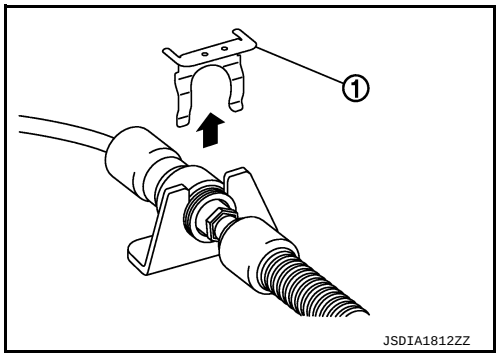
5. Disengage the pawls (B) of the grommet (A), and pull downwards to remove.
6. Remove the battery. Refer to PG-50, "Removal and Installation (Battery)".



7. Remove the control cable installation nut (A) from the manual lever (B).

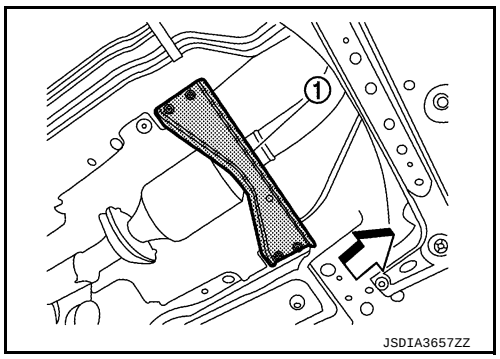


8. Remove the lock plate (1).



9. Remove the tunnel stay (1).

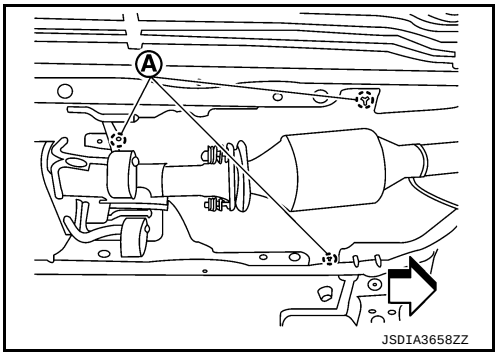
⇦ : Front



10. Remove the exhaust front tube and sub muffler from the exhaust system. Refer to EX-5, "Removal and Installation".

11. Remove the heat plate fixtures (A).

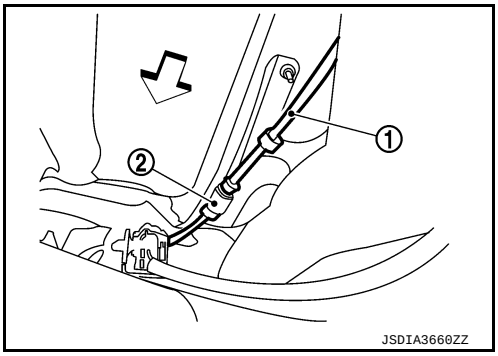
⇦ : Front



12. Remove the control cable (1) from the bracket (2).

⇦ : Front

13. Remove the control cable from the vehicle.



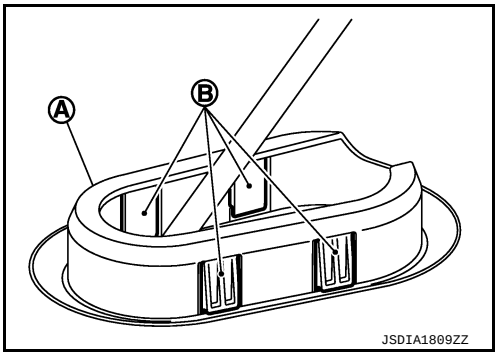
INSTALLATION

Installation is in the reverse order of removal.

- From below the vehicle, press the grommet (A) into place until the pawls (B) make a click sound.

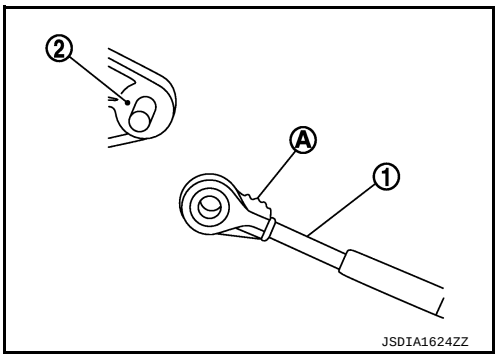
CAUTION:

- **Place the grommet on the floor, then fasten it in place from below the vehicle.**
- **Check that pulling down on the grommet does not disconnect it.**

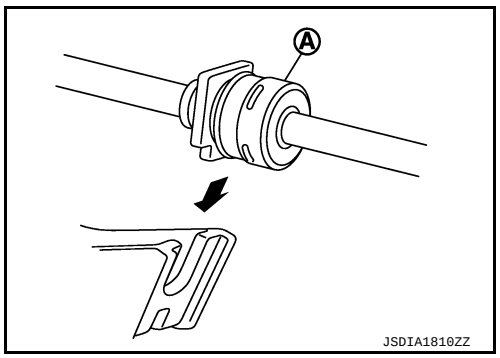


- Pay attention to the following when connecting the control cable to the shift selector.

1. When connecting the control cable (1) to the shift selector assembly (2), face the grooved surface of the rib (A) up and insert the control cable until it stops.



2. Install the socket (A) onto the shift selector.
CAUTION:
- **Place the socket onto the shift selector, then fasten it in place from above.**
- **Check that the pulling on the socket does not disconnect it.**



Inspection and Adjustment

INFOID:0000000008972832

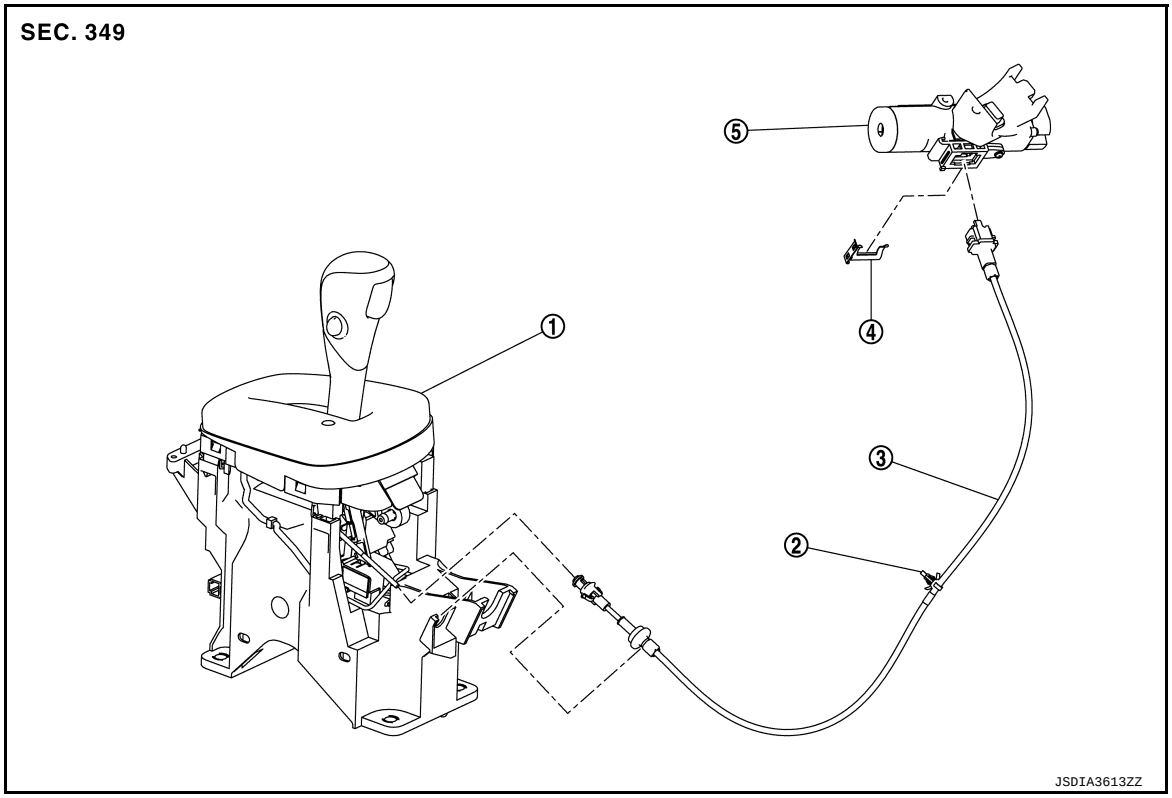
INSPECTION AND ADJUSTMENT

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-147, "Inspection" (Inspection) or TM-147, "Adjustment" (Adjustment).

