SECTION TM
TRANSAXLE & TRANSMISSION

CONTENTS

5MT: RS5F92R

6MT: RS6F94R

CVT: RE0F10B

CVT: RE0F11A

PRECAUTION

PRECAUTIONS

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

INFOID:0000000006415725

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 “SRS AIR BAG” and “SEAT BELT” of this Service Manual.

The vehicle may be equipped with a passenger air bag deactivation switch. Because no rear seat exists where a rear-facing child restraint can be placed, the switch is designed to turn off the passenger air bag so that a rear-facing child restraint can be used in the front passenger seat. The switch is located in the center of the instrument panel, near the ashtray. When the switch is turned to the ON position, the passenger air bag is enabled and could inflate for certain types of collision. When the switch is turned to the OFF position, the passenger air bag is disabled and will not inflate. A passenger air bag OFF indicator on the instrument panel lights up when the passenger air bag is switched OFF. The driver air bag always remains enabled and is not affected by the passenger air bag deactivation switch.

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 “SRS AIR BAG”.**
- **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.**
- **The vehicle may be equipped with a passenger air bag deactivation switch which can be operated by the customer. When the passenger air bag is switched OFF, the passenger air bag is disabled and will not inflate. When the passenger air bag is switched ON, the passenger air bag is enabled and could inflate for certain types of collision. After SRS maintenance or repair, make sure the passenger air bag deactivation switch is in the same position (ON or OFF) as when the vehicle arrived for service.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag 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 Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:0000000006415726

NOTE:

- Before removing and installing any control units, first turn the ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

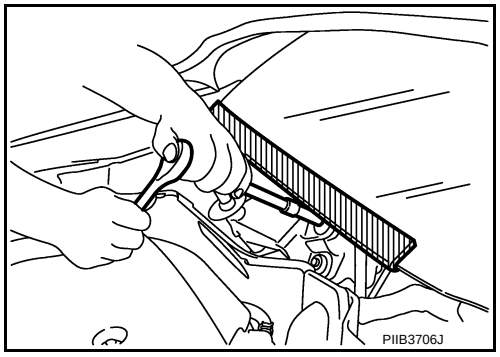
OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Turn the ignition switch to ACC position.
   (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

Precaution for Procedure without Cowl Top Cover

INFOID:0000000006415727

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



Service Notice or Precautions for Manual Transaxle

INFOID:0000000006415669

CAUTION:

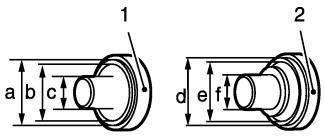
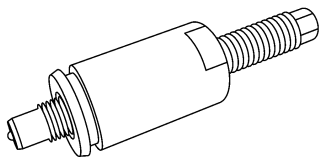
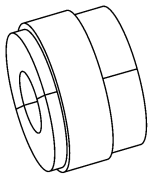
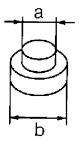
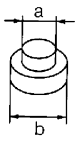
- **Never reuse CSC (Concentric Slave Cylinder). Because CSC slides back to the original position every time when removing transaxle assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage. Refer to CL-27, "Removal and Installation".**
- **Never 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.**
- **Never damage sliding surfaces and mating surfaces.**

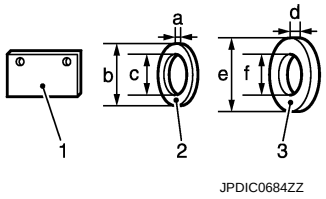
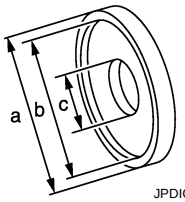
PREPARATION

PREPARATION

Special Service Tools

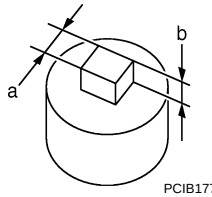
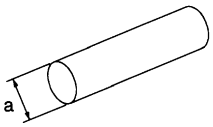
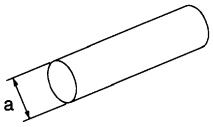
INFOID:0000000006415670

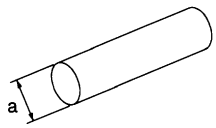
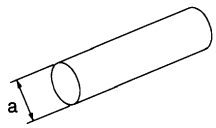
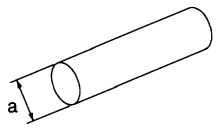
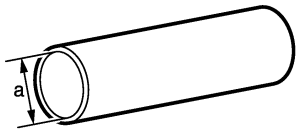
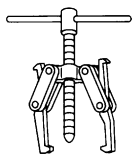
Tool number Tool name	Description
KV32500QAA (Renault SST: B.vi 1666) Drift set 1. — (Stamping number: B.vi 1666-A) Drift a: 54.3 mm (2.138 in) dia. b: 45 mm (1.77 in) dia. c: 26.6 mm (1.047 in) dia. 2. — (Stamping number: B.vi 1666-B) Drift d: 54 mm (2.13 in) dia. e: 48.6 mm (1.913 in) dia. f: 26.6 mm (1.047 in) dia.  JPDIC0730ZZ	Installing differential side oil seal
KV32300QAC (Renault SST: B.vi 22-01) Puller  SCIA1781J	Removing 5th main gear
KV32300QAD (Renault SST: B.vi 1000-01) Puller  SCIA1782J	Removing 5th main gear
ST33052000 Drift a: 22 mm (0.87 in) dia. b: 28 mm (1.10 in) dia.  ZZA0969D	Removing differential side bearing
KV40104920 Drift a: 21.7 mm (0.854 in) dia. b: 44.7 mm (1.760 in) dia.  ZZA0969D	Installing differential side bearing

Tool number Tool name	Description
KV32300QAN (Renault SST: B.vi 1161) Dummy shim set 1. — Support plate 2. — Dummy shim a: 0.60 mm (0.0236 in) b: 38 mm (1.50 in) dia. c: 25 mm (0.98 in) dia. 3. — Dummy shim d: 1.60 mm (0.0630 in) e: 45 mm (1.77 in) dia. f: 25 mm (0.98 in) dia.  JPDIC0684ZZ	Adjusting preload of mainshaft rear bearing.
KV32300QAP (Renault SST: B.vi 1527) Adjusting plate a: 65 mm (2.56 in) dia. b: 58 mm (2.28 in) dia. c: 23 mm (0.91 in) dia.  JPDIC0683ZZ	Adjusting preload of mainshaft rear bearing.

Commercial Service Tools

INFOID:0000000006415671

Tool name	Description
Socket a: 8 mm (0.31 in) b: 5 mm (0.20 in)  PCIB1776E	Removing and installing drain plug
Drift a: 14.5 mm (0.571 in) dia.  S-NT063	Installing bushing
Drift a: 38 mm (1.50 in) dia.  S-NT063	Removing and installing input shaft front bearing

Tool name	Description
Drift a: 62 mm (2.44 in) dia.  S-NT063	• Installing mainshaft rear bearing outer race • Installing differential side bearing outer race
Drift a: 58 mm (2.28 in) dia.  S-NT063	• Removing mainshaft rear bearing outer race • Removing and installing input shaft rear bearing • Installing mainshaft front bearing outer race
Drift a: 30 mm (1.18 in) dia.  S-NT063	Installing mainshaft front bearing inner race
Drift a: 33 mm (1.30 in) dia.  JPDIC0679ZZ	Installing mainshaft bushing
Puller  NT077	• Removing 5th-reverse synchronizer hub • Removing differential side bearing • Removing mainshaft front bearing inner race
Remover  S-NT134	• Removing mainshaft front bearing outer race • Removing bushing

SYSTEM DESCRIPTION

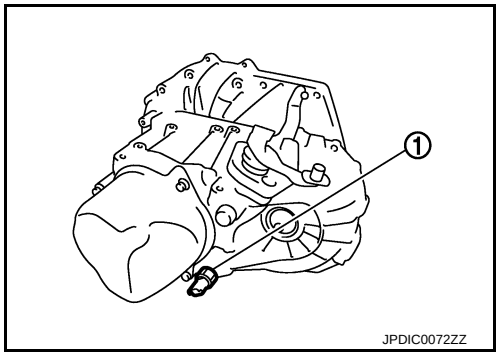
COMPONENT PARTS

Component Parts Location

INFOID:0000000006415672

POSITION SWITCH

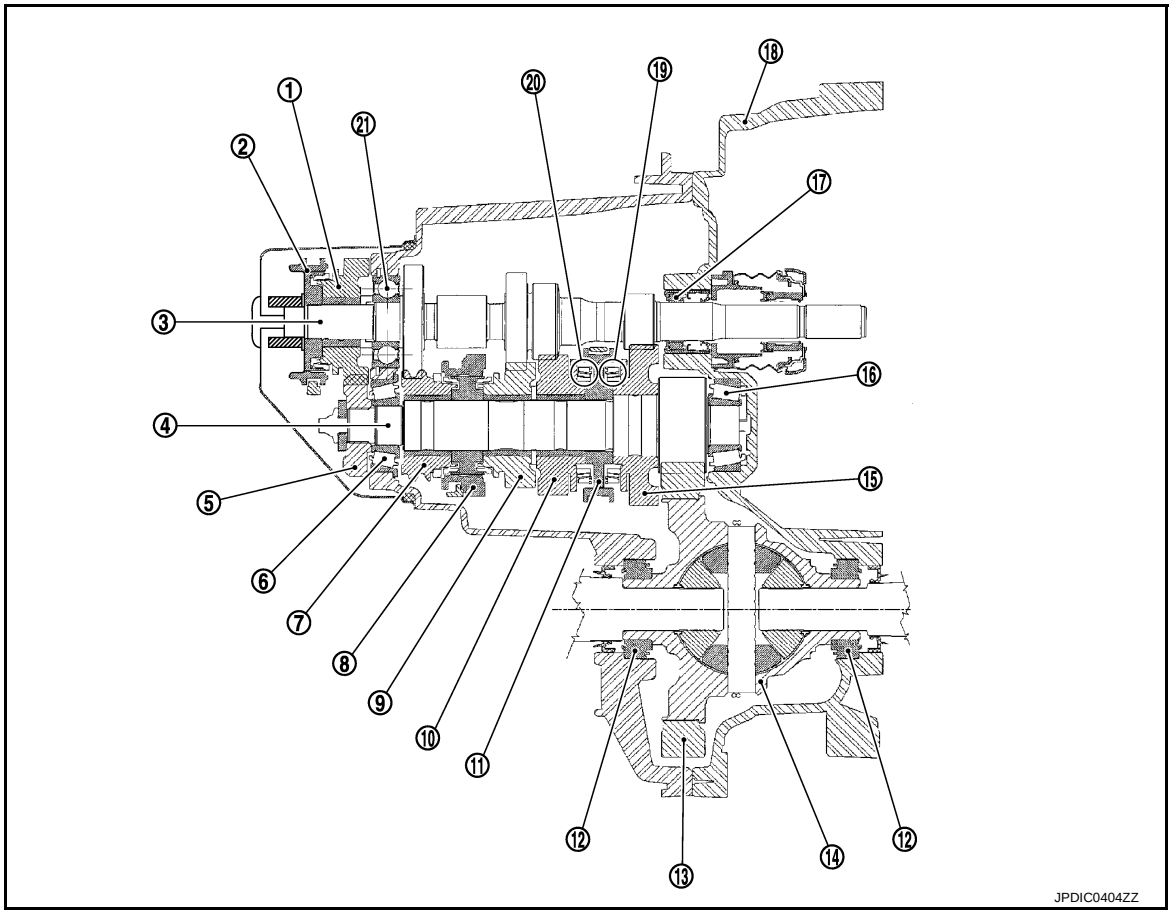
1 : Position switch



STRUCTURE AND OPERATION

Sectional View

INFOID:0000000006415673



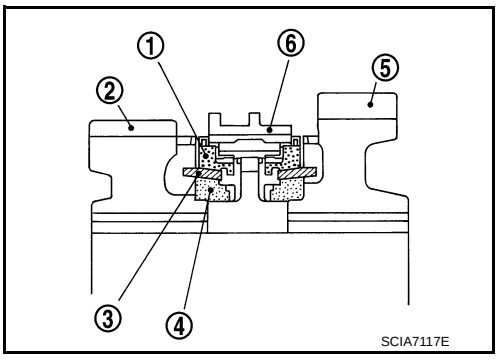
1. 5th input gear	2. 5th-reverse synchronizer hub assembly	3. Input shaft
4. Mainshaft	5. 5th main gear	6. Mainshaft rear bearing
7. 4th main gear	8. 3rd-4th synchronizer hub assembly	9. 3rd main gear
10. 2nd main gear	11. 1st-2nd synchronizer hub assembly	12. Differential side bearing
13. Final gear	14. Differential	15. 1st main gear
16. Mainshaft front bearing	17. Input shaft front bearing	18. Clutch housing
19. 1st double-cone synchronizer	20. 2nd double-cone synchronizer	21. Input shaft rear bearing

System Description

INFOID:0000000006415674

DOUBLE-CONE SYNCHRONIZER

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



1 : Outer baulk ring
2 : 2nd main gear
3 : Synchronizer cone
4 : Inner baulk ring
5 : 1st main gear
6 : 1st-2nd coupling sleeve

REVERSE GEAR NOISE PREVENTION FUNCTION (REVERSE BRAKE)

Description

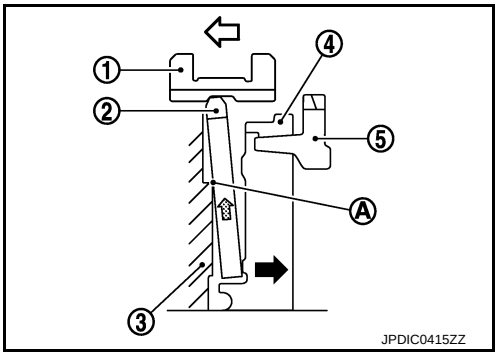
Soon after the clutch is disengaged, the input shaft is still rotating due to inertia. This may cause a gear noise when the gear is shifted to reverse position. The reverse gear noise prevention function stops the rotation of the input shaft and enables smooth gear shifting when the reverse gear is selected.

Operation Principle

1. When the gear is shifted to reverse position, 5th-reverse coupling sleeve (1) slides in the reverse direction. (⇦)

   5 : 5th input gear

2. Synchronizer levers (2) with support point (A) at 5th-reverse synchronizer hub (3) presses 5th-reverse baulk ring (4). (⬅)
3. Friction that is generated at 5-reverse baulk ring presses synchronizer lever on 5th-reverse coupling sleeve. (⇦)
4. 5th-reverse coupling sleeve that is pressed by synchronizer lever stops the rotation of input shaft.



DTC/CIRCUIT DIAGNOSIS

POSITION SWITCH

BACK-UP LAMP SWITCH

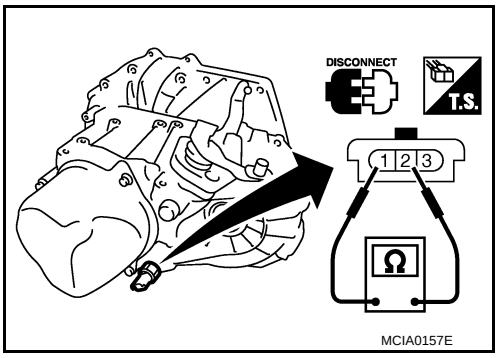
BACK-UP LAMP SWITCH : Component Inspection

INFOID:0000000006415675

1.CHECK BACK-UP LAMP SWITCH

1. Disconnect position switch connector. Refer to TM-24, "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-24, "Removal and Installation".

PARK/NEUTRAL POSITION (PNP) SWITCH

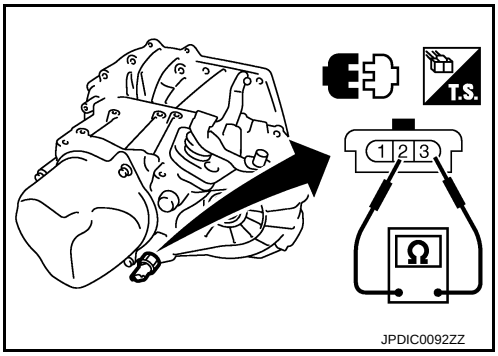
PARK/NEUTRAL POSITION (PNP) SWITCH : Component Inspection

INFOID:0000000006415676

1.CHECK PARK/NEUTRAL POSITION (PNP) SWITCH

1. Disconnect position switch connector. Refer to TM-24, "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-24, "Removal and Installation".

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000006415677

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-22			TM-33		TM-27	TM-33		TM-33		
Symptoms	Noise	1	2							3	3		
	Oil leakage		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

GEAR OIL

Inspection

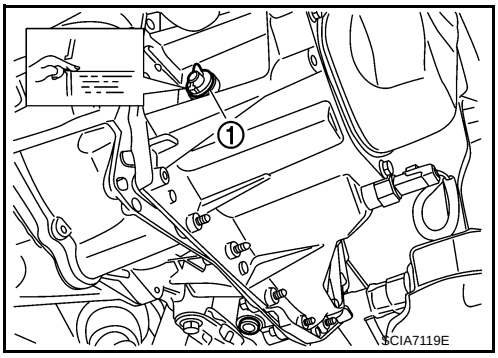
INFOID:0000000006415678

OIL LEAKAGE

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

OIL LEVEL

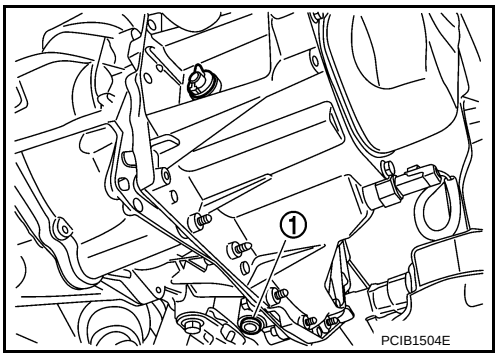
1. Remove filler plug (1) and gasket from transaxle case.
2. Check the oil level from filler plug mounting hole as shown in the figure.
   CAUTION:
   Never start engine while checking oil level.
3. Set a gasket on filler plug and then install it to transaxle case.
   CAUTION:
   Never reuse gasket.
4. Tighten filler plug to the specified torque. Refer to TM-33, "Exploded View".