KEY INTERLOCK CABLE

Exploded View

INFOID:0000000008765940



1. Shift selector assembly
2. Clip
3. Key interlock cable
4. Clip
5. Key cylinder

Removal and Installation

INFOID:0000000008765941

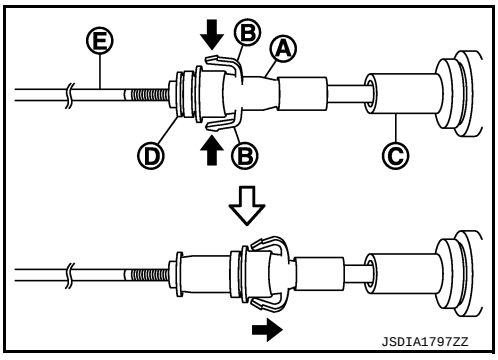
REMOVAL

CAUTION:

Always apply the parking brake before performing removal and installation.

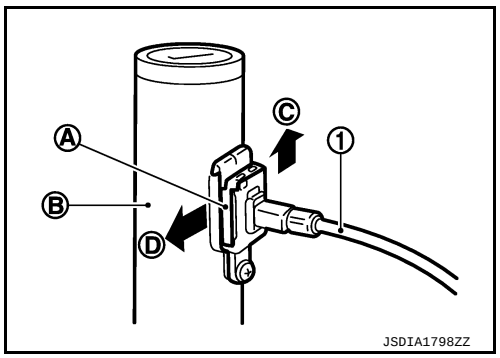
1. Remove the steering column cover, and the instrument lower panel LH. Refer to IP-21, "Removal and Installation".
2. Remove the center console assembly. Refer to IP-17, "Removal and Installation".
3. Press the pawls (B) of the key interlock cable slider (A) while sliding it in the direction of the casing cap (C), and separate the adjusting holder (D) and slider.

   (E) :Key interlock rod



4. Remove the key interlock cable from the shift selector.

5. Lift the clip (A) in the direction of the arrow (⬅[C]) and remove in the direction of the arrow (⬅[D]).

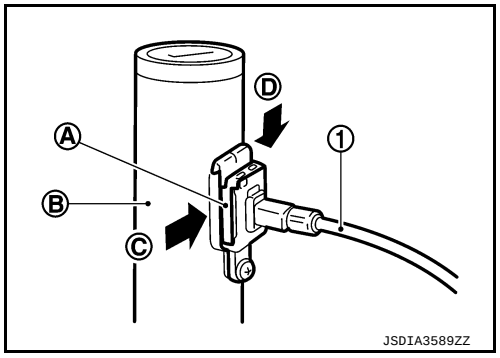


(1) : Key interlock cable
(B) : Key cylinder

6. Remove the key interlock cable from the key cylinder.
7. Disengage the clip and disconnect the key interlock cable from the vehicle.

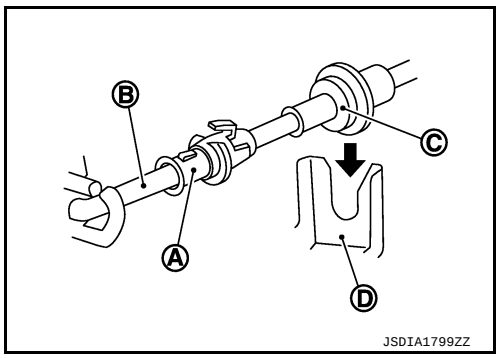
INSTALLATION

1. Move the shift selector to P position.
2. Turn the ignition switch to ACC or ON position.
3. Install the holder of key interlock cable to key cylinder.
4. Install the clip (A) in the direction of the arrow (⬅[C]) and push it in the direction of the arrow (⬅[D]).



(1) : Key interlock cable
(B) : Key cylinder

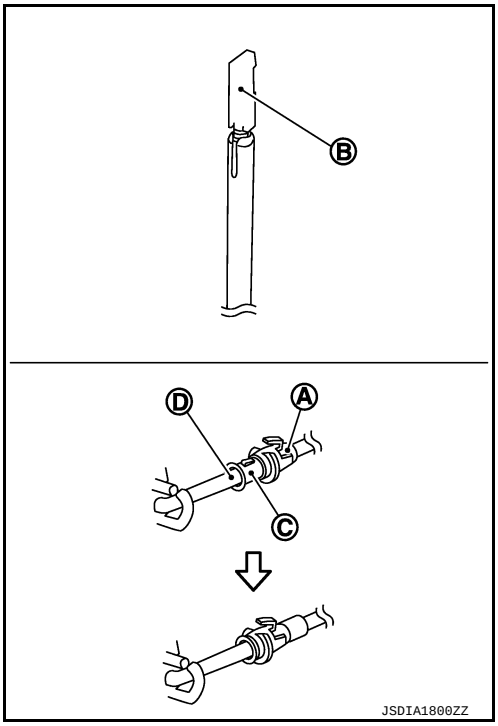
5. Turn the ignition switch to LOCK position.
6. Install the adjusting holder (A) onto the key interlock rod (B), then install the casing cap (C) onto the shift selector cable bracket (D).



CAUTION:

- **When installing the key interlock cable, never bend or twist the cable forcefully.**
- **After connecting the key interlock cable to the shift selector cable bracket, be sure to check that the casing cap is completely fastened to the cable bracket. If the casing cap is easily displaced, replace the key interlock cable.**

7. While pressing the detent rod (B) down, slide the key interlock cable slider (A) toward the key interlock rod (D) side and install the adjusting holder (C) and key interlock rod.
   CAUTION:
   - **Do not squeeze the pawls on the key interlock cable slider when holding the slider.**
   - **Do not apply force in a perpendicular direction to the key interlock rod when sliding the slider.**
8. Install the center console assembly. Refer to IP-17, "Removal and Installation".
9. Install the steering column cover, and the instrument lower panel LH. Refer to IP-21, "Removal and Installation".



Inspection

INFOID:0000000008765942

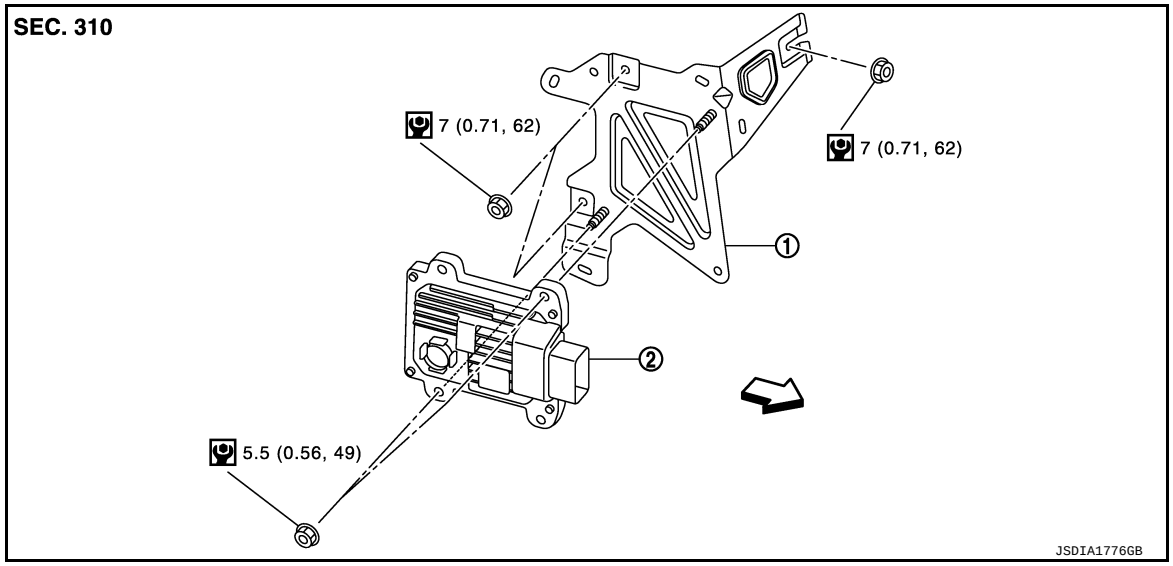
INSPECTION AFTER INSTALLATION

- Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-147, "Adjustment".
- The key can be removed only when the shift selector is in the “P” position. (With key interlock)
- It must not be possible to turn the ignition switch to LOCK when the selector lever is not in the “P” position. (With key interlock)

TCM

Exploded View

INFOID:0000000008765943



① Bracket
② TCM
⇦ : Vehicle front
: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000008765944

CAUTION:
When replacing TCM, note the “CVTF DETERIORATION DATE” value displayed on CONSULT “CONFORM CVTF DETERIORTN” in MAINTENANCE BOOKLET, before start the operation.
NOTE:
When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM. Refer to TM-141, "Description".