Draining

INFOID:0000000006415679

1. Start engine and let it run to warm up transaxle.
2. Stop engine. Remove drain plug (1) and gasket, using a socket [Commercial service tool] and then drain gear oil.
3. Set a gasket on drain plug and install it to clutch housing, using a socket [Commercial service tool].
   CAUTION:
   Never reuse gasket.
4. Tighten drain plug to the specified torque. Refer to TM-33, "Exploded View".



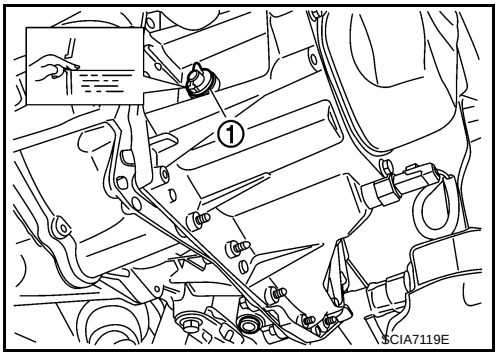
Refilling

INFOID:0000000006415680

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 in the figure.

Oil grade and viscosity	**: Refer to MA-13, "Fluids and Lubricants".**
Oil capacity	**: Refer to TM-63, "General Specifications".**

3. After refilling gear oil, check the oil level. Refer to TM-22, "Inspection".
4. Set a gasket on filler plug and then install it to transaxle case.
   CAUTION:
   Never reuse gasket.
5. Tighten filler plug to the specified torque. Refer to TM-33, "Exploded View".



REMOVAL AND INSTALLATION

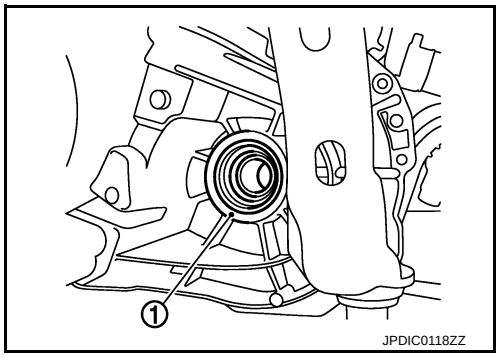
SIDE OIL SEAL

Removal and Installation

INFOID:0000000006415681

REMOVAL

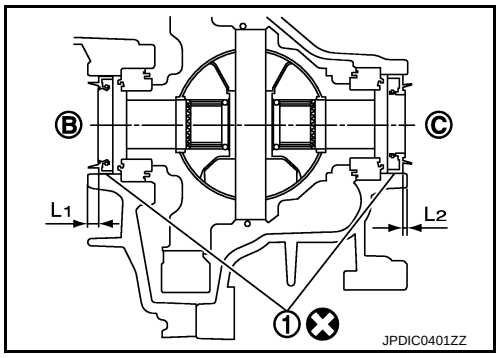
1. Remove front drive shafts. Refer to FAX-53, "Removal and Installation".
2. Remove differential side oil seals (1) from clutch housing and transaxle case, using an oil seal remover.
   CAUTION:
   Never damage transaxle case and clutch housing.



INSTALLATION

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

- Install differential side oil seals (1) to clutch housing and transaxle case, using the drift [Stamping number: B.vi 1666-B] of the drift set [SST: KV32500QAA].



B : Transaxle case side
C : Clutch housing side

Dimension “L1” : 5.7 – 6.3 mm (0.224 – 0.248 in)
Dimension “L2” : 2.4 – 3.0 mm (0.094 – 0.118 in)

CAUTION:
- **Never incline differential side oil seal.**
- **Never damage clutch housing and transaxle case.**

Inspection

INFOID:0000000006415682

INSPECTION AFTER INSTALLATION

Check the oil level and oil leakage. Refer to TM-22, "Inspection".

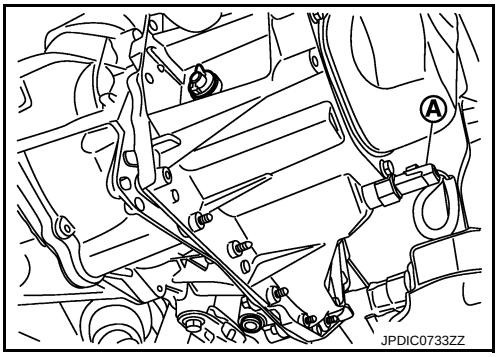
POSITION SWITCH

Removal and Installation

INFOID:0000000006415683

REMOVAL

1. Drain gear oil. Refer to TM-22, "Draining".
2. Disconnect position switch connector (A).
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.**

   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-33, "Exploded View".
4. Refill gear oil. Refer to TM-22, "Refilling".

Inspection

INFOID:0000000006415684

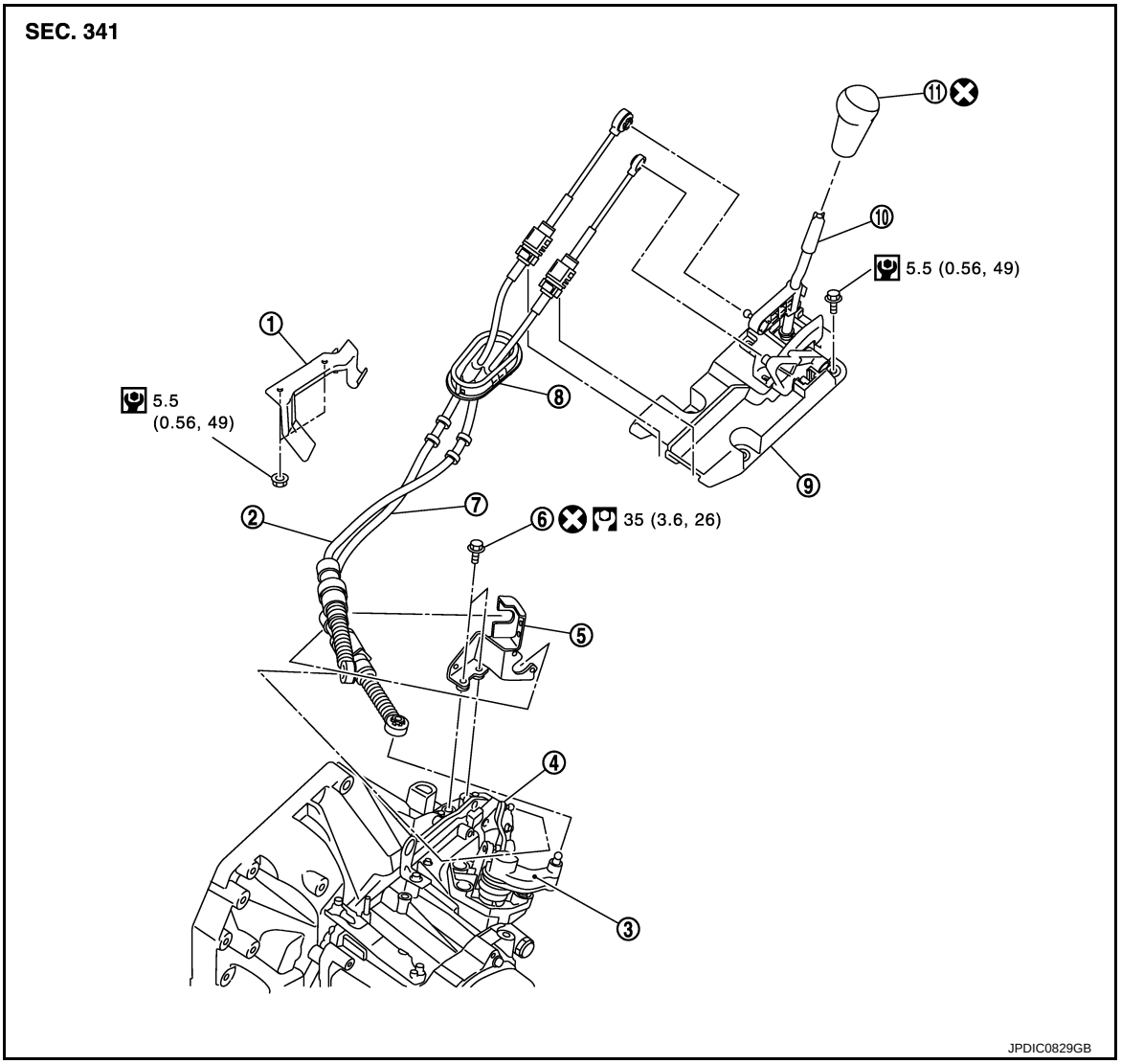
INSPECTION AFTER INSTALLATION

- Check continuity between position switch terminals. Refer to TM-20, "BACK-UP LAMP SWITCH : Component Inspection" (Back-up lamp switch) and TM-20, "PARK/NEUTRAL POSITION (PNP) SWITCH : Component Inspection" (PNP switch).
- Check the oil leakage and the oil level. Refer to TM-22, "Inspection".

CONTROL LINKAGE

Exploded View

INFOID:0000000006417070



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

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

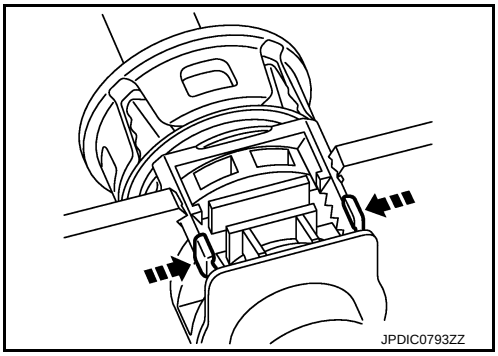
Removal and Installation

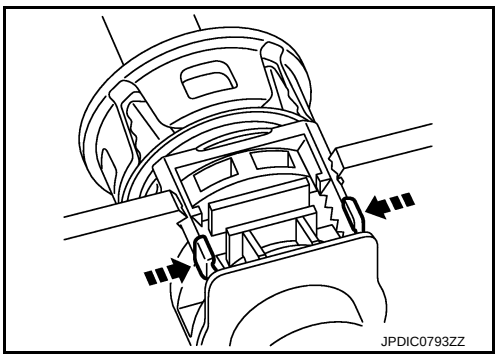
INFOID:0000000006417071

REMOVAL

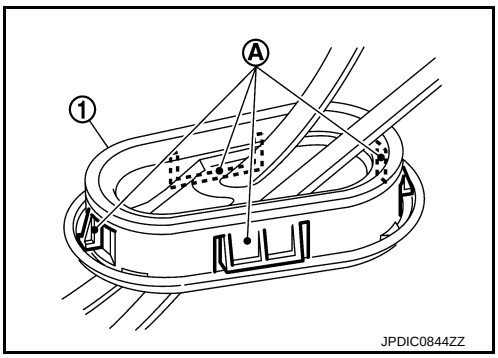
1. Shift the shifter lever to the neutral position.
2. Remove air cleaner case. Refer to EM-161, "Removal and Installation".
3. Pull out and disconnect the each cable from the shifter lever A and the selector lever, using a suitable remover.

4. While pressing the lock of the selector cable in the direction of the arrow shown in the figure, remove the selector cable from the cable mounting bracket.
5. While pressing the lock of the shifter cable in the direction of the arrow shown in the figure, remove the shifter cable from the cable mounting bracket.
6. Remove cable mounting bracket from clutch housing.
7. Pull the shifter lever knob upward to remove.
8. Remove center console assembly. Refer to IP-23, "Removal and Installation".
9. Pull out and disconnect the each cable from the pin of the M/T shift selector assembly, using a suitable remover.
10. While pressing the lock of the selector cable in the direction of the arrow shown in the figure, remove the selector cable from the M/T shift selector assembly.
11. While pressing the lock of the shifter cable in the direction of the arrow shown in the figure, remove the shifter cable from the M/T shift selector assembly.
12. Remove the M/T shift selector assembly.
13. Remove exhaust front tube and heat plate. Refer to EX-12, "Removal and Installation".
14. Remove the bracket from the vehicle.


JPDIC0793ZZ


JPDIC0793ZZ

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



JPDIC0844ZZ

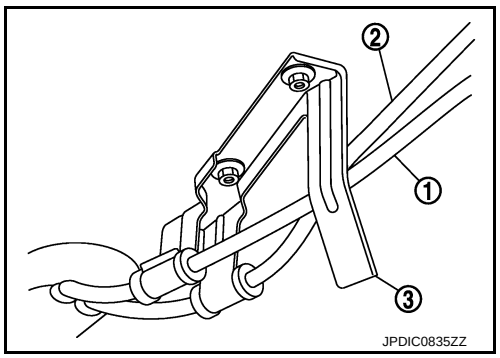
INSTALLATION

Note the following, and install 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 shifter lever knob.**
- To install the shifter lever knob, press it into the shifter lever.
  CAUTION:
  - **Never reuse shifter lever knob.**
  - **Be careful with orientation of shifter lever knob.**
- Tapping work for tapping bolts is not applied to new clutch housing. Do not perform tapping by other than screwing tapping bolts because tapping is formed by screwing tapping bolts into clutch housing.
  CAUTION:
  Never reuse tapping bolt.
- Insert the each cable until it reaches the cable mounting bracket and M/T shift selector assembly.
- Insert the each cable until it reaches the shifter lever A and the selector lever.
- Shift the shifter lever to the neutral position.

- Install the shifter cable (1) and the selector cable (2) to the bracket (3) as shown in the figure.



Inspection

INFOID:0000000006417072

INSPECTION AFTER INSTALLATION

Shifter Lever Knob

Check that the shifter lever 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 M/T shift selector assembly.
- Pull grommet in the removal direction to check that it dose not disconnect from the vehicle.

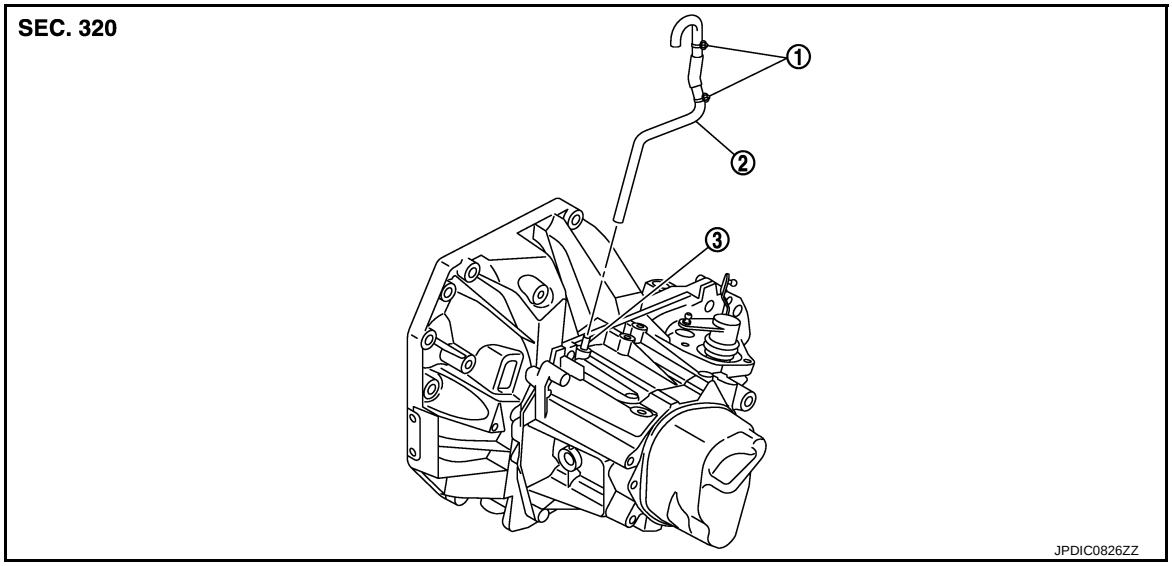
M/T Shift Selector Assembly and Shifter Lever

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

AIR BREATHER HOSE

Exploded View

INFOID:0000000006415688



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

Removal and Installation

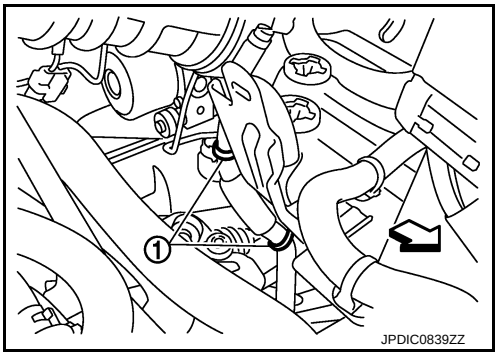
INFOID:0000000006415689

REMOVAL

1. Remove clips (1).

   ⇦ : Vehicle front

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



INSTALLATION

Note the following, and install 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 mounting hole.**

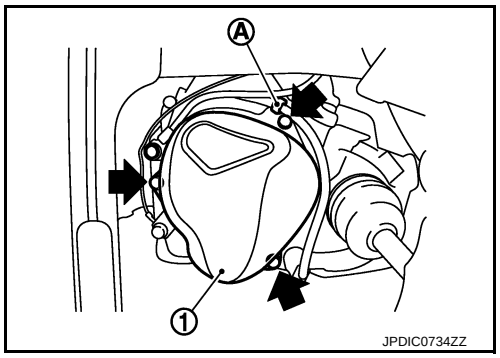
5TH MAIN GEAR ASSEMBLY

Removal and Installation

INFOID:0000000006415692

REMOVAL

1. Shift the shifter lever to the 3rd gear position.
2. Disconnect the shifter cable and the selector cable from shifter lever A and selector lever. Refer to TM-25, "Removal and Installation".
   CAUTION:
   Never move shifter lever A and the selector lever to disconnect each cable.
3. Drain gear oil. Refer to TM-22, "Draining".
4. Remove fender protector LH. Refer to EXT-22, "Removal and Installation".
5. Remove the harness clamp (A) from rear housing (1).
6. Remove rear housing and O-ring.
   CAUTION:
   Remove in the input shaft axial direction because the oil channel of the rear housing is inserted in the center hole of the input shaft.
7. Remove 5th main gear assembly, referring to Step 5 to 8 of “Disassembly of TRANSAXLE ASSEMBLY” Refer to TM-37, "Disassembly".