REMOVAL

1. Remove the battery. Refer to PG-50, "Removal and Installation (Battery)".
2. Remove the air cleaner case assembly. Refer to EM-25, "Removal and Installation".
3. Disconnect the TCM harness connector.
4. Remove the TCM.
5. Remove the bracket.

INSTALLATION

Installation is the reverse order of removal.

Adjustment

INFOID:0000000008765945

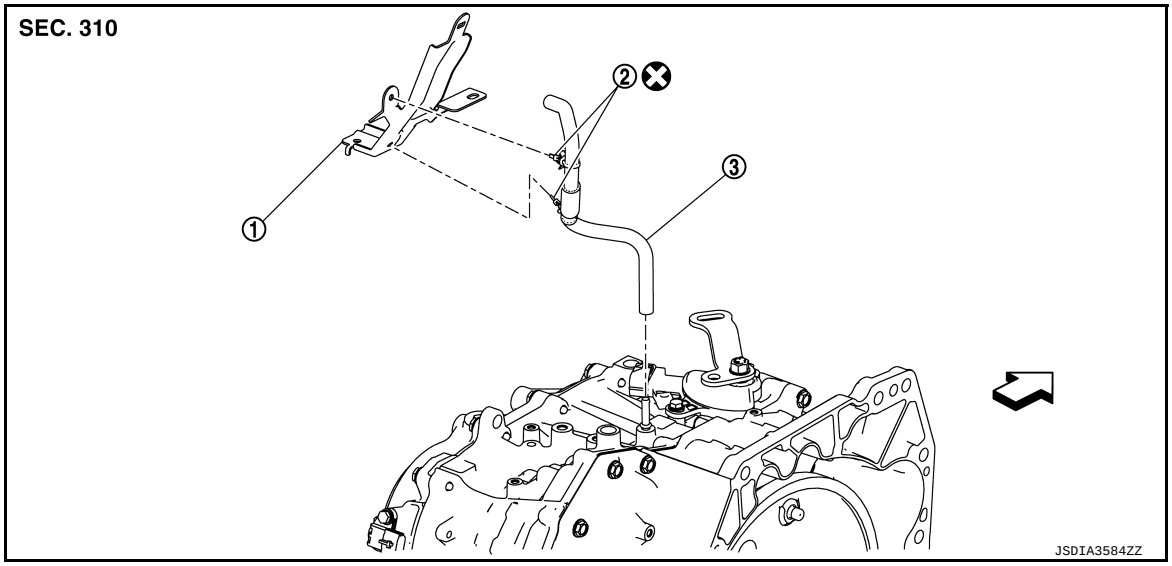
ADJUSTMENT AFTER INSTALLATION

Perform “ADDITIONAL SERVICE WHEN REPLACING TCM”. Refer to TM-141, "Description".

AIR BREATHER HOSE

Exploded View

INFOID:0000000008765946



① Harness bracket ② Clip . ③ Air breather hose .

⇦ : Vehicle front

⊗ : Always replace after every disassembly.

Removal and Installation

INFOID:0000000008765947

REMOVAL

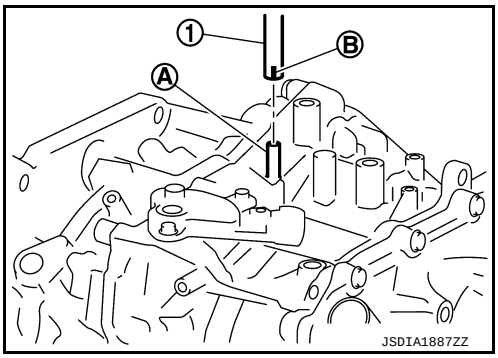
1. Remove clips from harness bracket.
2. Remove air breather hose from transaxle assembly.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

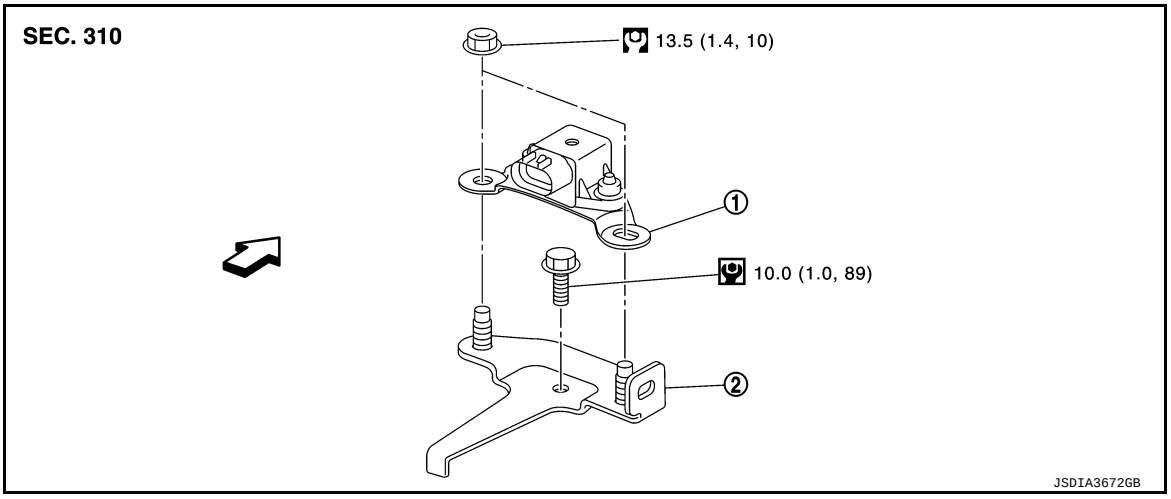
- **Do not bend the air breather hose to prevent damage to the hose.**
- **Do not reuse clips.**
- **Securely install the clips to the harness bracket.**
- **Be sure to insert it fully until its end reaches the stop when inserting air breather hose (1) to transaxle tube (A).**
- **Install air breather hose to transaxle tube so that the paint mark (B) is facing frontward.**



G SENSOR

Exploded View

INFOID:0000000008765948



① G sensor
② Bracket
⇦ : Vehicle front
: N·m (kg-m, ft-lb)
: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000008765949

WARNING:
Do not leave any objects (screwdrivers, tools, etc.) on the seat during seat repair. It can lead to personal injury if the side air bag module should accidentally deploy.
CAUTION:
- **Do not drop or strike G sensor, because it has little tolerance for impact.**
- **Do not use a power tool and avoid impact.**

REMOVAL

1. Disconnect the negative and positive battery terminals and wait at least three minutes. Refer to PG-50, "Removal and Installation (Battery)".
2. Remove driver seat. Refer to SE-18, "DRIVER SIDE : Removal and Installation - Seat Assembly".
3. Remove center pillar lower garnish (left side) and dash side finisher (left side). Refer to INT-27, "CENTER PILLAR LOWER FINISHER : Removal and Installation" (center pillar lower garnish) and INT-26, "DASH SIDE FINISHER : Removal and Installation" (dash side finisher).
4. Pull up floor carpet. Refer to INT-35, "Removal and Installation".
5. Disconnect G sensor harness connector.
6. Remove G sensor.
7. Remove bracket.

INSTALLATION

Installation is the reverse order of removal.