INSTALLATION

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

- Shift into 3rd with shifter lever to install the 5th main gear assembly, referring to Step 38 to 41 of “Assembly of TRANSAXLE ASSEMBLY.” Refer to TM-43, "Assembly".
- Install O-ring and the rear housing to the transaxle case and tighten the mounting bolts to the specified torque. Refer to TM-33, "Exploded View".
  CAUTION:
  Never pinch O-ring when installing rear housing.
- Refill gear oil. Refer to TM-22, "Refilling".

Inspection

INFOID:0000000006415693

INSPECTION AFTER INSTALLATION

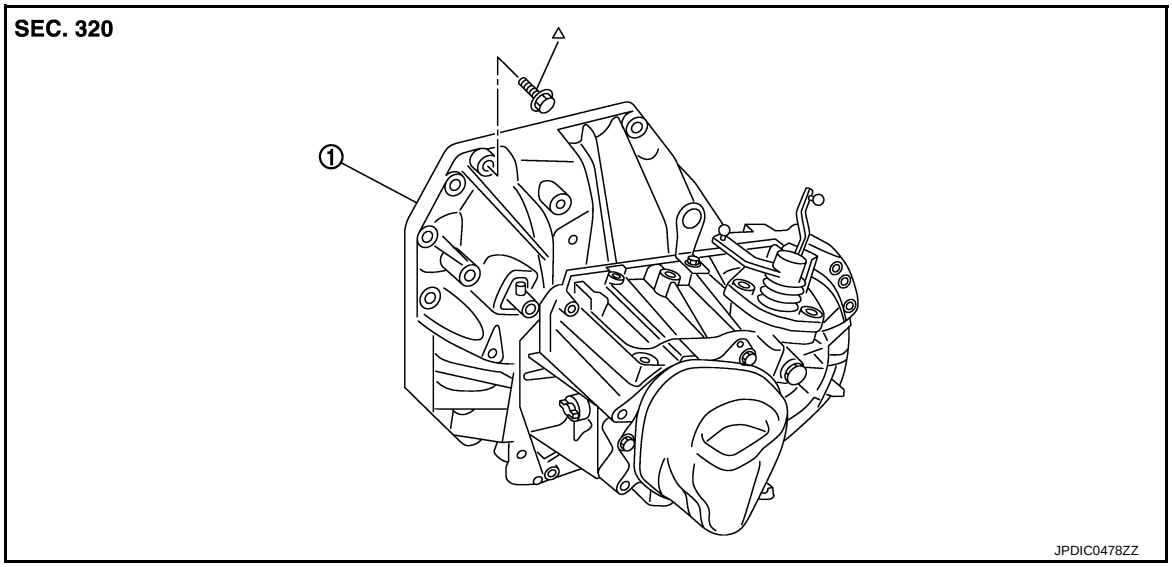
- Check the operation of the control linkage. Refer to TM-27, "Inspection".
- Check the oil leakage and the oil level. Refer to TM-22, "Inspection".

UNIT REMOVAL AND INSTALLATION

TRANSAXLE ASSEMBLY

Exploded View

INFOID:0000000006415694



1. Transaxle assembly

△ : Refer to "INSTALLATION" in TM-30, "Removal and Installation" for the locations and tightening torque.

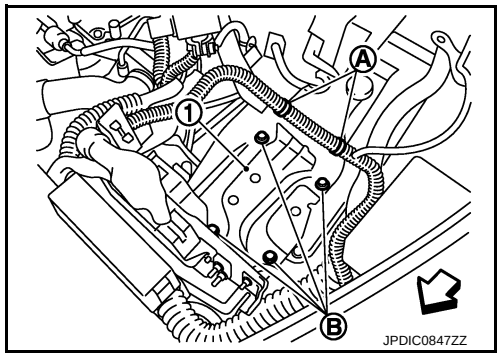
Removal and Installation

INFOID:0000000006415695

CAUTION:
Never 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-27, "Removal and Installation".

REMOVAL

1. Disconnect battery cable from negative terminal. Refer to PG-124, "Removal and Installation".
2. Shift the shifter lever to the neutral position.
3. Remove battery. Refer to PG-124, "Removal and Installation".
4. Remove air cleaner case. Refer to EM-161, "Removal and Installation".
5. Remove bracket (1), as per the following procedure.

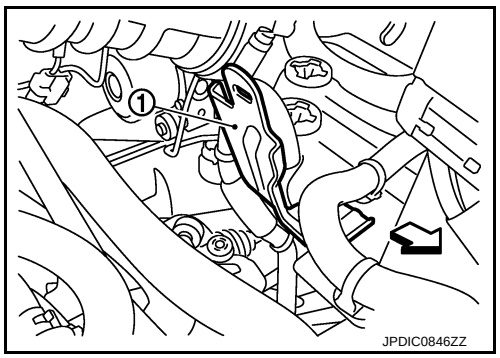


⇦ : Vehicle front

a. Disconnect clips (A) from bracket.
b. Remove bolts (B) from bracket.
c. Remove bracket.

6. Remove air breather hose. Refer to TM-28, "Removal and Installation".

7. Remove bracket (1).



⇦ : Vehicle front

8. Disconnect selector cable and shifter cable from transaxle assembly. Refer to TM-25, "Removal and Installation".
9. Remove crankshaft position sensor. Refer to EM-228, "Disassembly and Assembly".
10. Remove clutch tube from CSC (Concentric Slave Cylinder) and then temporarily secure it to a position where it will not inhibit work. Refer to CL-25, "Removal and Installation".

CAUTION:
- **Keep painted surface on the body or other parts free of clutch fluid. If it spills, wipe up immediately and wash the affected area with water.**
- **Never depress clutch pedal during removal procedure.**

11. Remove fender protector LH. Refer to EXT-22, "Removal and Installation".
12. Disconnect ground cable.
13. Disconnect position switch connector. Refer to TM-24, "Removal and Installation".
14. Remove the harness clamp from rear housing.
15. Remove the engine harness clamp and then temporarily secure it to a position where it will not inhibit work.
16. Remove starter motor. Refer to STR-22, "HR16DE : Removal and Installation".
17. Remove front drive shafts. Refer to FAX-53, "Removal and Installation".

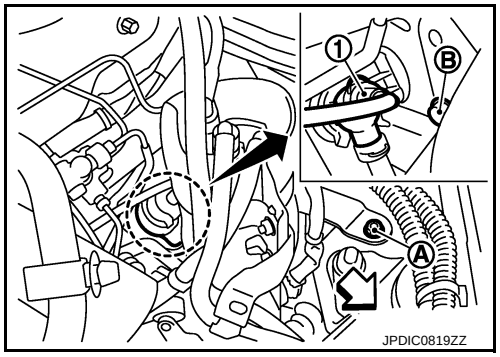
NOTE:
Insert a suitable plug into differential side oil seal after removing front drive shaft.

18. Set a suitable jack to transaxle assembly and then set a suitable jack to engine assembly.

CAUTION:
When setting a suitable jack, be careful so that it does not contact with the switch.

19. Remove engine mounting frame support (LH) (TBD) mounting bolts, as per the following procedure.

a. Remove bolt (A).



⇦ : Vehicle front

b. Release clutch damper (1) from bracket. Refer to CL-25, "Removal and Installation".
c. Remove bolt (B).
d. Remove engine mounting frame support (LH) mounting bolts from vehicle. Refer to EM-215, "Removal and Installation".

20. Remove rear engine mounting bracket and rear torque rod. Refer to EM-215, "Removal and Installation".
21. Remove transaxle assembly mounting bolts.
22. Remove transaxle assembly from the engine.

CAUTION:
- **Fix transaxle assembly to a suitable jack.**
- **The transaxle assembly must not interfere with the wire harnesses and clutch tube.**

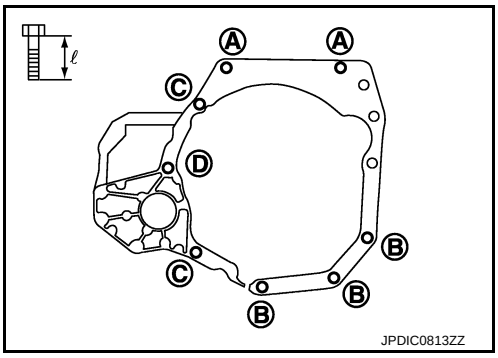
23. Remove engine mounting bracket (LH) (TBD) and engine mounting frame support (LH) (TBD) from transaxle assembly. Refer to EM-215, "Removal and Installation".
24. Remove CSC. Refer to CL-27, "Removal and Installation".

INSTALLATION

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

CAUTION:
- **Fix transaxle assembly to a suitable jack.**
- **The transaxle assembly must not interfere with the wire harnesses and clutch tube.**
- **When installing transaxle assembly, never bring input shaft into contact with clutch cover.**

- **Tapping work for tapping bolts is not applied to new clutch housing. Do not perform tapping by other than screwing tapping bolts because tapping is formed by screwing tapping bolts into clutch housing.**
- Tighten transaxle assembly mounting bolts to the specified torque. The figure is the view from the engine.



JPDIC0813ZZ

Bolt symbol	A	B	C	D
Insertion direction	Transaxle to engine	Engine to transaxle		
Quantity	2	3	2	1
Bolt length “ℓ” mm (in)	55 (2.17)		49 (1.93)	69 (2.72)
Tightening torque N·m (kg-m, ft-lb)	48.0 (4.9, 35)			

Inspection

INFOID:0000000006415696

INSPECTION AFTER INSTALLATION

- Check the operation of the control linkage. Refer to TM-27, "Inspection".
- Check the oil leakage and the oil level. Refer to TM-22, "Inspection".

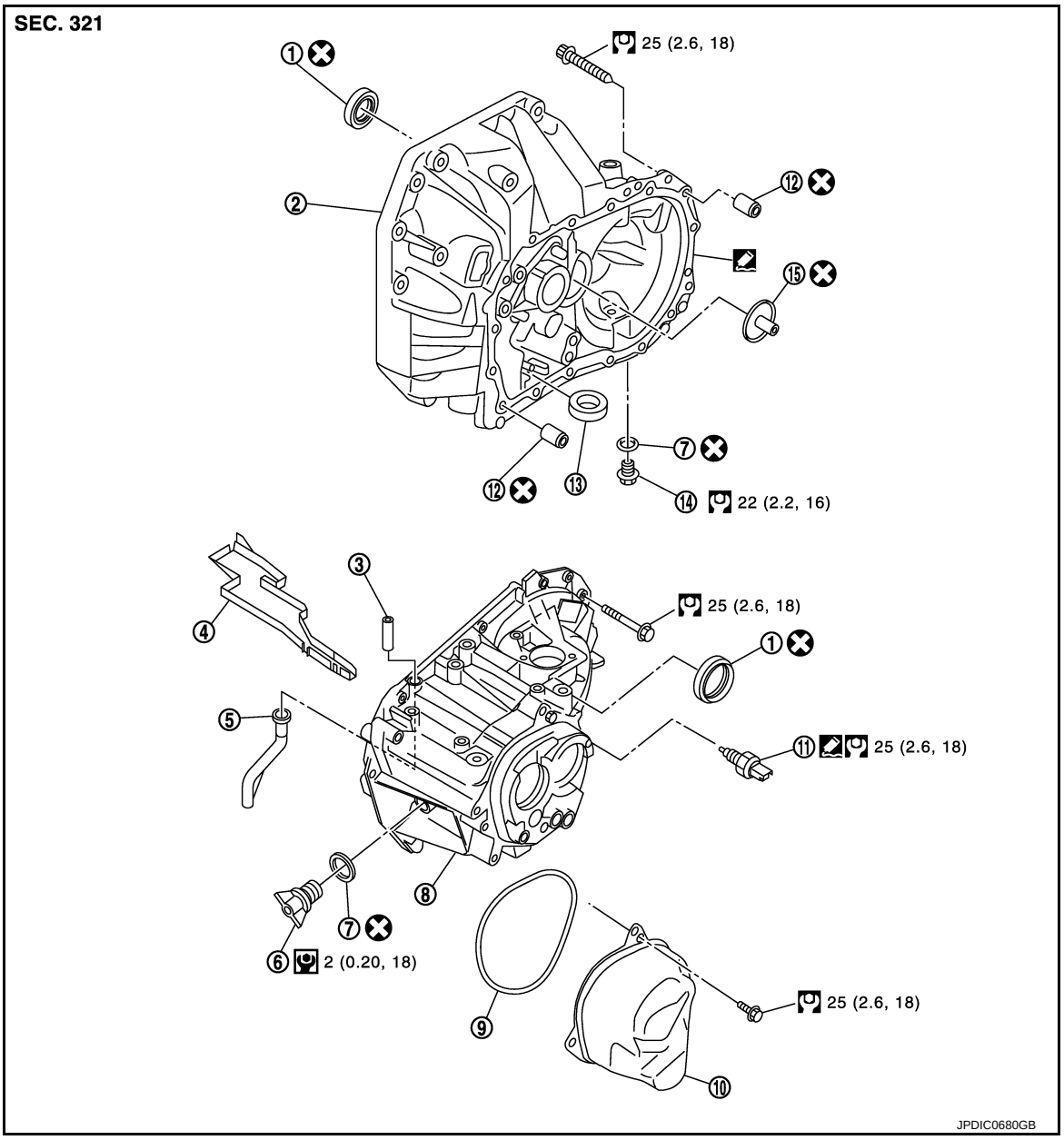
UNIT DISASSEMBLY AND ASSEMBLY

TRANSAXLE ASSEMBLY

Exploded View

INFOID:0000000006415700

CASE AND HOUSING



1. Differential side oil seal
2. Clutch housing
3. 2 way connector
4. Oil gutter
5. Air breather inner tube
6. Filler plug
7. Gasket
8. Transaxle case
9. O-ring
10. Rear housing
11. Position switch
12. Dowel pin
13. Magnet
14. Drain plug
15. Oil channel

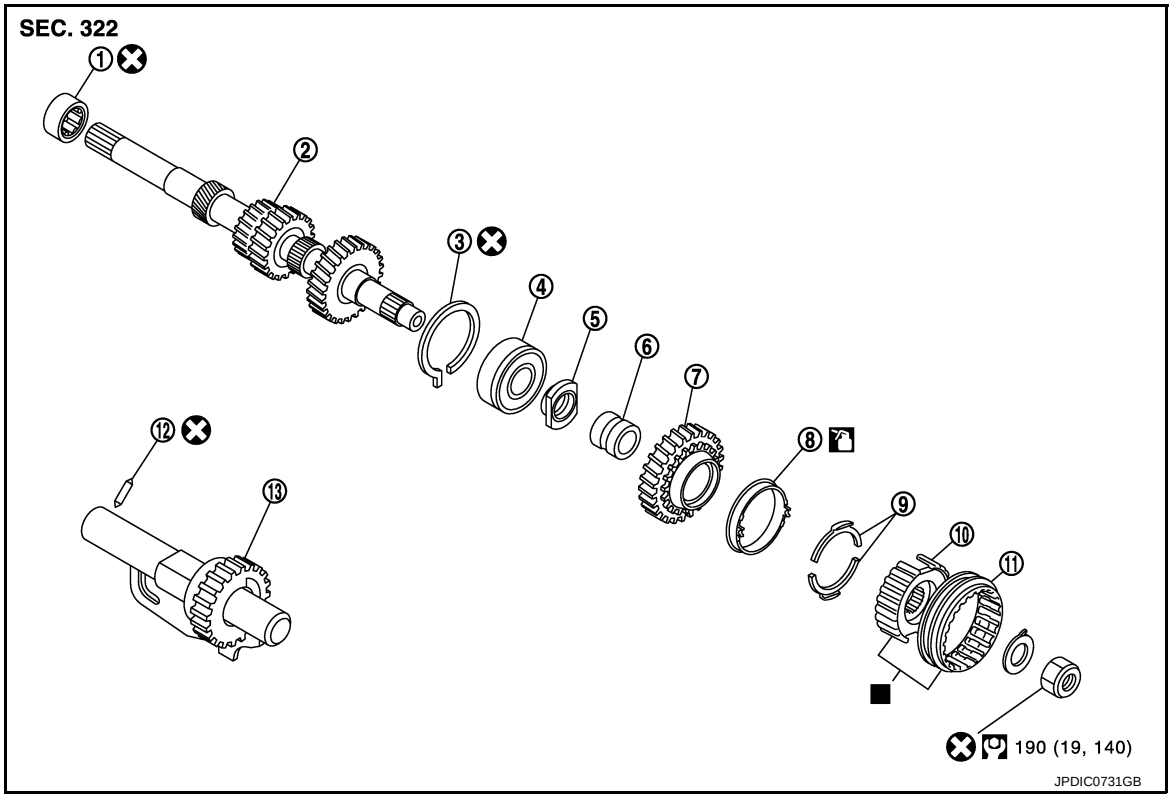
: Apply Genuine Liquid Gasket, Three Bond 1215 or an equivalent.