Adjustment

INFOID:0000000008765950

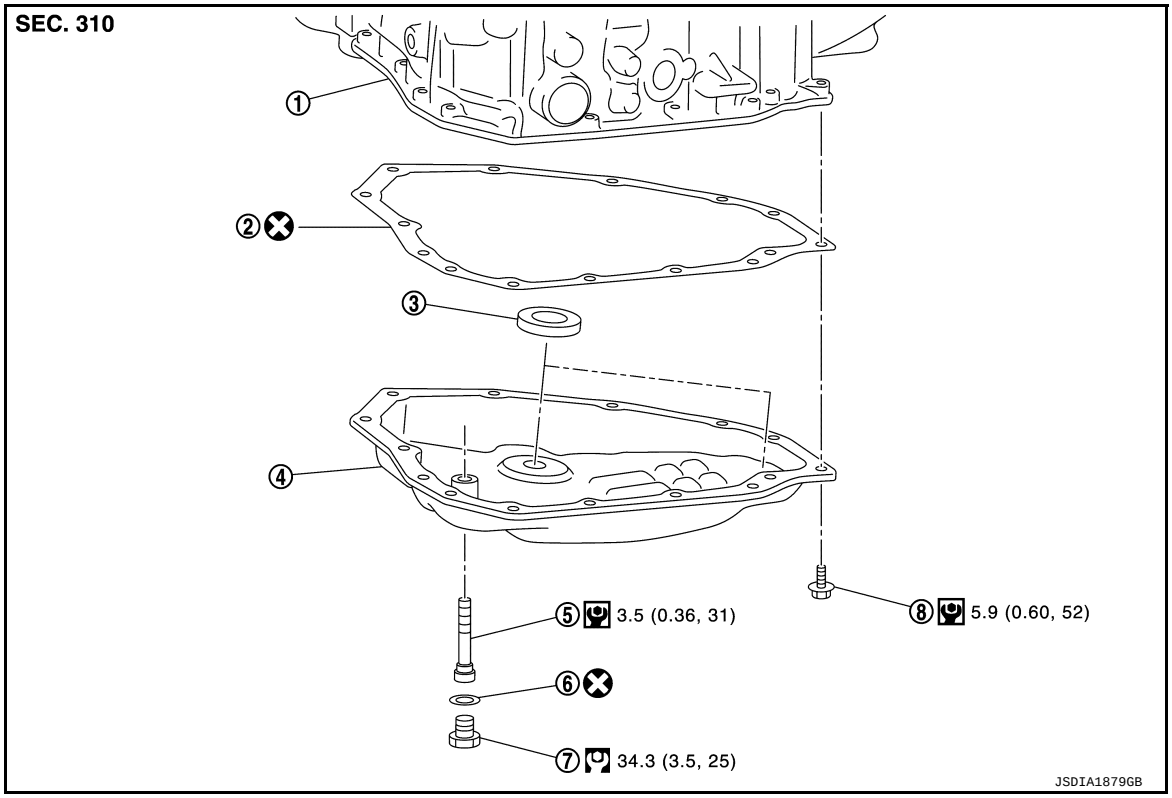
ADJUSTMENT AFTER INSTALLATION

Perform “CALIBRATION OF G SENSOR”. Refer to TM-144, "Description".

OIL PAN

Exploded View

INFOID:0000000008765951



① Transaxle assembly
② Oil pan gasket
③ Magnet
④ Oil pan
⑤ Overflow tube
⑥ Drain plug gasket
⑦ Drain plug
⑧ Oil pan fitting bolt

: Always replace after every disassembly.
: N·m (kg-m, ft-lb)
: N·m (kg-m, it-lb)

Removal and Installation

INFOID:0000000008765952

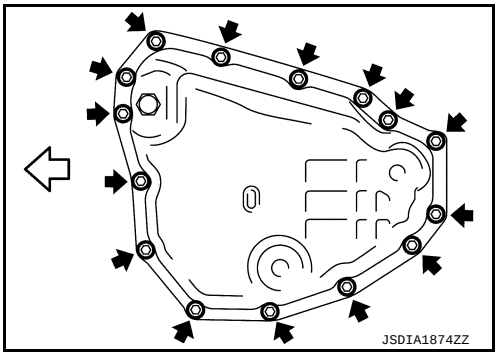
REMOVAL

1. Remove the engine under cover. Refer to EXT-31, "ENGINE UNDER COVER : Removal and Installation".
2. Remove the drain plug and overflow tube, and then drain the CVT fluid.
   CAUTION:
   When draining CVT fluid use safety glasses.
3. Remove the drain plug gasket from the drain plug.

4. Remove the oil pan bolts (⬅), and then remove the oil pan and oil pan gasket.

⇦ : Front

5. Remove the magnets from the oil pan.



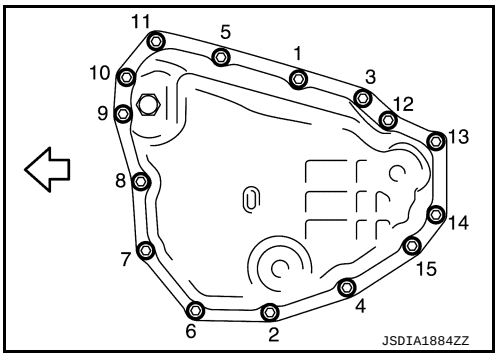
INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **Do not reuse oil pan gasket and drain plug gasket.**
- **When installing the oil pan bolts, be sure to use new bolts.**
- **Completely remove all moisture, oil and old gasket, etc. from the oil pan gasket surface of transaxle case and oil pan.**
- **When installing the overflow tube, be sure to tighten to the specified torque. If it is not tightened to the specified torque, the tube may be damaged.**
- When the oil pan is installed, tighten bolts in the order shown in the figure after temporarily tightening the oil pan bolt.

⇦ : Front



Inspection and Adjustment

INFOID:0000000008765953

INSPECTION AFTER REMOVAL

Check oil pan for foreign material.

- If a large amount of worn material is found, clutch plate may be worn.
- If iron powder is found, bearings, gears, or clutch plates may be worn.
- If aluminum powder is found, bushing may be worn, or chips or burrs of aluminum casting parts may enter.

Check points where wear is found in all cases.

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-244, "Inspection".

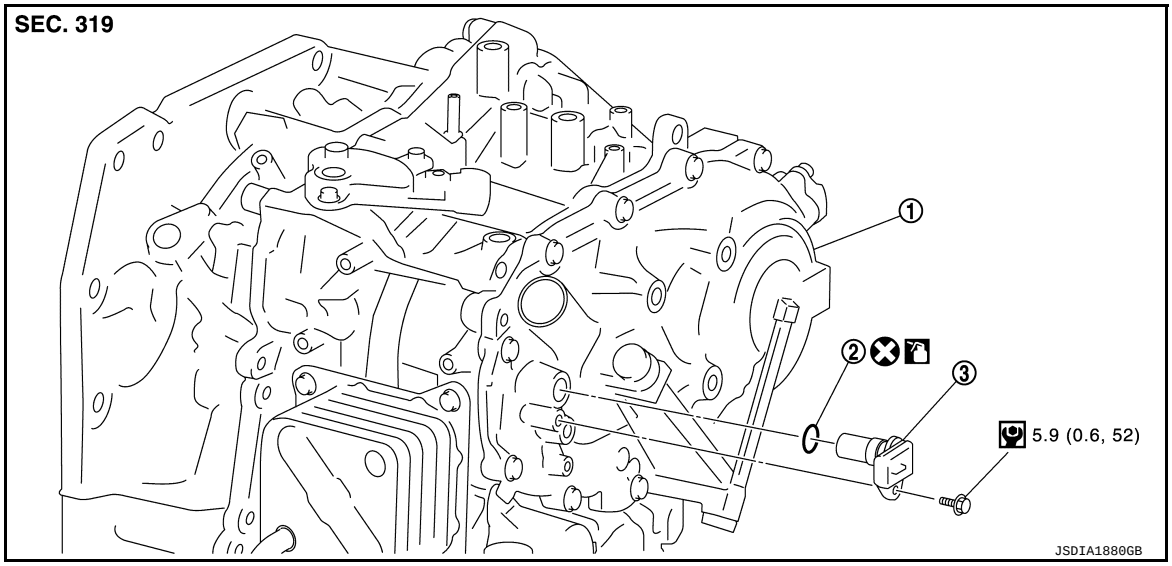
ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level after refill the CVT fluid. Refer to TM-245, "Adjustment".

PRIMARY SPEED SENSOR

Exploded View

INFOID:0000000008765954



① Transaxle assembly ② O-ring ③ Primary speed sensor

: Always replace after every disassembly.

: N m (kg-m, in-lb)

: Genuine NISSAN CVT Fluid NS-3

Removal and Installation

INFOID:0000000008765955

REMOVAL

1. Disconnect the primary speed sensor connector.
2. Remove the primary speed sensor.
3. Remove the O-ring from the primary speed sensor.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **Do not reuse O-ring.**
- **Apply Genuine NISSAN CVT Fluid NS-3 to the O-ring.**

Inspection and Adjustment

INFOID:0000000008765956

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-244, "Inspection".

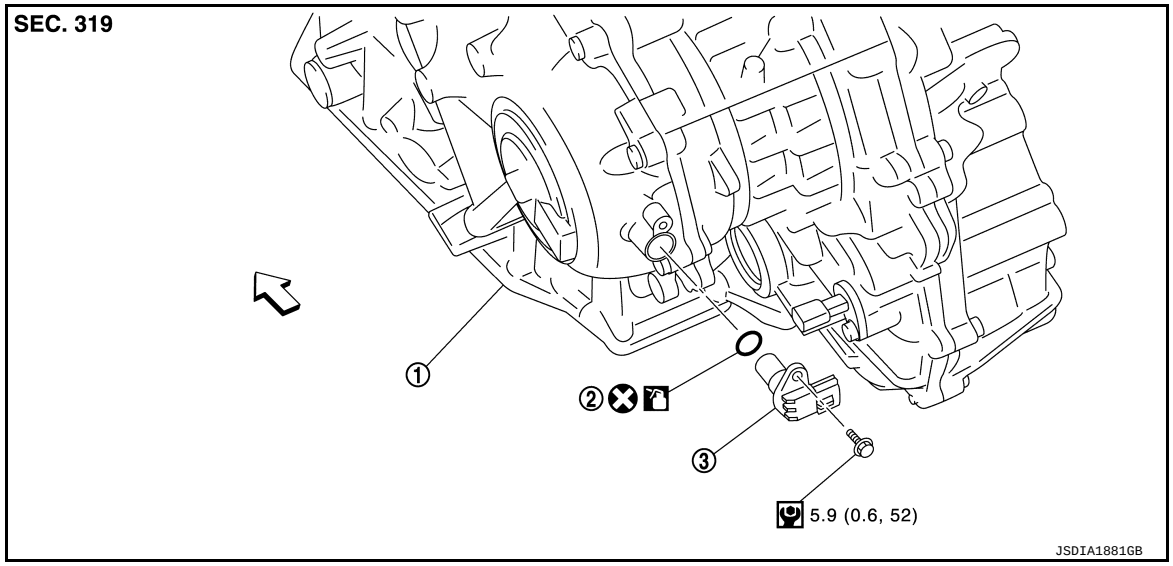
ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level. Refer to TM-245, "Adjustment".