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

SHAFT AND GEAR



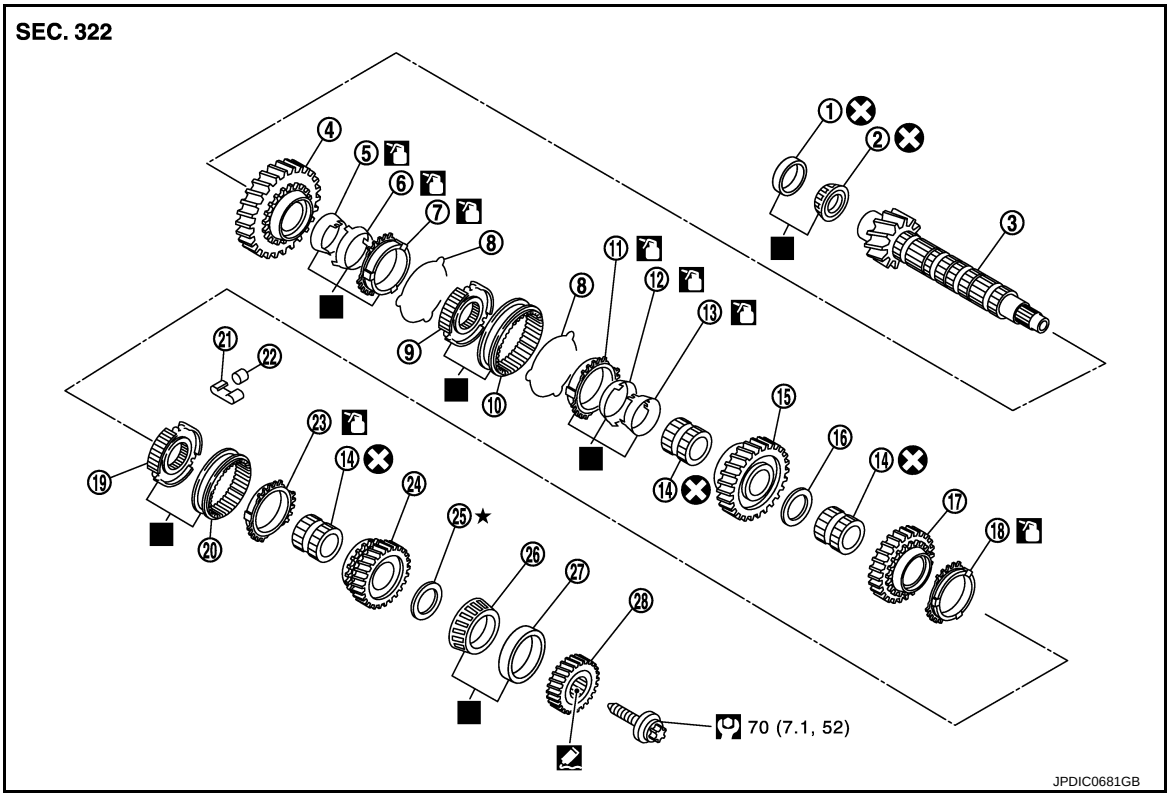
1. Input shaft front bearing
2. Input shaft
3. Snap ring
4. Input shaft rear bearing
5. Adapter plate
6. Bushing
7. 5th input gear
8. 5th-reverse baulk ring
9. Synchronizer lever
10. 5th-reverse synchronizer hub
11. 5th-reverse coupling sleeve
12. Retaining pin
13. Reverse gear

: Apply gear oil.

■ : Replace the parts as a set.

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)



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. Spread spring	9. 1st-2nd synchronizer hub
10. 1st-2nd coupling sleeve	11. 2nd outer baulk ring	12. 2nd synchronizer cone
13. 2nd inner baulk ring	14. Mainshaft bushing	15. 2nd main gear
16. Thrust washer	17. 3rd main gear	18. 3rd baulk ring
19. 3rd-4th synchronizer hub	20. 3rd-4th coupling sleeve	21. Spring
22. Insert key	23. 4th baulk ring	24. 4th main gear
25. Adjusting shim	26. Mainshaft rear bearing inner race	27. Mainshaft rear bearing outer race
28. 5th main gear		

: Apply gear oil.

: Apply Thread Locking Sealant, Loctite Frenbloc or an equivalent.

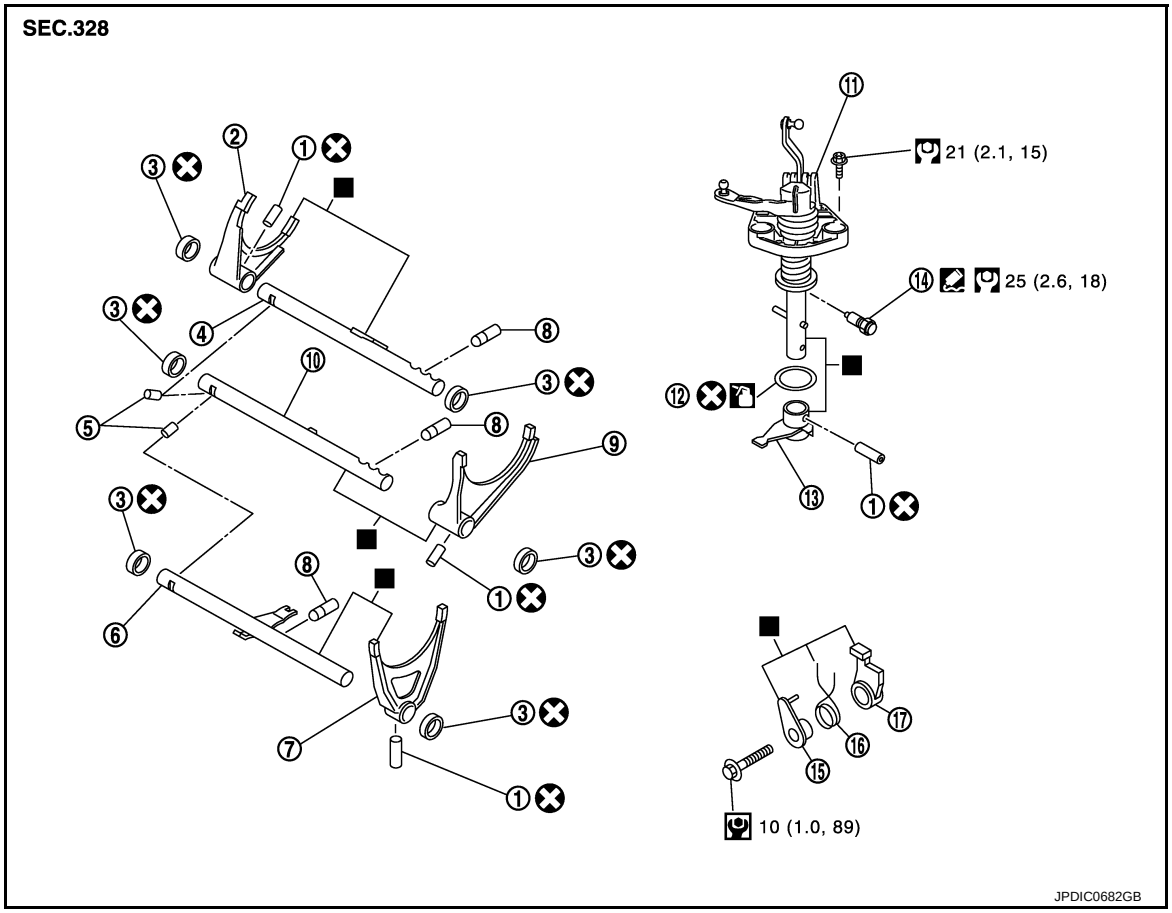
: Replace the parts as a set.

: Always replace after every disassembly.

★ : Select with proper thickness.

: N·m (kg-m, ft-lb)

SHIFT FORK AND FORK ROD



1. Retaining pin
2. 1st-2nd shift fork
3. Bushing
4. 1st-2nd fork rod
5. Lock pin
6. 5th-reverse fork rod
7. 5th-reverse shift fork
8. Check ball
9. 3rd-4th shift fork
10. 3rd-4th fork rod
11. Control shaft
12. O-ring
13. Selector
14. Check ball plug
15. Bushing
16. Spring
17. Gear catch

: Apply gear oil.

: Apply Genuine Liquid Gasket, Three Bond 1215 or an equivalent.

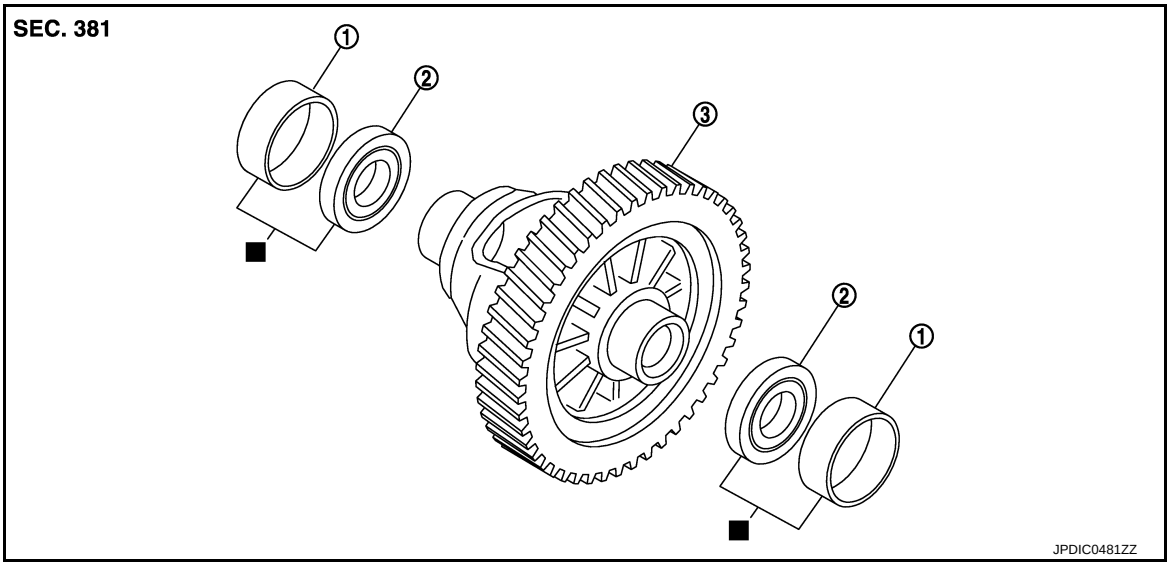
: Replace the parts as a set.

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

FINAL DRIVE



1. Differential side bearing outer race 2. Differential side bearing 3. Final drive

■ : Replace the parts as a set.

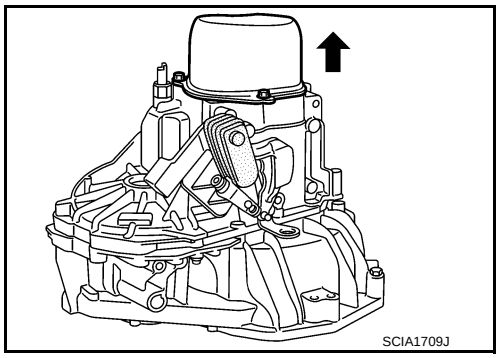
Disassembly

INFOID:0000000006415701

1. Remove drain plug and gasket from clutch housing, using a socket [Commercial service tool] and drain gear oil.
2. Remove filler plug and gasket from transaxle case.
3. Remove rear housing and O-ring.

CAUTION:

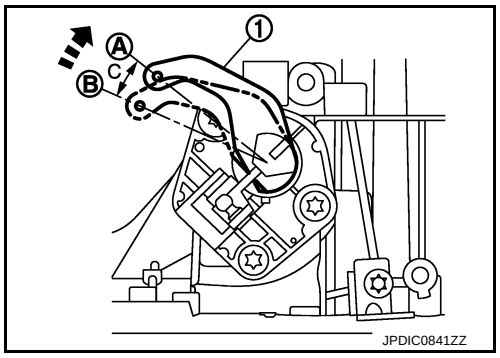
Remove to axial direction of input shaft (⬅) because rear housing oil channel is inserted to input shaft center hole.



4. Shift the shifter lever A (1) to the 3rd gear position (A).

B : Neutral position
C : Approx. 15 degrees

NOTE:
- If it is not shifted to the 3rd gear position, transaxle case cannot be removed from clutch housing.
- Shifter lever A is set in the 3rd gear position by turning in the direction indicated by arrow.



5. Remove 5th-reverse shift fork (1) and 5th-reverse coupling sleeve, as per the following procedure.

a. Remove retaining pin from 5th-reverse shift fork, using a pin punch (A).

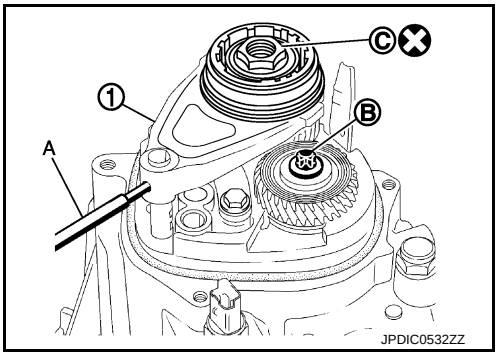
b. Press 5th-reverse shift fork, shift to 5th, and then engage it with 3rd gear.

c. Remove mounting bolt (B).

d. Remove mounting nut (C) and washer.

CAUTION:

Never use an impact wrench for removal, or otherwise each gear may be damaged.



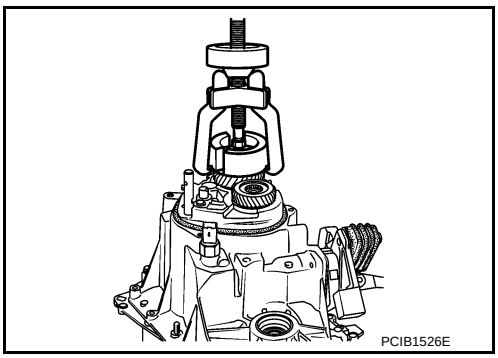
e. Remove 5th-reverse shift fork and 5th-reverse coupling sleeve from 5th-reverse synchronizer hub.

6. Remove 5th-reverse synchronizer hub from input shaft, using a puller [Commercial service tool].

CAUTION:

Set claw of the puller to the wider side of the hub when setting the puller in 5th-reverse synchronizer hub.

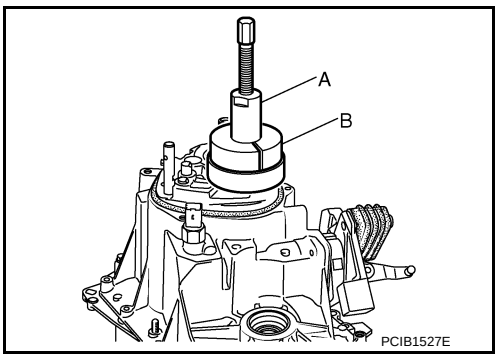
7. Remove synchronizer levers, 5th-reverse baulk ring, 5th input gear, bushing, and adapter plate from input shaft.



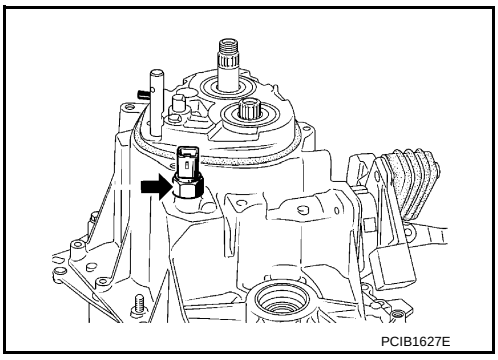
8. Remove 5th main gear from mainshaft, using the pullers.

A : Puller [SST: KV32300QAC]

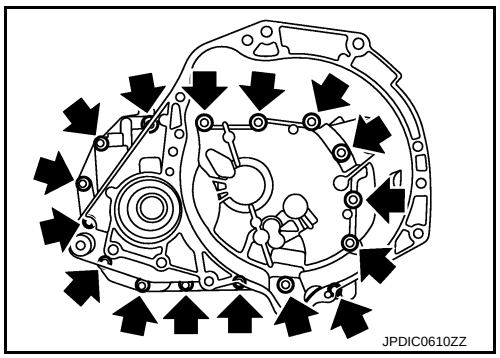
B : Puller [SST: KV32300QAD]



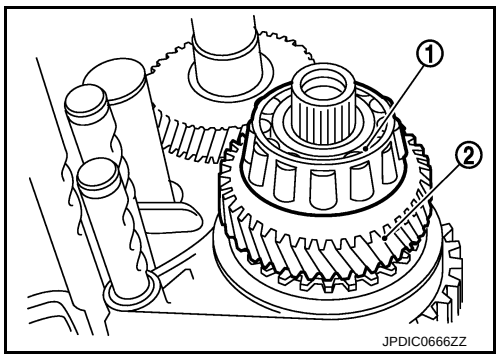
9. Remove position switch from transaxle case.



10. Remove transaxle case mounting bolts (⬅).
11. Remove transaxle case from clutch housing.

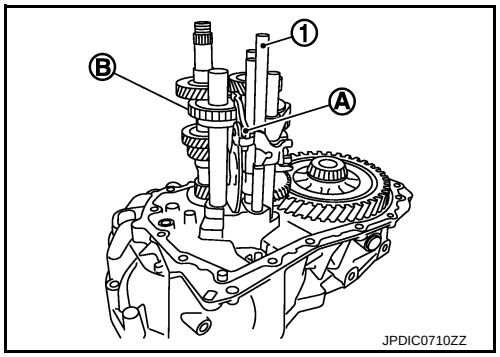


12. Remove mainshaft rear bearing inner race (1), adjusting shim, and 4th main gear (2) from mainshaft.



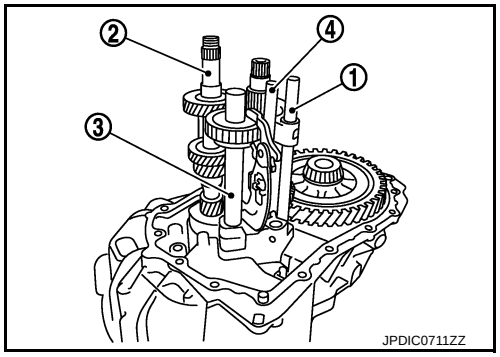
13. Remove 5th-reverse fork rod (1), as per the following procedure.

a. Pull 5th-reverse fork rod up until it contacts claw (A) of reverse gear.
b. Press gear portion (B) of reverse gear down, and then remove 5th-reverse fork rod from clutch housing.