SECONDARY SPEED SENSOR

Exploded View

INFOID:0000000008765957



① Transaxle assembly ② O-ring ③ Secondary speed sensor

⇦ : Vehicle front

: Always replace after every disassembly.

: N·m (kg-m, in-lb)

: Genuine NISSAN CVT Fluid NS-3

Removal and Installation

INFOID:0000000008765958

REMOVAL

1. Disconnect the secondary speed sensor connector.
2. Remove the secondary speed sensor.
3. Remove the O-ring from the secondary speed sensor.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **Do not reuse O-ring.**
- **Apply Genuine NISSAN CVT Fluid NS-3 to the O-ring.**

Inspection and Adjustment

INFOID:0000000008765959

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-244, "Inspection".

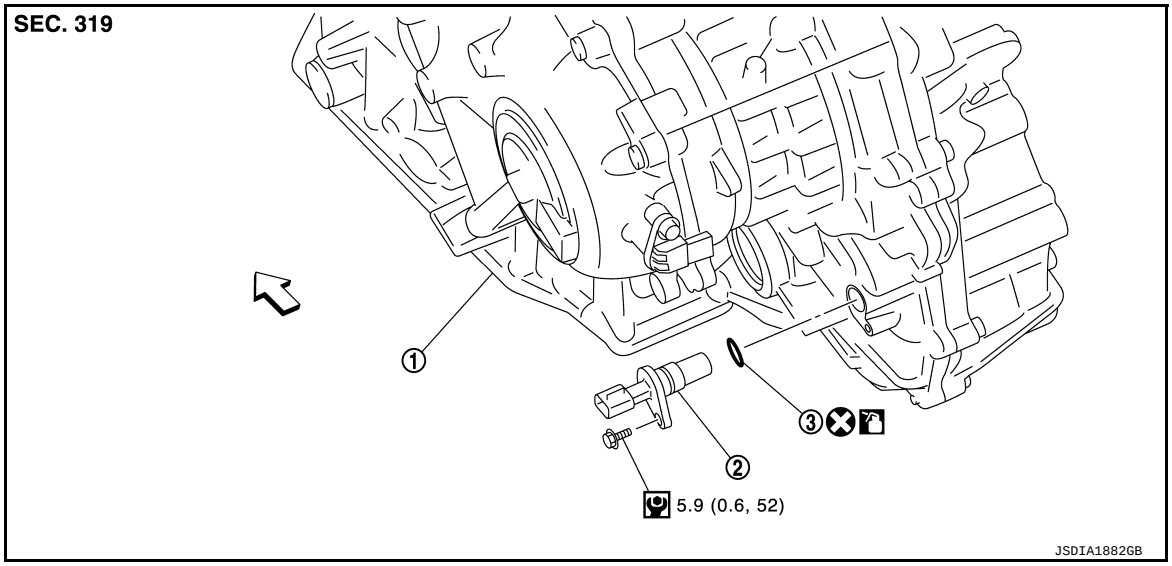
ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level. Refer to TM-245, "Adjustment".

OUTPUT SPEED SENSOR

Exploded View

INFOID:0000000008765960



① Transaxle assembly ② Output speed sensor ③ O-ring

⇦ : Vehicle front

: Always replace after every disassembly.

: N·m (kg-m, in-lb)

: Genuine NISSAN CVT Fluid NS-3

Removal and Installation

INFOID:0000000008765961

REMOVAL

1. Disconnect the output speed sensor harness connector.
2. Remove the output speed sensor.
3. Remove the O-ring from the output speed sensor.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **Do not reuse O-ring.**
- **Apply Genuine NISSAN CVT Fluid NS-3 to the O-ring.**

Inspection and Adjustment

INFOID:0000000008765962

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-244, "Inspection".

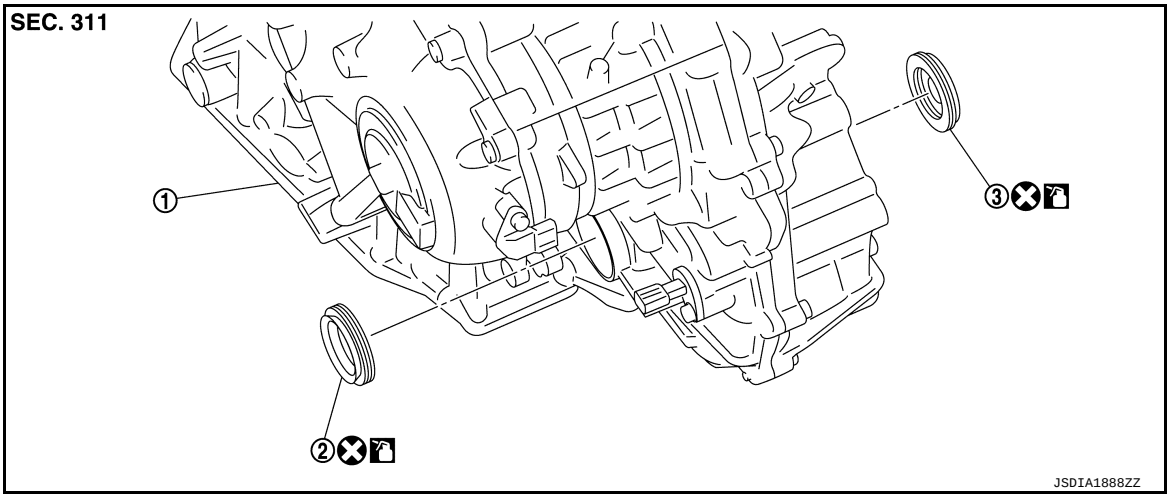
ADJUSTMENT AFTER INSTALLATION

Check the CVT fluid level. Refer to TM-245, "Adjustment".

DIFFERENTIAL SIDE OIL SEAL

Exploded View

INFOID:0000000008765963



① Transaxle assembly ② Differential side oil seal (left side) ③ Differential side oil seal (right side)

⇦ : Vehicle front

: Always replace after every disassembly.

: Genuine NISSAN CVT Fluid NS-3

Removal and Installation

INFOID:0000000008765964

REMOVAL

NOTE:

Cap or plug openings to prevent fluid from spilling.

1. Remove the front drive shaft (RH/LH). Refer to FAX-20, "6M/T : Removal and Installation (RH)"(RH), FAX-17, "6M/T : Removal and Installation (LH)"(LH) and FAX-25, "EXCEPT 6M/T : Removal and Installation" (Except 6M/T).
2. Use oil seal remover or a similar means and remove the differential side oil seal.
   CAUTION:
   When removing the differential side oil seal, be careful not to scratch the oil seal mounting surfaces of the transaxle case and converter housing.

INSTALLATION

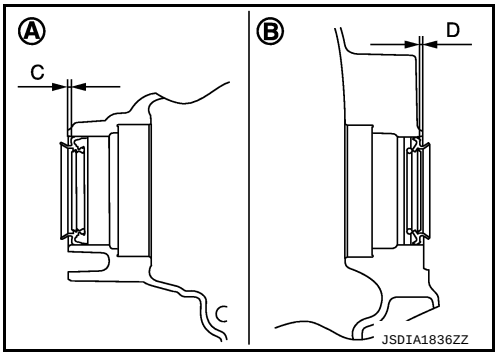
Installation is in the reverse order of removal.

CAUTION:

- **Do not reuse differential side oil seal.**
- **Apply Genuine NISSAN CVT Fluid NS-3 to the differential side oil seal lip and around the oil seal.**
- **When inserting the drive shaft, be sure to use a protector.**

Using Tool, drive the differential side oil seal in until the amount of oil seal projection from the case edge matches dimensions (C) and (D).

Tool number : KV38107900



CAUTION:
Be careful not to scratch the lip of the differential side oil seal when press-fitting it.

(A) : Differential side oil seal (LH)
(B) : Differential side oil seal (RH)

Dimension “C” :Height difference from case end surface is within 1.8 ± 0.5 mm (0.071 ± 0.020 in).
Dimension “D” :Height difference from case end surface is within 1.8 ± 0.5 mm (0.071 ± 0.020 in).

NOTE:
The reference is the pull-in direction of the differential side oil seal.

Drift to be used:

Location	Commercial Service Tools
Transaxle case side	Commercial service tool with outer dia. 56 mm (2.20 in) and inner dia. 50 mm (1.97 in)
Converter housing side	

Inspection and Adjustment

INFOID:0000000008765965

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-244, "Inspection".

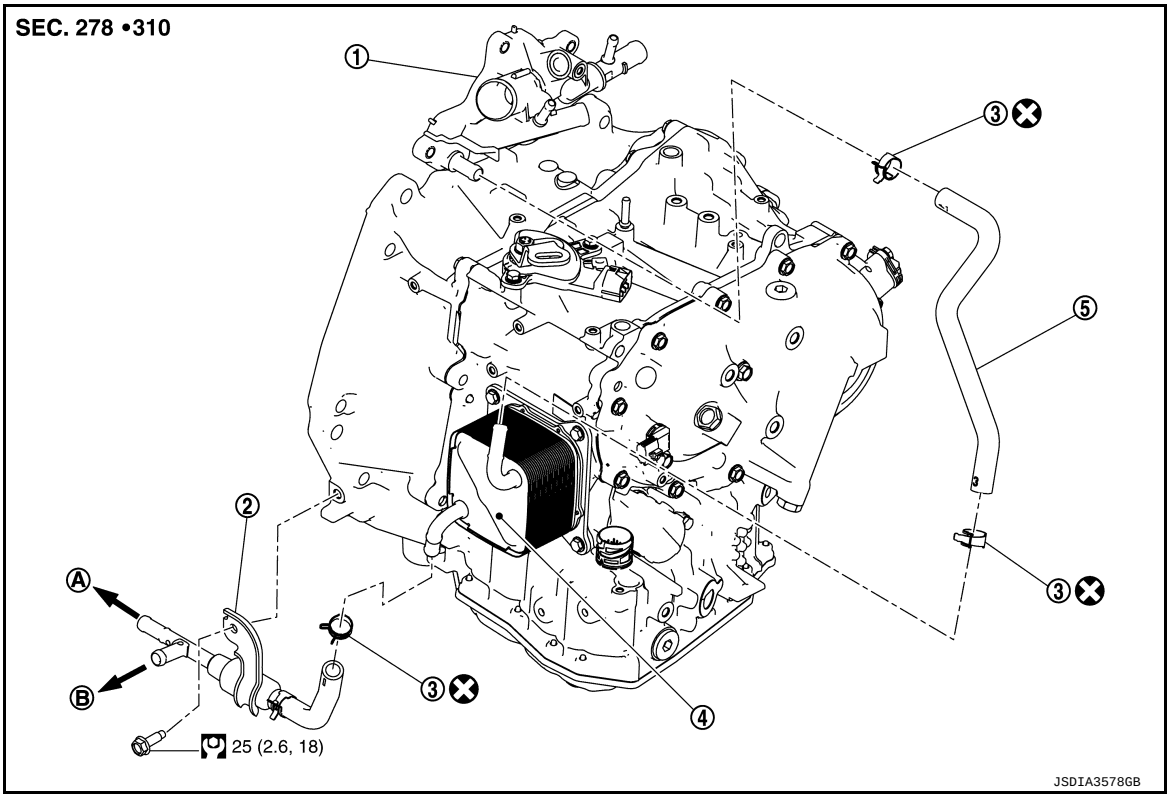
ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level. Refer to TM-245, "Adjustment".

WATER HOSE

Exploded View

INFOID:0000000008765972



① Water outlet	② Heater thermostat assembly	③ Hose clamp
④ CVT oil warmer	⑤ Water hose	
Ⓐ To thermostat housing	Ⓑ To engine oil cooler	

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)

Removal and Installation

INFOID:0000000008765973

REMOVAL

WARNING:

Do not remove the radiator cap when the engine is hot. Serious burns could occur from high-pressure coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly push down and turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by pushing it down and turning it all the way.

CAUTION:

Perform these steps after the coolant temperature has cooled sufficiently.

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

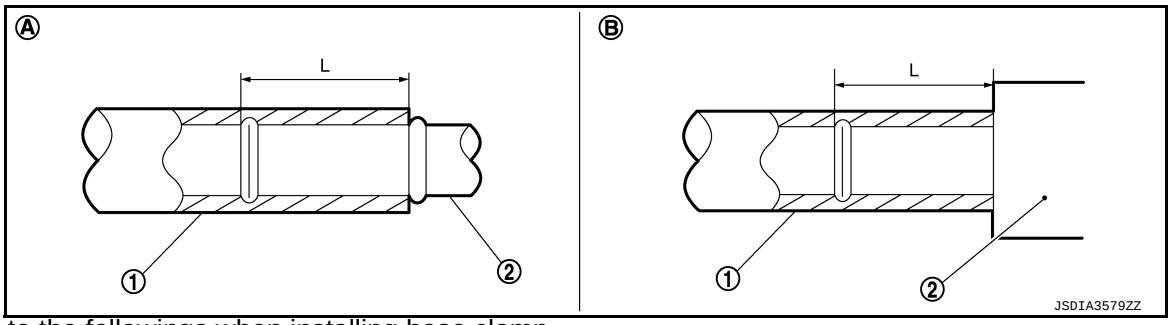
1. Remove the engine under cover. Refer to EXT-31, "ENGINE UNDER COVER : Removal and Installation".
2. Drain engine coolant from radiator. Refer to CO-12, "Changing Engine Coolant".
3. Remove water hose and heater thermostat assembly.

INSTALLATION

Installation is in the reverse order of removal.

- Refer to the following when installing water hoses.

Water hose (1)	Installation side tube (2)	Direction of paint mark	Hose insertion depth (L)
Heater thermostat assembly	CVT oil warmer	Frontward	(A): 27 mm (1.06 in) (Hose end reaches the 2-stage bulge.)
Water hose	CVT oil warmer	Frontward	
	Water outlet	Frontward	(B): 27 mm (1.06 in) (Hose end reaches the end of water outlet tube.)

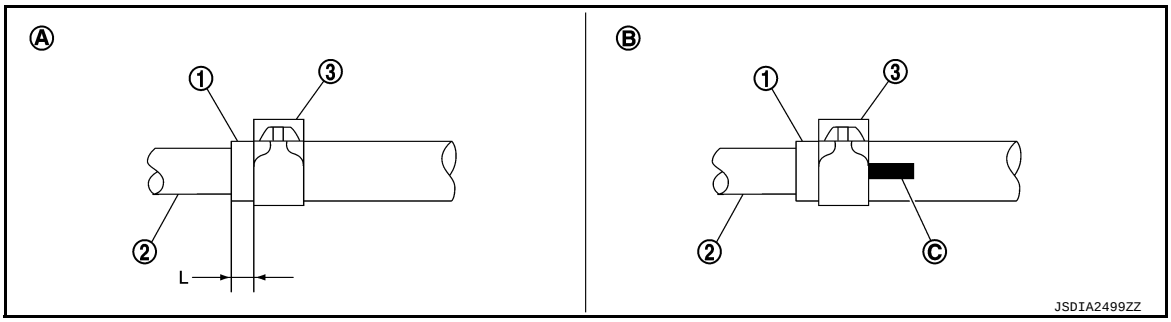


- Refer to the followings when installing hose clamp.