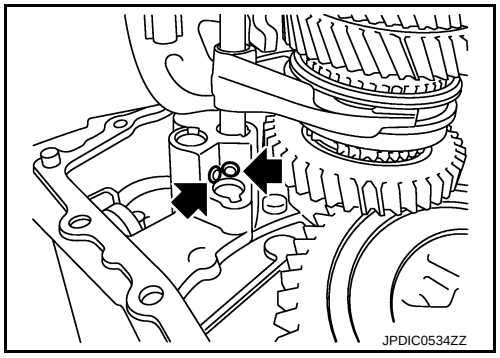


14. Remove 3rd-4th fork rod assembly (1), 3rd-4th coupling sleeve, and input shaft (2), as per the following procedure.

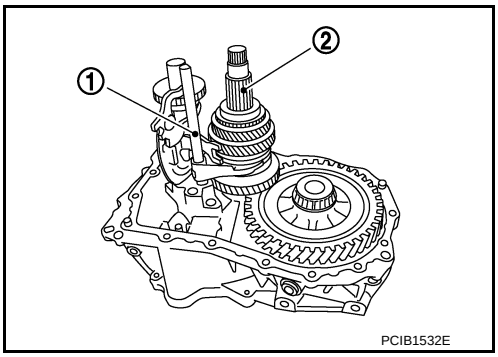
a. Remove 4th baulk ring, insert keys, and springs from mainshaft.
b. Pull gear of reverse gear (3) up.
c. Pull 1st-2nd fork rod (4) up, and then maintain the neutral position.
d. Remove 3rd-4th fork rod assembly, 3rd-4th coupling sleeve, and input shaft from clutch housing at the same time.
15. Remove retaining pin from 3rd-4th shift fork, using a pin punch.
16. Remove 3rd-4th shift fork from 3rd-4th shift fork rod.



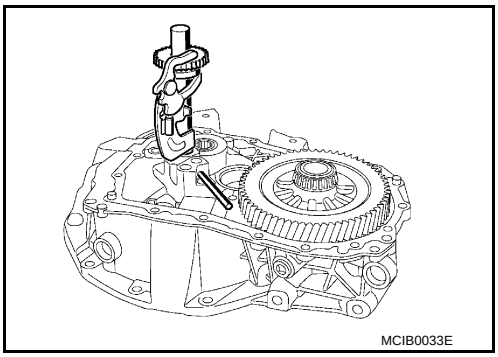
17. Remove lock pins (⬅) from clutch housing.



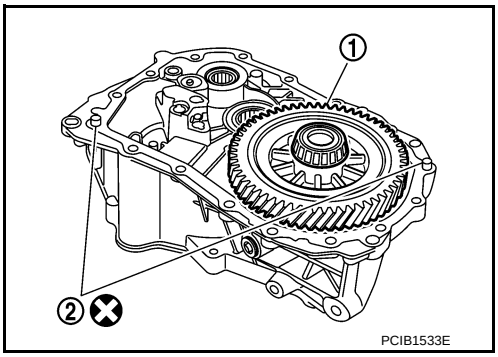
18. Remove 1st-2nd fork rod assembly (1) and mainshaft assembly (2) from clutch housing at the same time.
19. Remove retaining pin from 1st-2nd shift fork, using a pin punch.
20. Remove 1st-2nd shift fork from 1st-2nd shift fork rod.



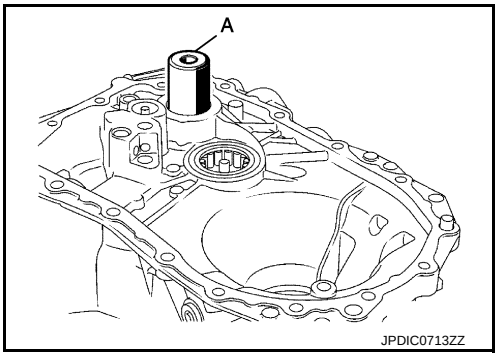
21. Remove retaining pin from reverse gear, using a pin punch.
22. Remove reverse gear from clutch housing.



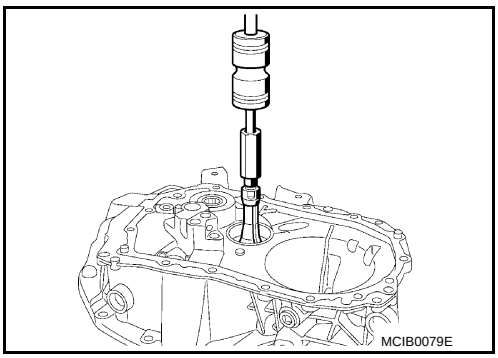
23. Remove final drive (1) from clutch housing.
24. Remove magnet and dowel pins (2) from clutch housing.



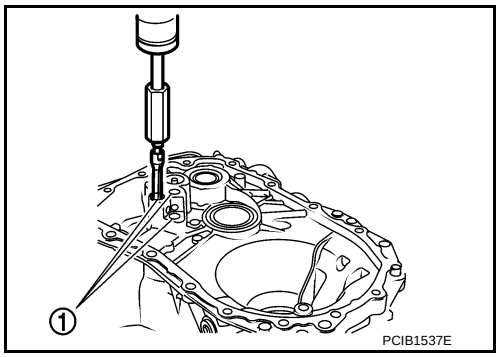
25. Remove input shaft front bearing from clutch housing, using a drift (A) [Commercial service tool].
26. Cut oil channel tube at the root.



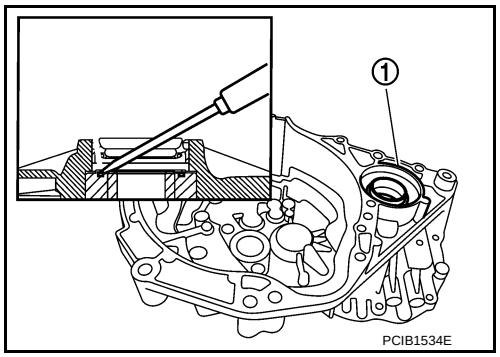
27. Remove mainshaft front bearing outer race from clutch housing, using a remover [Commercial service tool].
28. Remove oil channel from clutch housing.



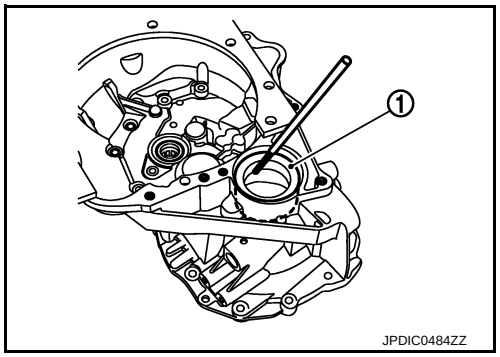
29. Remove bushings (1) from clutch housing, using a remover [Commercial service tool].



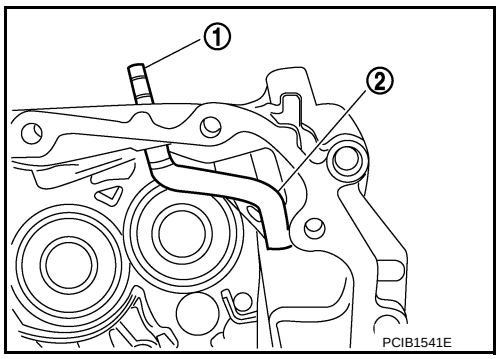
30. Remove differential side oil seals (1) from clutch housing and transaxle case, using an oil seal remover.
CAUTION:
Never damage transaxle case and clutch housing.



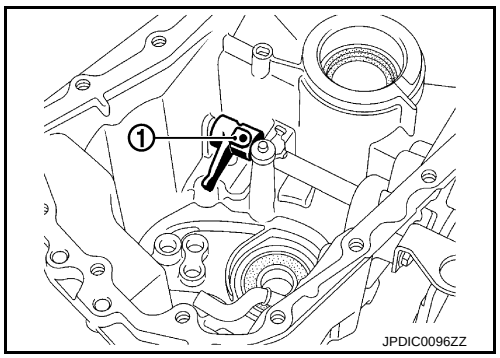
31. Remove differential side bearing outer races (1) from clutch housing and transaxle case, using a brass rod.
CAUTION:
Never damage transaxle case and clutch housing.



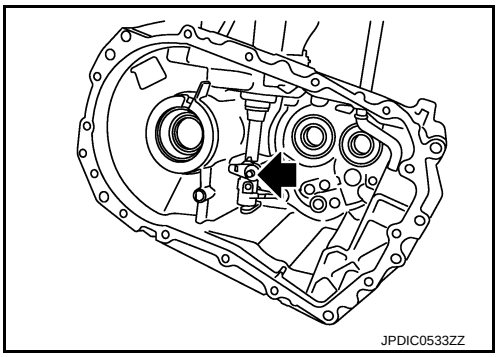
32. Pull 2 way connector (1) straight to remove it from air breather inner tube (2).
33. Remove air breather inner tube from transaxle case.
34. Remove oil gutter from transaxle case.



35. Remove retaining pin (1) from selector, using a pin punch.



36. Remove mounting bolt (⬅), and then remove bushing, spring, and gear catch from transaxle case.
37. Remove check ball plug from transaxle case.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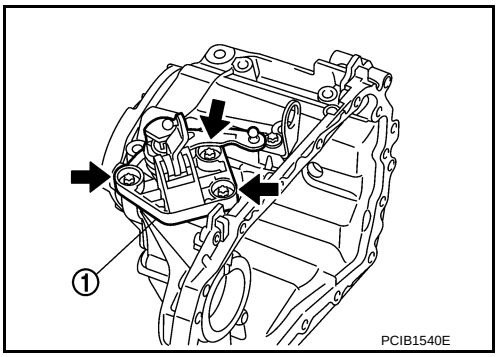
38. Remove mounting bolts (⬅), and then remove control shaft (1) and selector from transaxle case.
39. Remove O-ring from control shaft.



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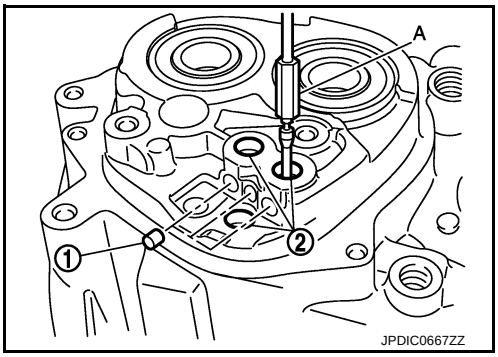
40. Remove check balls (1) from transaxle case.
41. Remove bushings (2) from transaxle case, using a remover (A) [Commercial service tool].



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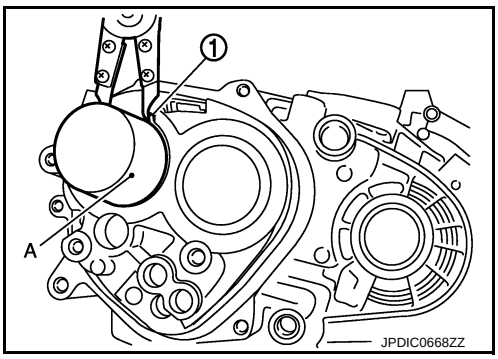
42. Expand snap ring (1) and remove input shaft rear bearing from transaxle case, using a drift (A) [Commercial service tool].
43. Remove snap ring from transaxle case.



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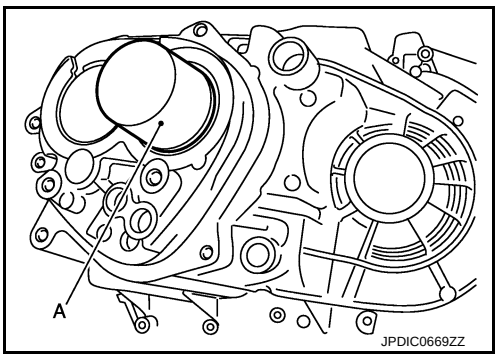
44. Remove mainshaft rear bearing outer race from transaxle case, using a drift (A) [Commercial service tool].



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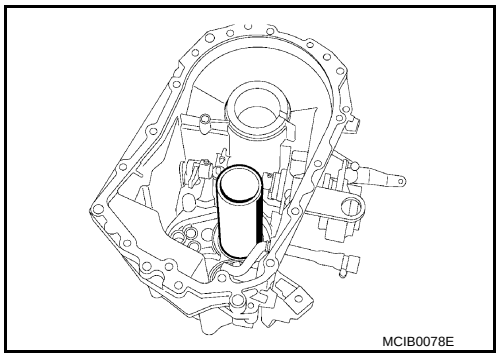
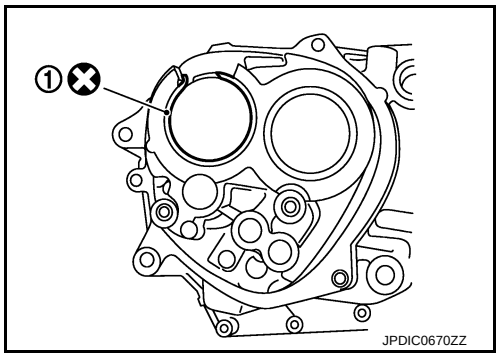
Assembly

INFOID:0000000006415702

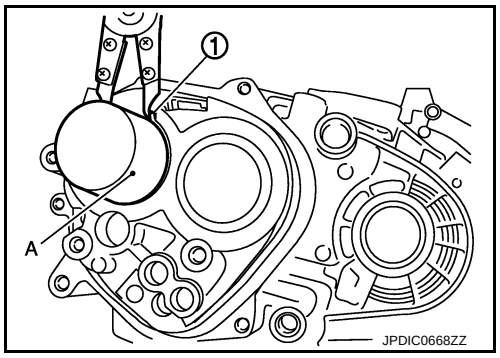
1. Install mainshaft rear bearing outer race to transaxle case, using a drift [Commercial service tool].
CAUTION:
Replace mainshaft rear bearing outer race and mainshaft rear bearing inner race as a set.



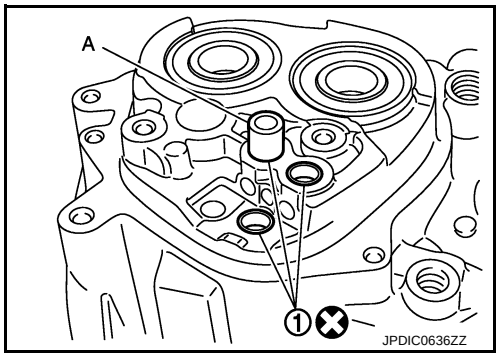
2. Install snap ring (1) along transaxle case groove so that notch mates with housing as shown in the figure.
CAUTION:
Check snap ring installing direction. Never misassemble.



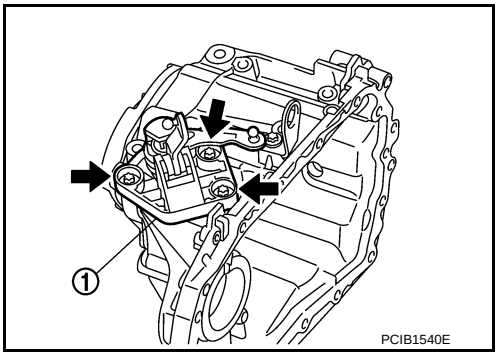
3. Expand snap ring (1) and install input shaft rear bearing to transaxle case, using a drift (A) [Commercial service tool].
CAUTION:
Check that snap ring is correctly installed within bearing groove.



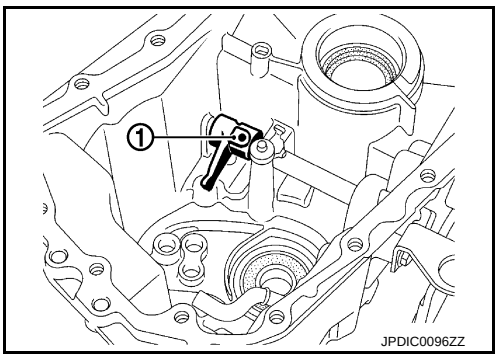
4. Install bushings (1) until they reach transaxle case, using a drift (A) [Commercial service tool].
5. Install check balls to transaxle case.
6. Apply gear oil to O-ring, and then install it to control shaft.
CAUTION:
Never reuse O-ring.



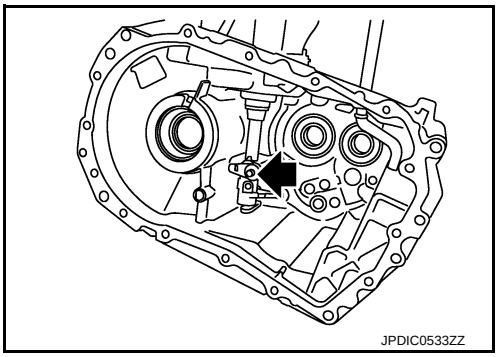
7. Install control shaft (1) and selector to transaxle case, and tighten mounting bolts (⬅) to the specified torque.
   CAUTION:
   - **Replace control shaft and selector as a set.**
   - **Be careful with the orientation of selector.**



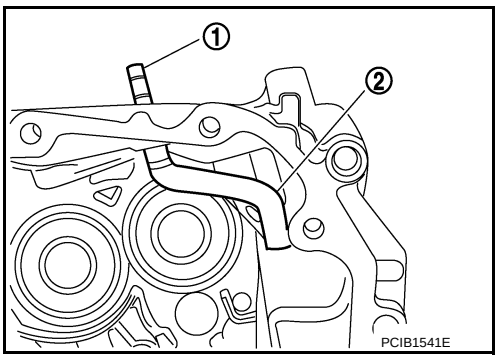
8. Install retaining pin (1) to selector, using a pin punch.
   CAUTION:
   Never reuse retaining pin.



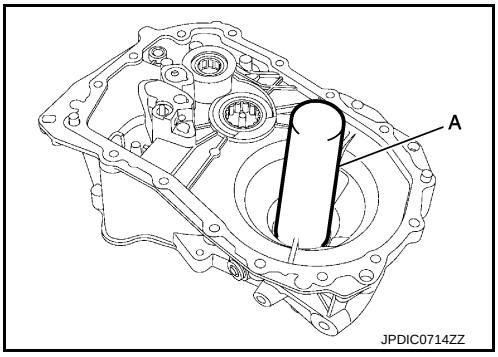
9. Install gear catch, spring, and bushing to transaxle case, and then tighten mounting bolt (⬅) to the specified torque.
   CAUTION:
   Replace gear catch, spring, and bushing as a set.
10. Install oil gutter to transaxle case.