CAUTION:

- **Do not reuse hose clamp.**
- **Hose clamp should not interfere with the bulge of fluid cooler tube.**

Water hose (1)	Installation side tube (2)	Hose clamp (3)	
		Direction of tab	Clamping position
Heater thermostat assembly	CVT oil warmer	Frontward	(B): Align with the end of paint mark (C)
Water hose	CVT oil warmer	Frontward	(A): 5 – 7 mm (0.20 – 0.28 in) (L) from hose end
	Water outlet	Frontward	



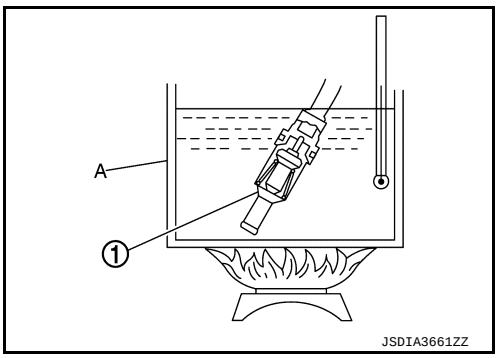
Inspection

INFOID:0000000008765974

INSPECTION AFTER REMOVAL

Heater Thermostat

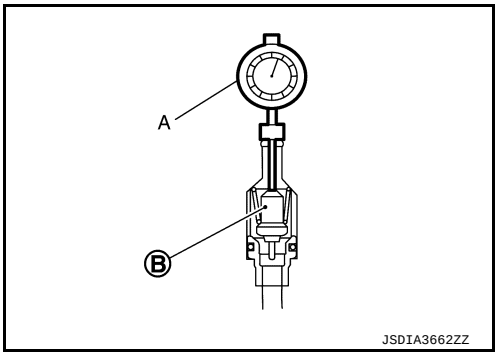
1. Fully immerse the heater thermostat ① in a container (A) filled with water. Continue heating the water while stirring.
2. Continue heating the heater thermostat for 5 minutes or more after bringing the water to a boil.



3. Quickly take the heater thermostat out of the hot water, measure the heater thermostat within 10 seconds.

- Place dial indicator (A) on the pellet Ⓑ and measure the elongation from the initial state.

Standard : Refer to TM-276, "Heater Thermostat".



4. If out of standard, replace heater thermostat.

INSPECTION AFTER INSTALLATION

Start the engine, and check the joints for coolant leakage.

PLUG

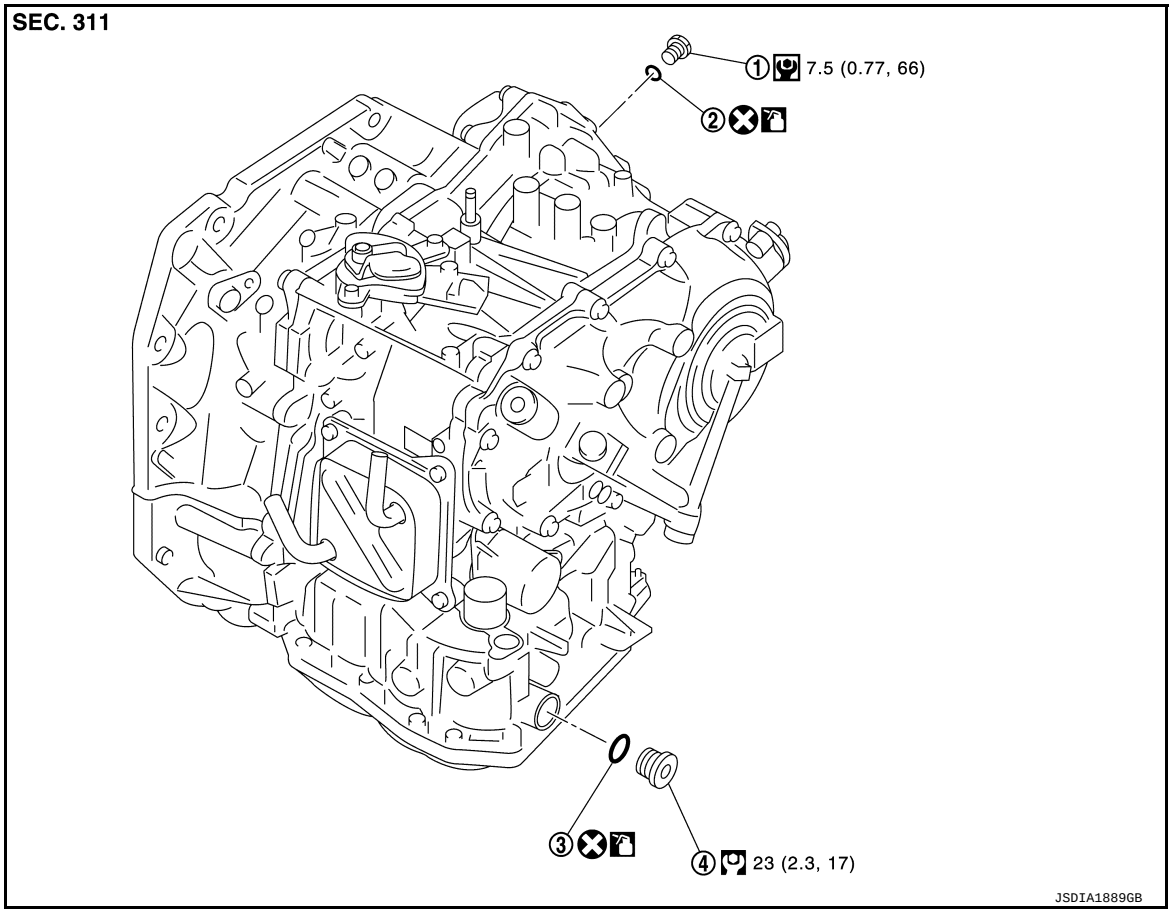
Description

INFOID:0000000008765978

Replace the O-ring if oil leakage or exudes from the plug.

Exploded View

INFOID:0000000008765979



① Plug
② O-ring
③ O-ring
④ Plug
: Always replace after every disassembly.
: N·m (kg-m, ft-lb)
: N·m (kg-m, in-lb)
: Genuine NISSAN CVT Fluid NS-3

Removal and Installation

INFOID:0000000008765980

NOTE:
Replace the O-rings if oil leaks or exudes from the plugs.

REMOVAL
Remove the plugs and O-rings.

INSTALLATION
Installation is in the reverse order of removal.
CAUTION:
- **Do not reuse O-ring.**
- **Apply Genuine NISSAN CVT Fluid NS-3 to O-ring.**

Inspection and Adjustment

INFOID:0000000008765981

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-244, "Inspection".

ADJUSTMENT AFTER INSTALLATION

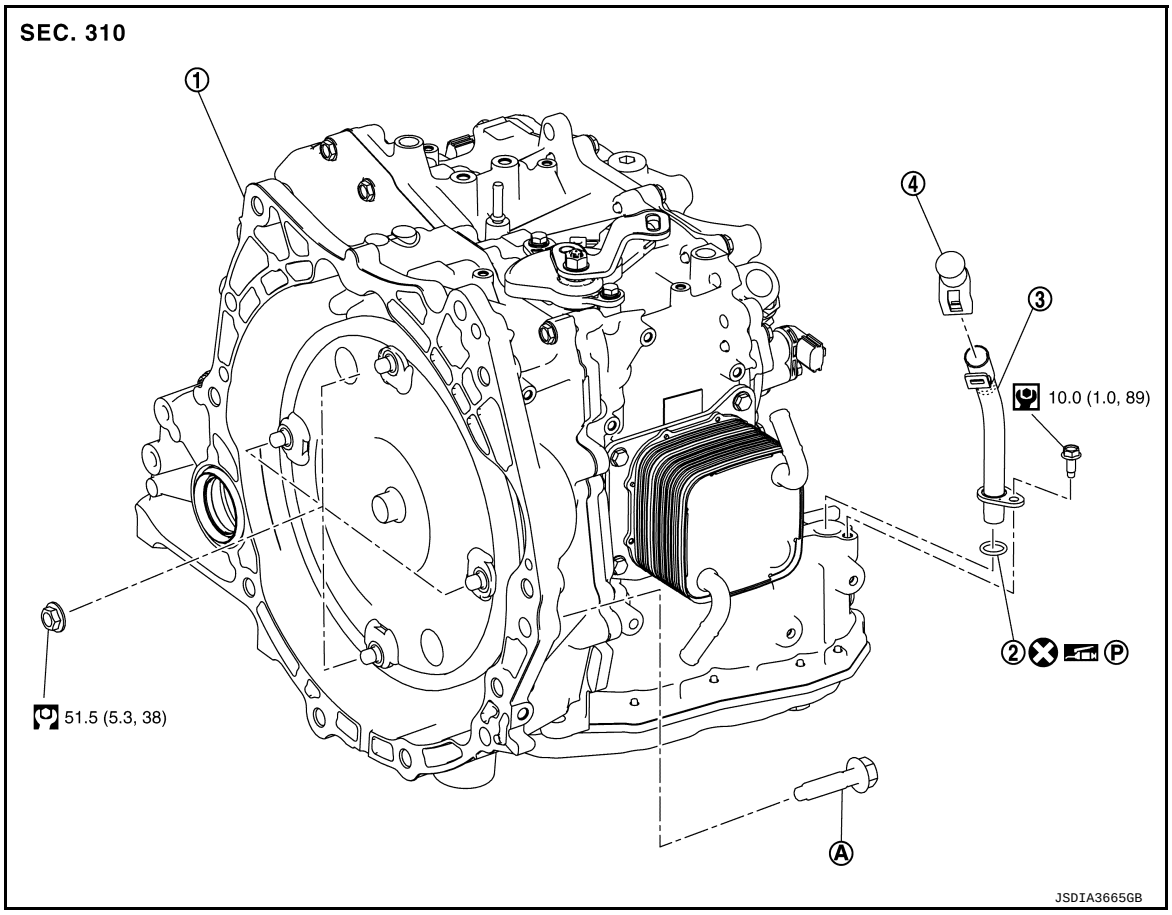
Adjust the CVT fluid level. Refer to TM-245, "Adjustment".