11. Install air breather inner tube (2) to transaxle case.
    CAUTION:
    Never damage air breather inner tube.
    NOTE:
    It is easier to install when air breather inner tube end is wrapped and narrowed by tape. Remove tape after installation.
12. Insert 2 way connector (1) straight, and then install it to air breather inner tube.
    CAUTION:
    Check air breather inner tube for twists after installing.



13. Install differential side bearing outer races until they reach clutch housing and transaxle case, using a drift (A) [Commercial service tool].
    CAUTION:
    Replace differential side bearing outer race and differential side bearing as a set.

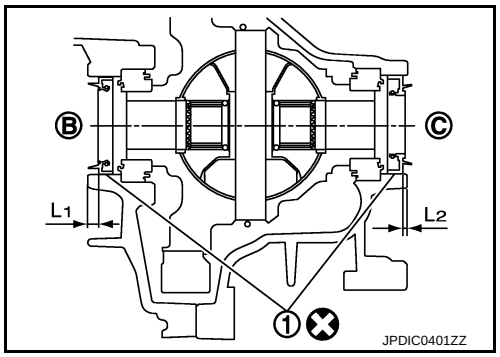


14. Install differential side oil seals (1) to clutch housing and transaxle case, using the drift [Stamping number: B.vi 1666-B] of the drift set [SST: KV32500QAA].

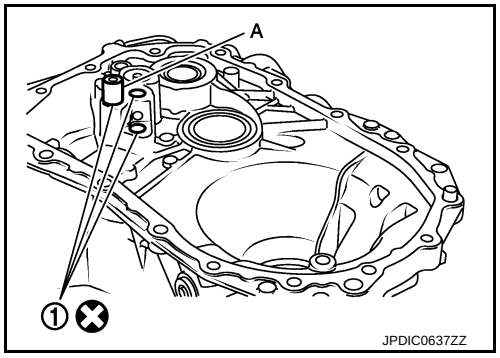
    B : Transaxle case side
    C : Clutch housing side

    Dimension "L_1" : 5.7 – 6.3 mm (0.224 – 0.248 in)
    Dimension "L_2" : 2.4 – 3.0 mm (0.094 – 0.118 in)

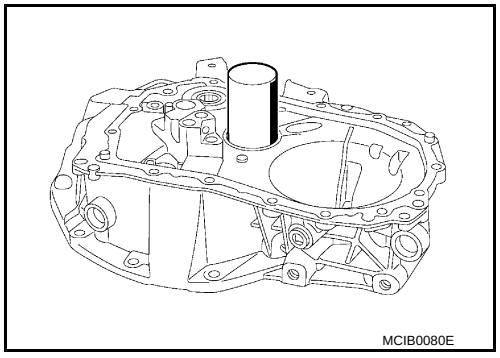
    CAUTION:
    - **Never incline differential side oil seal.**
    - **Never damage clutch housing and transaxle case.**



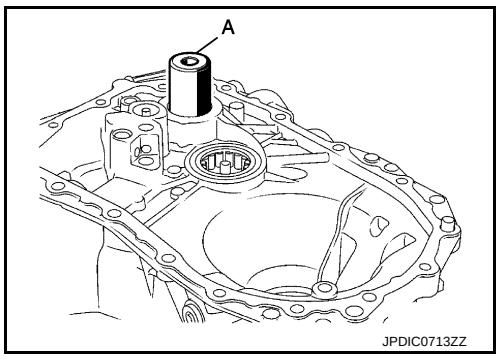
15. Install bushings (1) until they reach clutch housing, using a drift (A) [Commercial service tool].
16. Install oil channel to clutch housing.
    CAUTION:
    Never reuse oil channel.



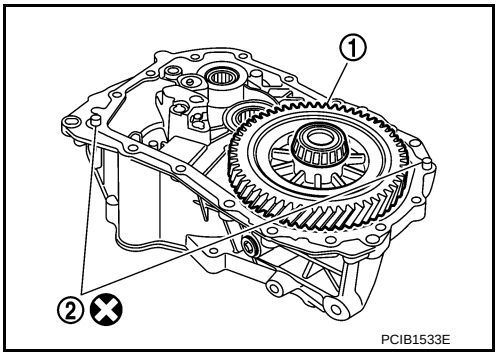
17. Install mainshaft front bearing outer race until they reach clutch housing, using a drift [Commercial service tool].
    CAUTION:
    - **Never reuse mainshaft front bearing outer race.**
    - **Replace mainshaft front bearing outer race and mainshaft front bearing inner race as a set.**



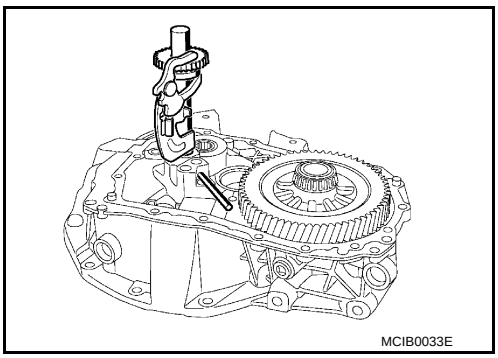
18. Install input shaft front bearing so that it becomes even to clutch housing surface, using a drift (A) [Commercial service tool].
    CAUTION:
    Never reuse input shaft front bearing.



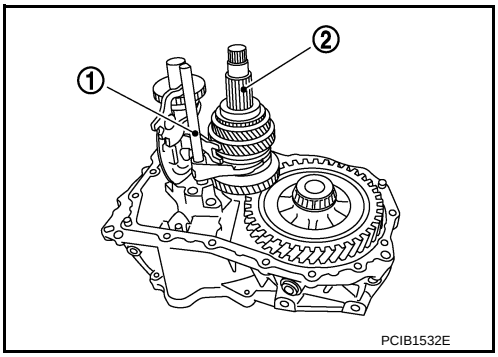
19. Install final drive (1) to clutch housing.
20. Install dowel pins (2) and magnet to clutch housing.



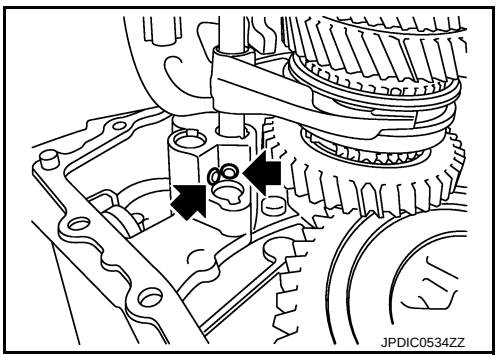
21. Install reverse gear to clutch housing, and then install retaining pin to clutch housing, using a pin punch.
    CAUTION:
    Never reuse retaining pin.
22. Install 1st-2nd shift fork to 1st-2nd fork rod, and then install retaining pin to 1st-2nd shift fork.
    CAUTION:
    - **Never reuse retaining pin.**
    - **Replace 1st-2nd fork rod and 1st-2nd shift fork as a set.**



23. Set 1st-2nd fork rod assembly (1) onto mainshaft assembly (2), and then install them to clutch housing.

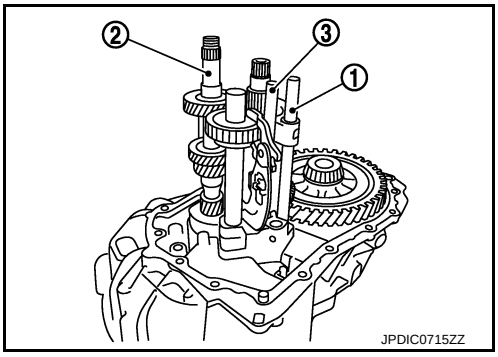


24. Install lock pins (⬅) to clutch housing.
25. Install 3rd-4th shift fork to 3rd-4th fork rod, and then install retaining pin to 3rd-4th shift fork.
    CAUTION:
    - **Never reuse retaining pin.**
    - **Replace 3rd-4th fork rod and 3rd-4th shift fork as a set.**



26. Install 3rd-4th fork rod assembly (1), 3rd-4th coupling sleeve, and input shaft (2) to clutch housing, as per the following procedure.

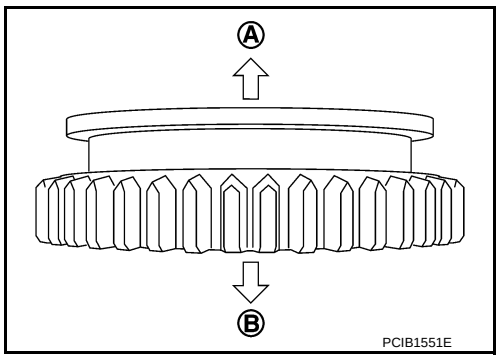
a. Pull 1st-2nd fork rod (3) up, and then maintain the neutral position.
b. Set 3rd-4th fork rod assembly onto 3rd-4th coupling sleeve, and then install them together with input shaft to clutch housing.
    CAUTION:
    - **Set lock pin (3rd-4th fork rod side) onto 1st-2nd fork rod groove and then install 3rd-4th fork rod assembly.**



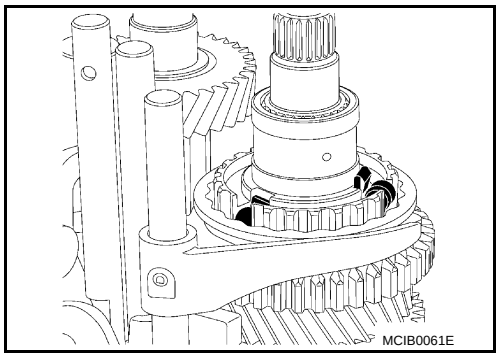
- **Be careful with the orientation of 3rd-4th coupling sleeve.**

  A : 4th main gear side
  B : 3rd main gear side

- **Install 3rd input gear of input shaft so that it is set under reverse main gear of 3rd-4th coupling sleeve.**
- **Replace 3rd-4th coupling sleeve and 3rd-4th synchronizer hub as a set.**

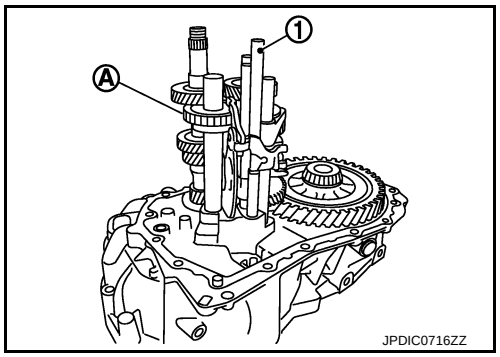


c. Install springs and insert keys to 3rd-4th synchronizer hub.
d. Apply gear oil to 4th baulk ring.
e. Install 4th baulk ring.



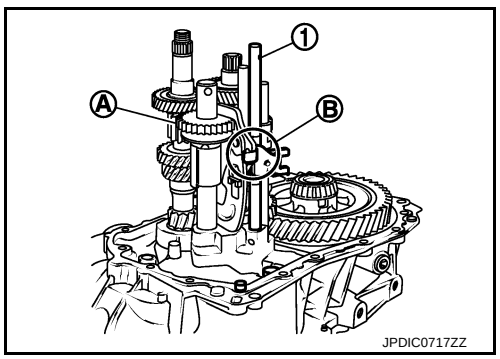
27. Install 5th-reverse fork rod (1) to clutch housing, as per the following procedure.
CAUTION:
Replace 5th-reverse fork rod and 5th-reverse shift fork as a set.

a. Pull gear (A) of reverse gear up.
b. Temporarily install 5th-reverse fork rod to clutch housing.



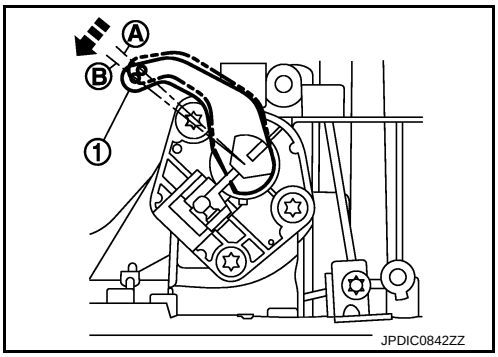
c. Press gear (A) of reverse gear down and then install 5th-reverse fork rod (1) to clutch housing.
CAUTION:
Set levers of 5th-reverse fork rod so as to align with reverse gear groove (B).

28. Install 4th main gear to mainshaft.



29. Install adjusting shim to mainshaft.
CAUTION:
After replacing the following parts, adjust mainshaft rear bearing preload to install a selected adjusting shim to the mainshaft.
- **Mainshaft**
- **Mainshaft front bearing inner race**
- **Mainshaft front bearing outer race**
- **Mainshaft rear bearing inner race**
- **Mainshaft rear bearing outer race**
- **Clutch housing**
- **Transaxle case**

30. Install mainshaft rear bearing inner race to mainshaft.
CAUTION:
Replace mainshaft rear bearing inner race and mainshaft rear bearing outer race as a set.
31. Press 3rd-4th shift fork down and then shift 3rd-4th coupling sleeve to 3rd gear side.
32. Turn the shifter lever A (1) fully clockwise to position (A) and move back the lever 10 degrees to position (B).
NOTE:
This position allows the transaxle case to be properly installed to the clutch housing.

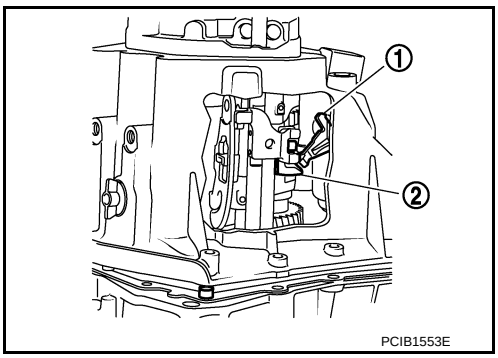


33. Apply recommended sealant to transaxle case mounting surface of clutch housing.
- **Use Genuine Liquid Gasket, Three Bond 1215 or an equivalent.**

CAUTION:
- **Never allow old liquid gasket, moisture, oil, or foreign matter to remain on mounting surface.**
- **Check that mounting surface is not damaged.**
- **Apply a continuous bead of liquid gasket to the mounting surface.**

34. Install transaxle case to clutch housing. If it is difficult to install, slightly rotate shifter lever A counterclockwise, and then install.

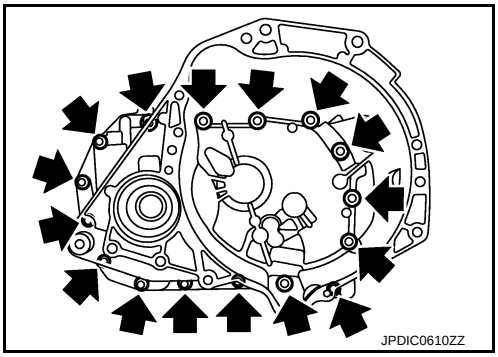
1 : Selector
2 : Shift fork



CAUTION:
- **Never disrupt liquid gasket bead with transaxle case or other objects during installation.**
- **Be careful to align the lever of 5th-reverse fork rod with reverse gear groove.**

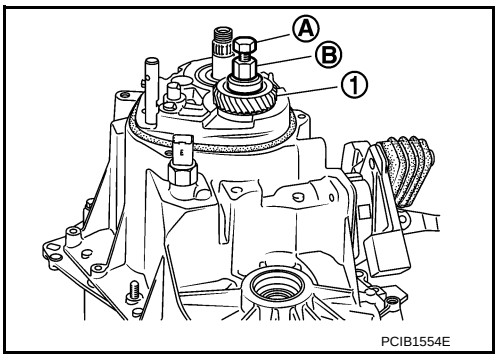
35. Rotate input shaft so that bearing and shaft fit each other, and then tighten transaxle mounting bolts (⬅) to the specified torque.
36. Apply recommended sealant to position switch thread and check ball plug thread. Tighten them to transaxle case and them to the specified torque.
- **Use Genuine Liquid Gasket, Three Bond 1215 or an equivalent.**

CAUTION:
Never allow old liquid gasket, moisture, oil, or foreign matter to remain on thread.



37. Apply thread locking sealant to 5th main gear spline.
- **Use Thread Locking Sealant, Loctite Frenbloc or an equivalent.**

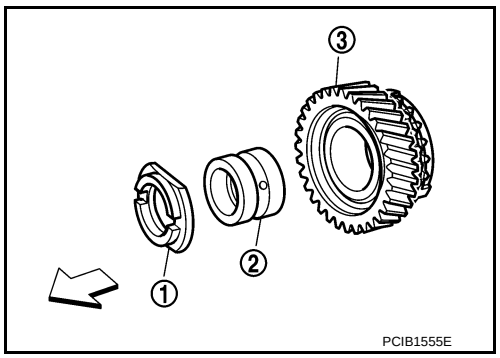
38. Install 5th main gear (1) to mainshaft, using a suitable bolt (A) [M10 x 1.0] and a suitable nut (B).



39. Install adapter plate (1), bushing (2), and 5th input gear (3) to input shaft.

⇦ : Transaxle case side

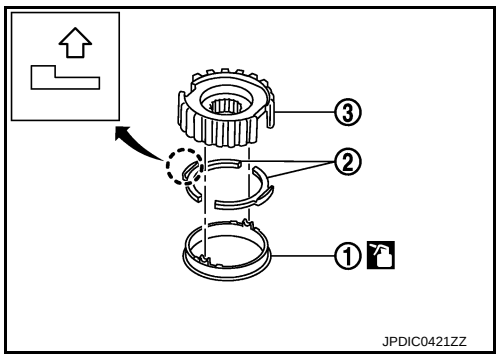
CAUTION:
Be careful with the orientation of adapter plate.



40. Apply gear oil to 5th-reverse baulk ring (1).
41. Install 5th-reverse baulk ring, synchronizer levers (2), and 5th-reverse synchronizer hub (3) to 5th input gear.

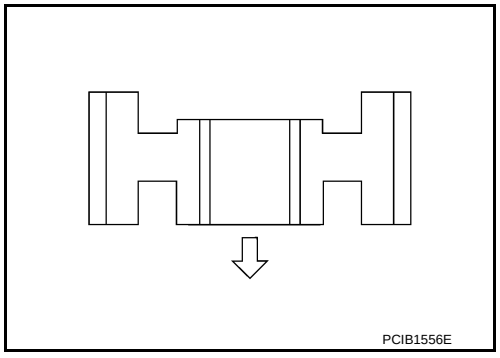
⇦ : 5th-reverse synchronizer hub side

CAUTION:
- **Be careful with the orientation of 5th-reverse baulk ring.**
- **Replace 5th-reverse synchronizer hub and 5th-reverse coupling sleeve as a set.**
- **Be careful with the orientation of synchronizer lever.**



- **Be careful with the orientation of 5th-reverse synchronizer hub.**

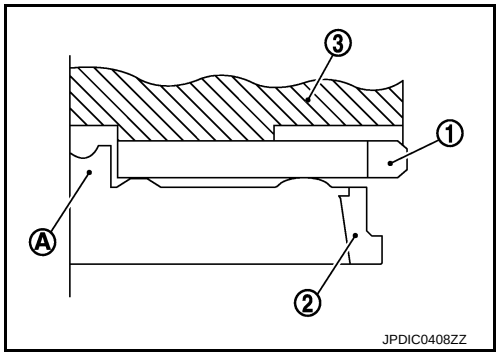
⇦ : 5th input gear side



- **Never allow synchronizer lever (1) to mount on to 5th-reverse baulk ring (2) protrusion (A).**

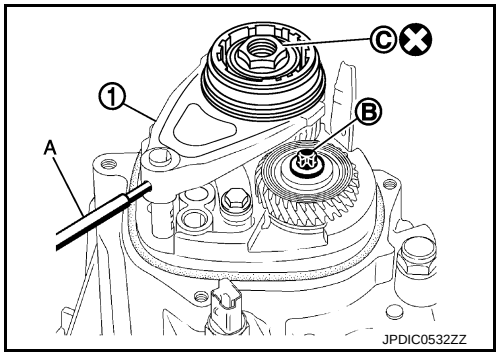
3 : 5th-reverse synchronizer hub

42. Install washer to input shaft.



43. Set 5th-reverse shift fork (1) to 5th-reverse coupling sleeve, and then install them to 5th-reverse fork rod and input shaft.

A : Pin punch
B : Mounting bolt
C : Mounting nut

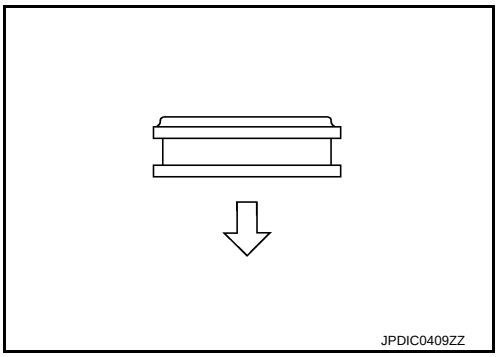


CAUTION:

- **Be careful with the orientation of 5th-reverse coupling sleeve.**

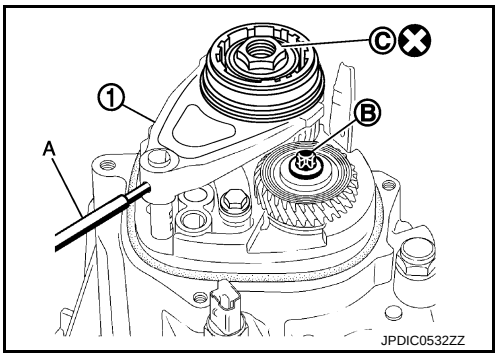
⇦ : 5th input gear side

- **Replace 5th-reverse synchronizer hub and 5th-reverse coupling sleeve as a set.**
- **Replace 5th-reverse shift fork and 5th-reverse fork rod as a set.**


JPDIC0409ZZ

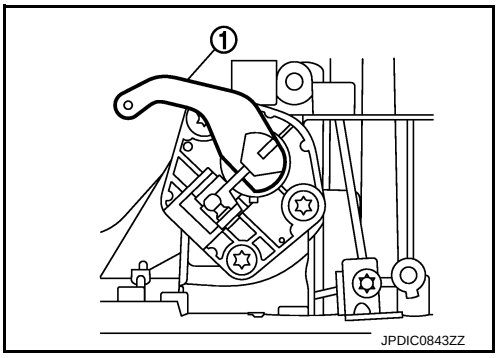
44. Check that the gear position is in the 3rd gear position. Press 5th-reverse shift fork and shift to 5th gear.
45. Tighten mounting bolt (B) to the specified torque.
46. Tighten mounting nut (C) to the specified torque.
47. Install retaining pin to 5th-reverse shift fork (1), using a pin punch (A).

CAUTION:
Never reuse retaining pin.



JPDIC0532ZZ

48. Shift the shifter lever A (1) to the neutral position.
49. Install O-ring to rear housing.



JPDIC0843ZZ

50. Install rear housing to transaxle case, and tighten bolts (⬅) to the specified torque.

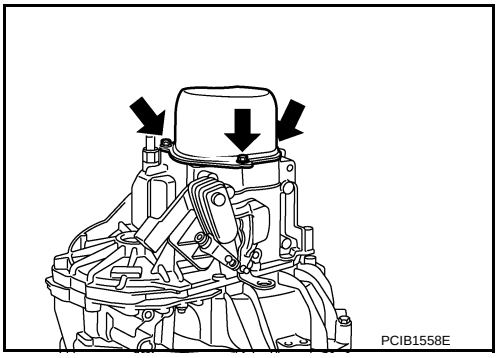
CAUTION:
Never pinch O-ring when installing rear housing.

51. Install drain plug, as per the following procedure.

a. Install gasket to drain plug.

CAUTION:
Never reuse gasket.

b. Install drain plug to clutch housing, using a socket [Commercial service tool].
c. Tighten drain plug to the specified torque.


PCIB1558E

52. Install filler plug, as per the following procedure.

a. Install gasket to filler plug, and then install them to transaxle case.

CAUTION:
Never reuse gasket.

b. Tighten filler plug to the specified torque.

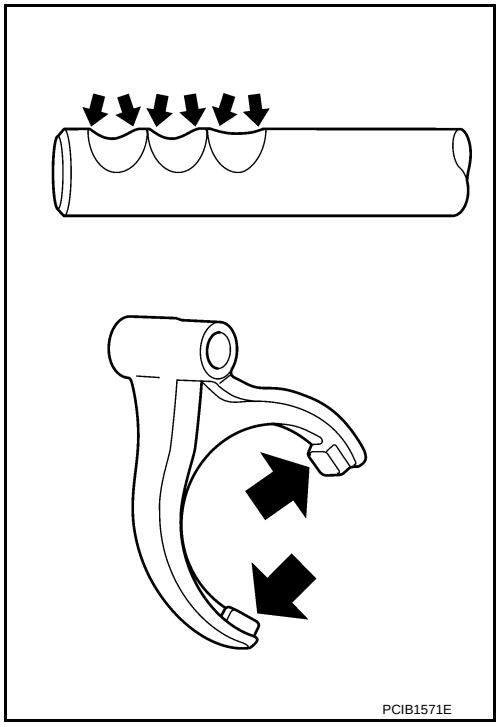
CAUTION:
Fill with gear oil before tightening filler plug to the specified torque.

Inspection and Adjustment

INFOID:0000000006415703

INSPECTION AFTER DISASSEMBLY

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



ADJUSTMENT

Mainshaft Rear Bearing Preload

NOTE:

An adequate adjusting shim must be selected after replacing mainshaft, mainshaft front bearing inner race, mainshaft front bearing outer race, mainshaft rear bearing inner race, mainshaft rear bearing outer race, clutch housing, or transaxle case.

1. Install mainshaft assembly to clutch housing, as per the following procedure.

a. Install oil channel to clutch housing.

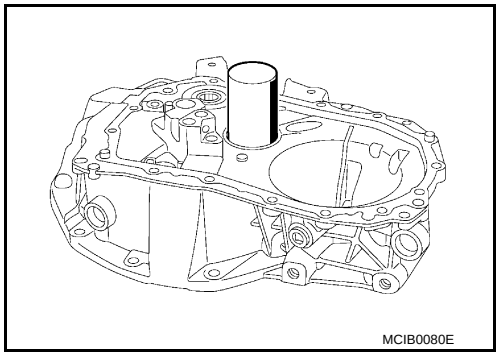
CAUTION:

Never reuse oil channel.

b. Install mainshaft front bearing outer race to clutch housing, using a drift [Commercial service tool].

CAUTION:

- **Never reuse mainshaft front bearing outer race.**
- **Replace mainshaft front bearing outer race and mainshaft front bearing inner race as a set.**



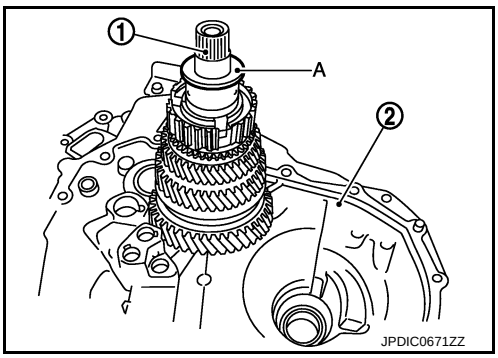
c. Install mainshaft front bearing inner race to mainshaft, using a drift [Commercial service tool].

CAUTION:

- **Never reuse mainshaft front bearing inner race.**
- **Replace mainshaft front bearing inner race and mainshaft front bearing outer race as a set.**

d. Install mainshaft assembly (1) to clutch housing (2).

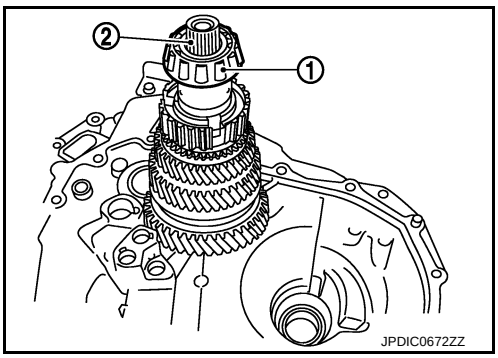
e. Install the dummy shim [1.60 mm (0.0630 in) thickness] (A) of dummy shim set [SST: KV32300QAN] to the mainshaft.



f. Install mainshaft rear bearing inner race (1) to mainshaft (2).

CAUTION:

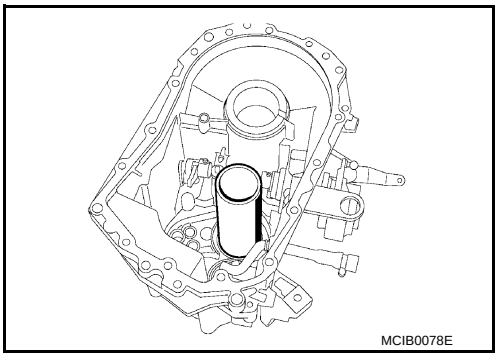
Replace mainshaft rear bearing inner race and mainshaft rear bearing outer race as a set.



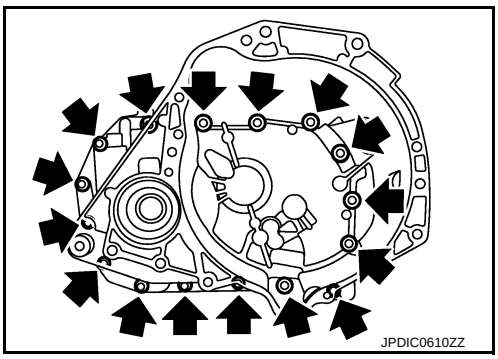
2. Install mainshaft rear bearing outer race to transaxle case, using a drift [Commercial service tool].

CAUTION:

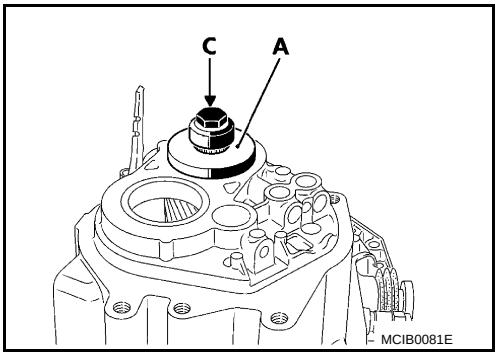
Replace mainshaft rear bearing inner race and mainshaft rear bearing outer race as a set.



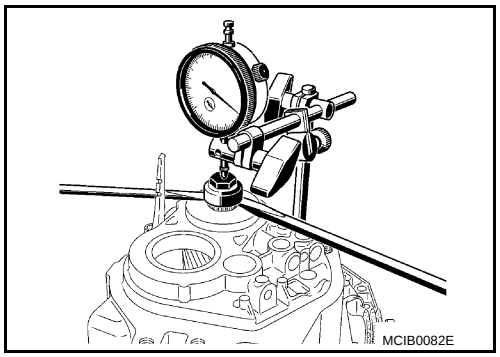
3. Install transaxle case to clutch housing and then tighten mounting bolts (⬅) to the specified torque.



4. Install adjusting plate (A) [SST: KV32300QAP], suitable washer, and suitable bolt (C) [M10 x 1.0] to mainshaft.



5. Install dial indicator to the transaxle case.
6. After rotating the mainshaft several turns for conforming the bearing, bring the dial indicator meter to zero.
7. Pull up the mainshaft, using two suitable tools.
8. Read the meter on the dial indicator.
9. Repeat Step 6 to 8 three times and calculate the average value of the readings.



10. Calculate and select the thickness of adjusting shim.
Specified value [0.26 mm (0.0102 in)] + Dummy shim [1.60 mm (0.0630 in)] + Average value of dial indicator readings = Adjusting shim thickness

Example

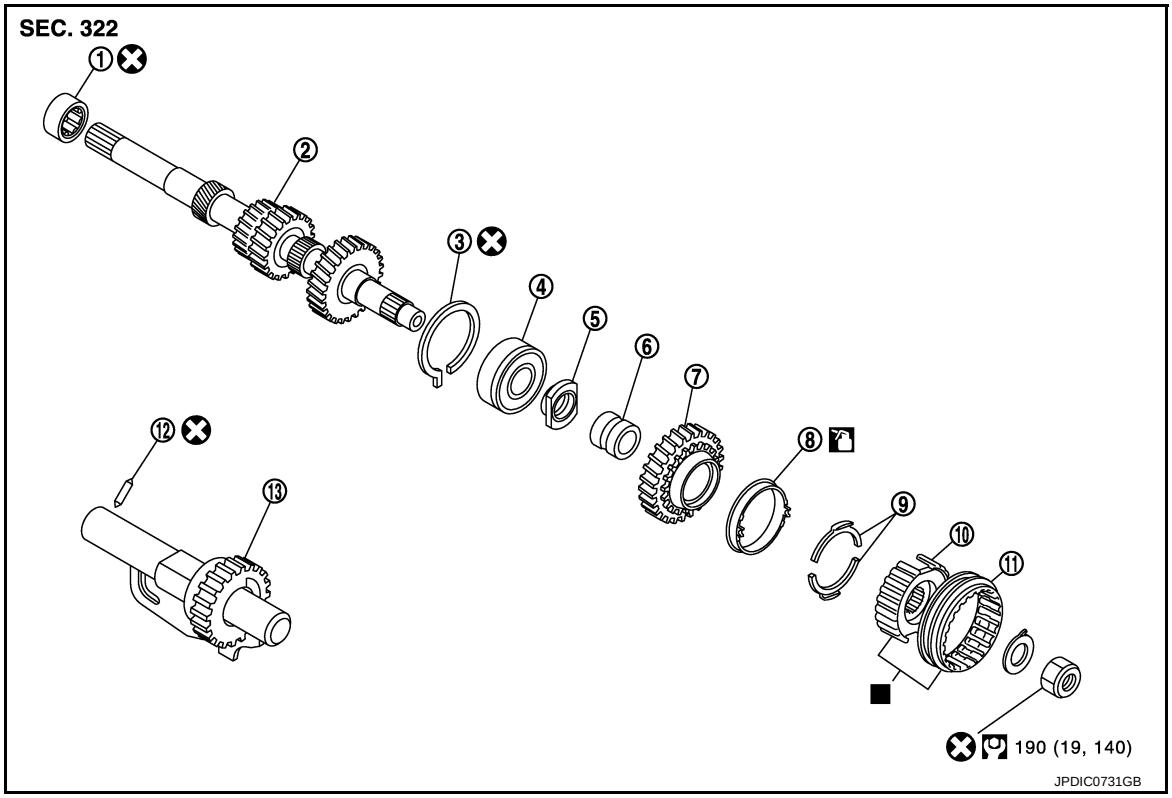
Specified value		Dummy shim		Average value of dial indicator readings		Adjusting shim thickness
0.26 mm (0.0102 in)	+	1.60 mm (0.0630 in)	+	0.49 mm (0.0193 in)	=	2.35 mm (0.0925 in)

NOTE:
Adjusting shim is configured for a thickness between 2.15 mm (0.0846 in) and 2.43 mm (0.0957 in) [0.04 mm (0.0016 in) intervals].

INPUT SHAFT AND GEAR

Exploded View

INFOID:0000000006417972



1. Input shaft front bearing
2. Input shaft
3. Snap ring
4. Input shaft rear bearing
5. Adapter plate
6. Bushing
7. 5th input gear
8. 5th-reverse baulk ring
9. Synchronizer lever
10. 5th-reverse synchronizer hub
11. 5th-reverse coupling sleeve
12. Retaining pin
13. Reverse gear

: Apply gear oil.

■ : Replace the parts as a set.

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)

Disassembly

INFOID:0000000006417973

Refer to TM-37, "Disassembly" for disassembly procedure.

Assembly

INFOID:0000000006417974

Refer to TM-43, "Assembly" for assembly procedure.