UNIT REMOVAL AND INSTALLATION

TRANSMISSION ASSEMBLY

Exploded View

INFOID:0000000008765985



1. Transaxle assembly
2. O-ring
3. CVT fluid charging pipe
4. CVT fluid charging pipe cap

Ⓐ Tightening must be done following the installation procedure. Refer to TM-272, "Removal and Installation".

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

Ⓟ: Apply petroleum jelly

Removal and Installation

INFOID:0000000008765986

REMOVAL

WARNING:

Do not remove the radiator cap when the engine is hot. Serious burns could occur from high-pressure coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly push down and turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by pushing it down and turning it all the way.

CAUTION:

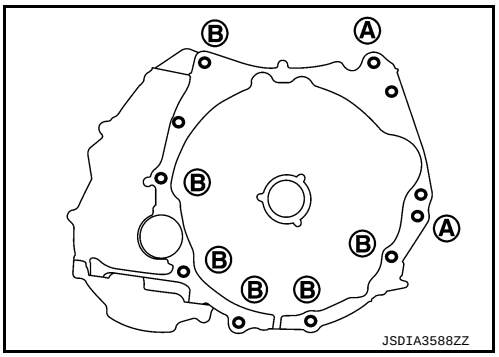
Perform these steps after the coolant temperature has cooled sufficiently.

NOTE:

- When removing components such as hoses, tubes/line, etc., cap or plug openings to prevent fluid from spilling.
- When replacing the TCM and transaxle assembly as a set, replace the transaxle assembly first and then replace the TCM. Refer to TM-141, "Description".

1. Remove the engine and transaxle assembly. Refer to EM-82, "M/T : Removal and Installation" (MT) or EM-86, "CVT : Removal and Installation" (CVT).
2. Disconnect the connectors and harnesses.
   - For CVT unit harness connector, refer to TM-69, "Removal and Installation Procedure for CVT Unit Connector".
   - Transmission position switch harness connector
   - Primary pulley speed sensor harness connector
   - Secondary pulley speed sensor harness connector
   - Output speed sensor harness connector
   - Ground
3. Rotate the crankshaft and remove the nuts that secure the drive plate to the torque converter from the stator motor mount.
   CAUTION:
   Rotate crankshaft clockwise (as viewed from the front of the engine).
4. Remove the bolts (engine to transaxle) that fasten the transaxle assembly and engine assembly.

Bolt position	(A)	(B)
Direction of insertion	Transaxle to engine	Engine to transaxle
Quantity	2	6



5. Remove transmission bracket.
6. Lift the transaxle from the front suspension member.

INSTALLATION

Installation is in the reverse order of removal.

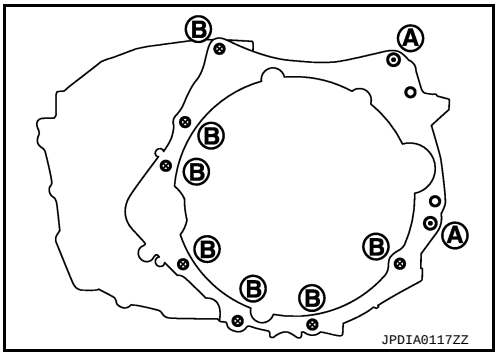
CAUTION:

- **When replacing an engine or transaxle you must make sure any dowels are installed correctly during re-assembly**
- **Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drive train components.**
- **Do not reuse O-rings or copper sealing washers.**
- **When turning crankshaft, turn it clockwise as viewed from the front of the engine.**
- **When tightening the nuts for the torque converter while securing the crankshaft pulley bolt, be sure to confirm the tightening torque of the crankshaft pulley bolt. Refer to EM-49, "Removal and Installation".**
- **After converter is installed to drive plate, rotate crankshaft several turns to check that CVT rotates freely without binding.**
- **When installing the CVT to the engine, align the matching mark on the drive plate with the matching mark on the torque converter.**

NOTE:

Install the transaxle assembly and engine assembly mounting bolts according to the following standards.

Bolt position	(A)	(B)
Direction of insertion	Transaxle to engine	Engine to transaxle
Quantity	2	6
Nominal length [mm (in)]	50 (1.97)	
Tightening torque N·m (kg-m, ft-lb)	62 (6.3, 46)	



Inspection and Adjustment

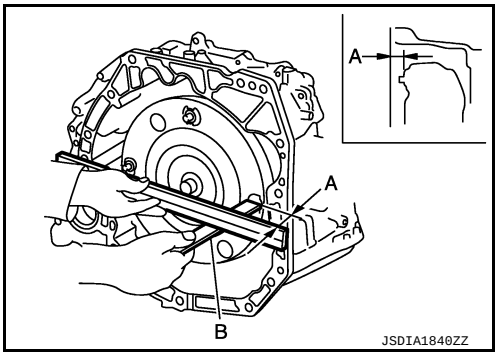
INFOID:0000000008765987

INSPECTION BEFORE INSTALLATION

Check the dimension (A) between the converter housing and torque converter.

B : Scale
C : Straightedge

Dimension (A) : **TM-276, "Torque Converter"**



INSPECTION AFTER INSTALLATION

Check the following items:

- CVT fluid leakage. Refer to TM-244, "Inspection"
- For CVT position, refer to TM-147, "Inspection".
- Start the engine and check for coolant leakage from the parts which are removed and reinstalled.

ADJUSTMENT AFTER INSTALLATION

- Adjust the CVT fluid level. TM-245, "Adjustment".
- Perform “ADDITIONAL SERVICE WHEN REPLACE TRANSAXLE ASSEMBLY”. Refer to TM-142, "Description".

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000008765988

Engine model		MRA8DE
Drive type		2WD
Transaxle model		RE0F11A
Transaxle model code number		X427A
Stall torque ratio		1.91 : 1
Pulley ratio	Forward	2.200 – 0.550
	Reverse	2.200
Auxiliary gearbox gear ratio	1GR	1.821
	2GR	1.000
	Reverse	1.714
Counter gear		0.906
Final drive		3.882
Recommended fluid		Genuine NISSAN CVT Fluid NS-3
Fluid capacity liter (US qt, lmp qt)		Approx. 6.9 (7-1/4, 6-1/8)*

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-3. Never mix with other fluid.**
- **Use only Genuine NISSAN CVT Fluid NS-3. Using transmission fluid other than Genuine NISSAN CVT Fluid NS-3 will damage the CVT, which is not covered by the warranty.**

*: The CVT fluid capacity is the reference value.

Shift Characteristics

INFOID:0000000008765989

Unit: rpm

Throttle position	Shift pattern	CVT input speed	
		At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
2/8	“D” position (OD ON)	1,500 – 2,600	1,700 – 3,000
	“D” position (OD OFF)	2,300 – 3,100	2,700 – 3,500
	“L” position	3,000 – 3,800	3,500 – 4,300
	ECO mode	1,500 – 2,300	1,700 – 2,500
8/8	“D” position (OD ON)	3,900 – 5,000	4,500 – 6,100
	“D” position (OD OFF)	3,900 – 5,000	4,500 – 6,100
	“L” position	3,900 – 5,000	4,500 – 6,100
	ECO mode	3,900 – 4,700	4,500 – 5,300

NOTE:
Lock-up is engaged at the vehicle speed of approximately 10 km/h (11 MPH) to 90 km/h (56 MPH).

Stall Speed

INFOID:0000000008765990

Unit: rpm

Stall speed	2,690 – 3,200

Line Pressure

INFOID:0000000008765991

Unit: MPa (kg/cm^2, psi)

Shift selector position	Engine speed	Line pressure
“P” and “N”	At idle	0.50 (5.1, 72.5)
“R” and “D”	At idle	0.50 (5.1, 72.5) – 1.38 (14.1, 200.1)
	At stall	4.19 (42.7, 607.5) – 4.69 (47.8, 680.0)

Torque Converter

INFOID:0000000008765992

Unit: mm (in)

Dimension between the converter housing and torque converter	14.4 (0.567)

Heater Thermostat

INFOID:0000000008765993

Valve opening temperature	69 – 73°C (156 –163°F)
Maximum valve lift	5.0 mm/85°C (0.197 in/185°F)
Valve closing temperature	65°C (149°F)