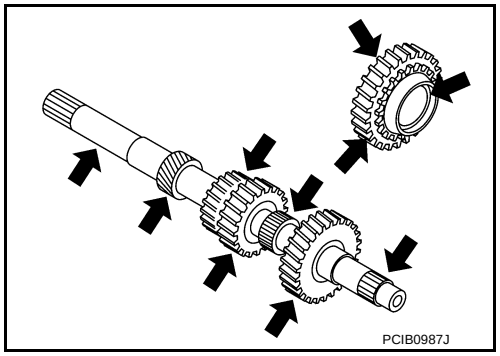
Inspection

INFOID:0000000006415704

INSPECTION AFTER DISASSEMBLY

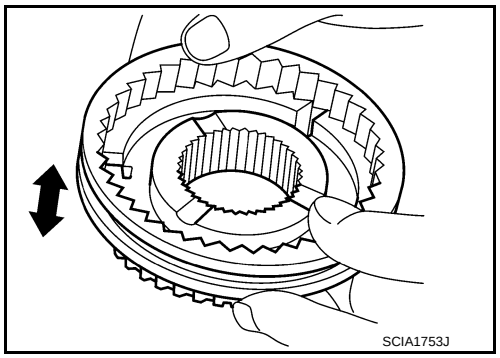
Input Shaft and Gear

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


PCIB0987J

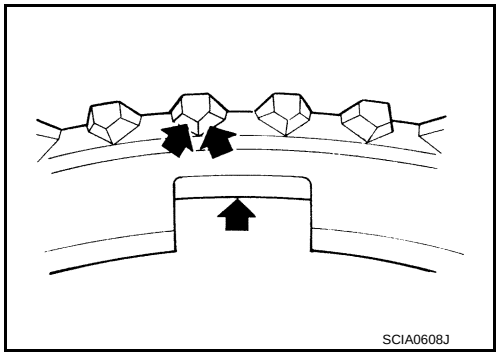
Synchronizer Hub and Coupling Sleeve

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.


SCIA1753J

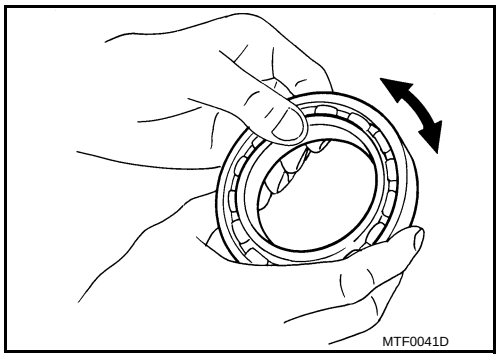
Baulk Ring

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


SCIA0608J

Bearing

Check bearing for damage and unsmooth rotation. Replace if necessary.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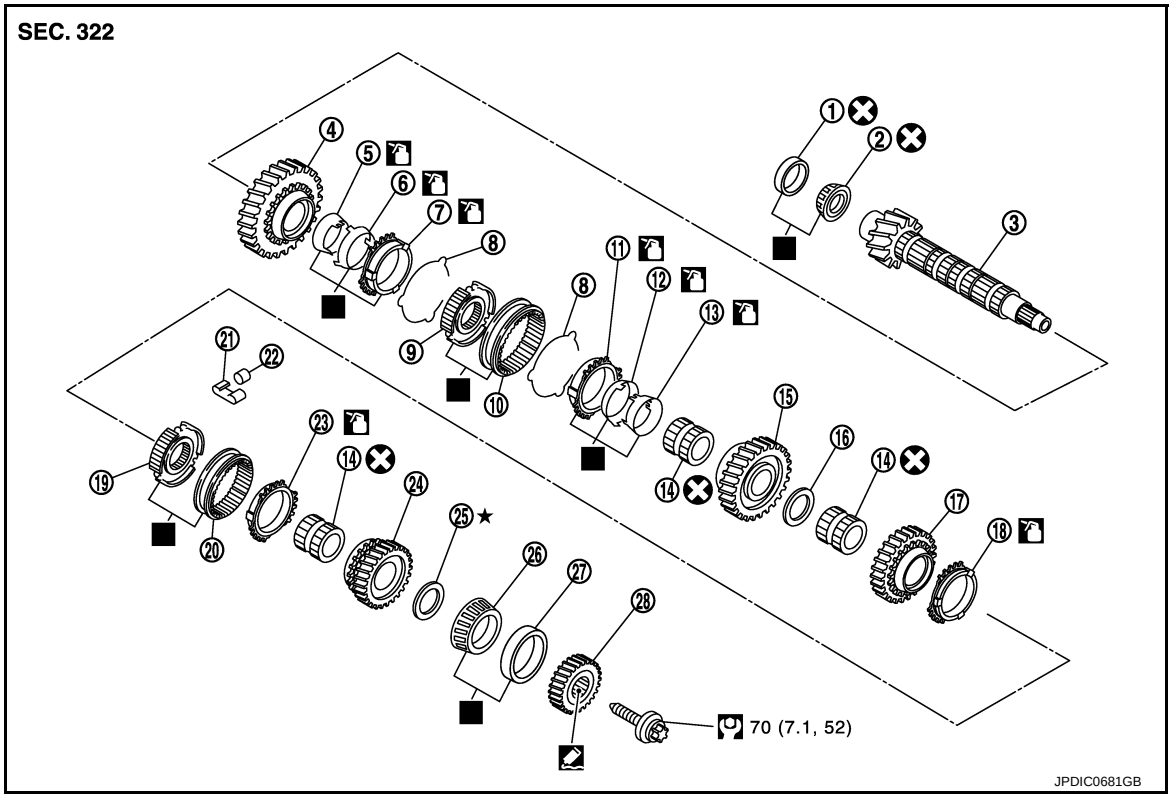
MAINSHAFT AND GEAR

Exploded View

INFOID:0000000006415705



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. Spread spring
9. 1st-2nd synchronizer hub
10. 1st-2nd coupling sleeve
11. 2nd outer baulk ring
12. 2nd synchronizer cone
13. 2nd inner baulk ring
14. Mainshaft bushing
15. 2nd main gear
16. Thrust washer
17. 3rd main gear
18. 3rd baulk ring
19. 3rd-4th synchronizer hub
20. 3rd-4th coupling sleeve
21. Spring
22. Insert key
23. 4th baulk ring
24. 4th main gear
25. Adjusting shim
26. Mainshaft rear bearing inner race
27. Mainshaft rear bearing outer race
28. 5th main gear

: Apply gear oil.

: Apply Thread Locking Sealant, Loctite Frenbloc or an equivalent.

: Replace the parts as a set.

: Always replace after every disassembly.

★ : Select with proper thickness.

: N·m (kg-m, ft-lb)

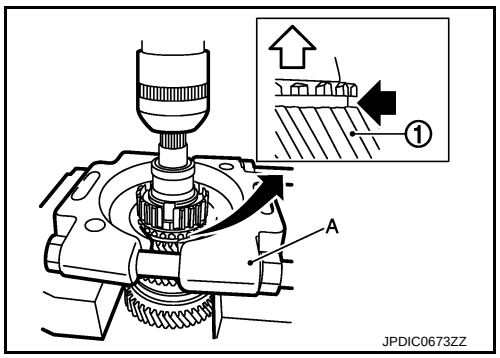
Disassembly

INFOID:0000000006415706

CAUTION:
Place a direction mark on the surface of gears, avoiding an effect on their functions.

1. Set puller (A) at the area shown by (⇦) on the 3rd main gear (1).

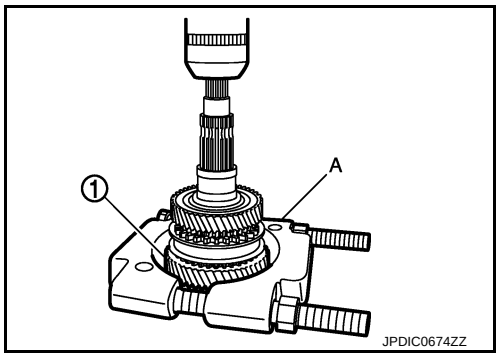
⇦ : 3rd baulk ring side



2. Remove the 3rd main gear, using a press. The following parts become detached together at the same time:
   - Mainshaft bushing
   - 3rd-4th synchronizer hub
   - 3rd baulk ring

   CAUTION:
   Never drop mainshaft.

3. Set puller (A) to 1st main gear (1).



4. Remove the 1st main gear, using a press. The following parts become detached together at the same time:
   - Mainshaft bushings
   - Thrust washer
   - 2nd main gear
   - 2nd inner baulk ring
   - 2nd synchronizer cone
   - 2nd outer baulk ring
   - 1st-2nd coupling sleeve
   - 1st-2nd synchronizer hub
   - 1st outer baulk ring
   - 1st synchronizer cone
   - 1st inner baulk ring

   CAUTION:
   Never drop mainshaft.

5. Remove spread springs from 1st-2nd synchronizer hub.
6. Remove mainshaft front bearing inner race, using a puller [Commercial service tool].

Assembly

INFOID:0000000006415707

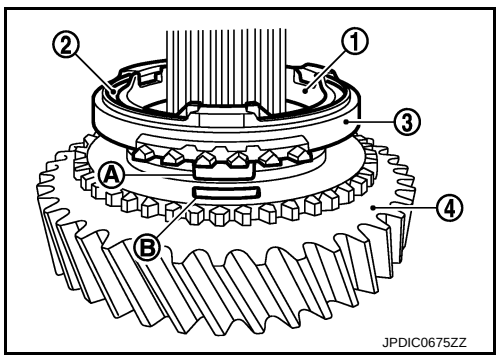
CAUTION:
After replacing the following parts, adjust mainshaft rear bearing preload. Refer to TM-51, "Inspection and Adjustment".
- **Mainshaft**
- **Mainshaft front bearing inner race**
- **Mainshaft front bearing outer race**
- **Mainshaft rear bearing inner race**
- **Mainshaft rear bearing outer race**
- **Clutch housing**
- **Transaxle case**

1. Install 1st main gear to mainshaft.
2. Apply gear oil to 1st inner baulk ring, 1st synchronizer cone, and 1st outer baulk ring.

   CAUTION:
   Replace 1st inner baulk ring, 1st synchronizer cone, and 1st outer baulk ring as a set.

3. Install 1st inner baulk ring (1), 1st synchronizer cone (2), and 1st outer baulk ring (3) to 1st main gear (4).

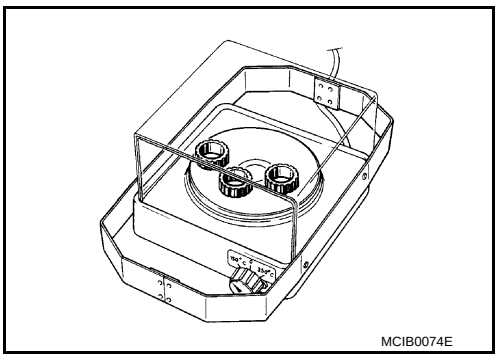
   CAUTION:
   Align the pawl (A) of the 1st synchronizer cone with the groove (B) of the 1st main gear.



4. Install spread spring to 1st-2nd synchronizer hub.
5. Install 1st-2nd synchronizer hub to mainshaft.

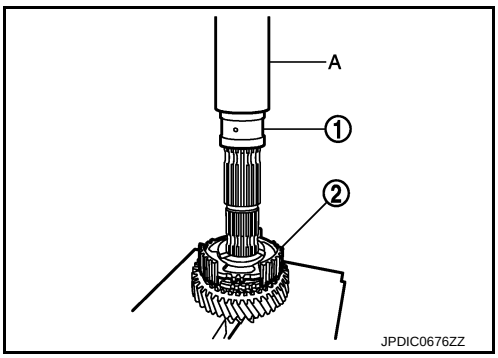
   CAUTION:
   Replace 1st-2nd synchronizer hub and 1st-2nd coupling sleeve as a set.

6. Heat the mainshaft bushing for 15 minutes at a temperature of 150°C, using a heat plate or an equivalent.
   CAUTION:
   - **Never reuse mainshaft bushing.**
   - **Never touch the mainshaft bushing with bare hands.**
7. Remove the mainshaft bushing from the heat plate to install to the mainshaft, using pliers or an equivalent.
   CAUTION:
   Never touch the mainshaft bushing with bare hands.


MCIB0074E

8. Install mainshaft bushing (1) to mainshaft, using a drift (A) [Commercial service tool] and a press.

   2 : 1st-2nd synchronizer hub



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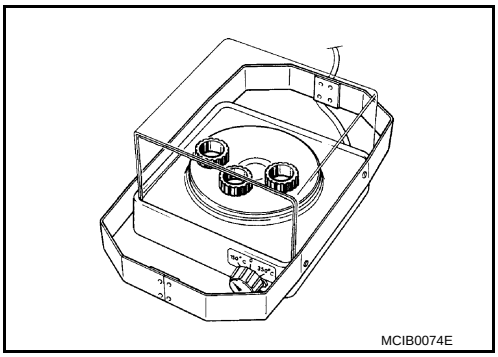
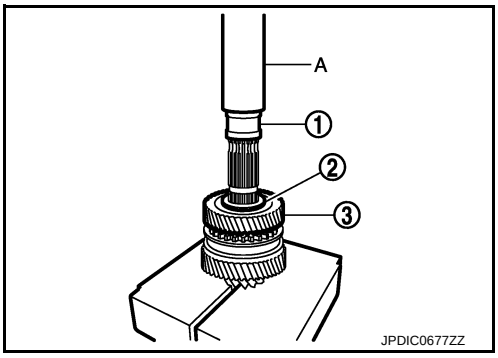
9. Install 1st-2nd coupling sleeve and spread spring to 1st-2nd synchronizer hub.
   CAUTION:
   Replace 1st-2nd synchronizer hub and 1st-2nd coupling sleeve as a set.
10. Apply gear oil to 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring.
    CAUTION:
    Replace 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring as a set.
11. Install 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring to 1st-2nd synchronizer hub.
12. Install 2nd main gear and thrust washer to mainshaft.
    CAUTION:
    Align the pawl of the 2nd synchronizer cone with the groove of the 2nd main gear.
13. Heat the mainshaft bushing for 15 minutes at a temperature of 150°C, using a heat plate or an equivalent.
    CAUTION:
    - **Never reuse mainshaft bushing.**
    - **Never touch the mainshaft bushing with bare hands.**
14. Remove the mainshaft bushing from the heat plate to install to the mainshaft, using pliers or an equivalent.
    CAUTION:
    Never touch the mainshaft bushing with bare hands.


MCIB0074E

15. Install mainshaft bushing (1) to mainshaft, using a drift (A) [Commercial service tool] and a press.

    2 : Thrust washer
    3 : 2nd main gear

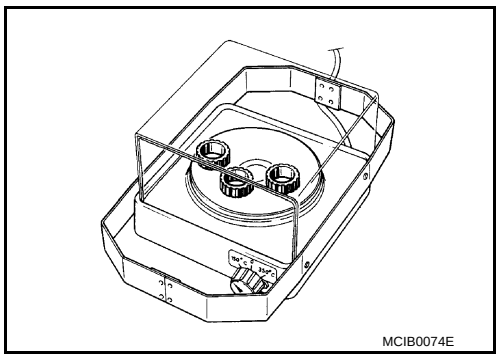


JPDIC0677ZZ

16. Install 3rd main gear to mainshaft.
17. Apply gear oil to 3rd baulk ring.
18. Install 3rd baulk ring to 3rd main gear.
19. Install 3rd-4th synchronizer hub to mainshaft.
    CAUTION:
    Replace 3rd-4th synchronizer hub and 3rd-4th coupling sleeve as a set.

20. Heat the mainshaft bushing for 15 minutes at a temperature of 150°C, using a heat plate or an equivalent.
CAUTION:
- **Never reuse mainshaft bushing.**
- **Never touch the mainshaft bushing with bare hands.**

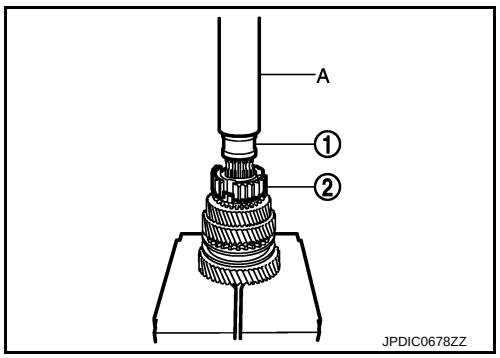
21. Remove the mainshaft bushing from the heat plate to install to the mainshaft, using pliers or an equivalent.
CAUTION:
Never touch the mainshaft bushing with bare hands.


MCIB0074E

22. Install mainshaft bushing (1) to mainshaft, using a drift (A) [Commercial service tool] and a press.

2 : 3rd-4th synchronizer hub

23. Install mainshaft front bearing inner race, using a drift [Commercial service tool].
CAUTION:
- **Never reuse mainshaft front bearing inner race.**
- **Replace mainshaft front bearing inner race and mainshaft front bearing outer race as a set.**



JPDIC0678ZZ

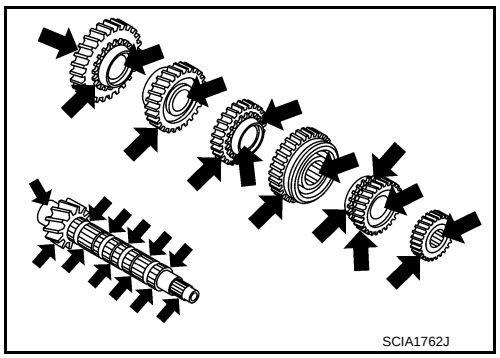
Inspection

INFOID:0000000006415708

INSPECTION AFTER DISASSEMBLY

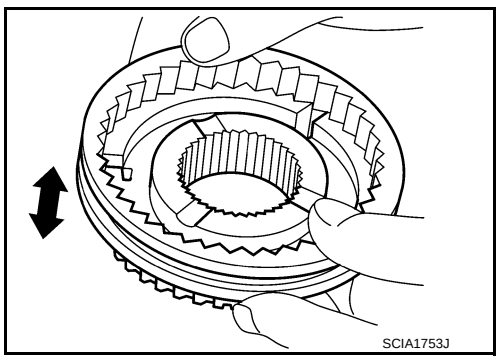
Mainshaft and Gear

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


SCIA1762J

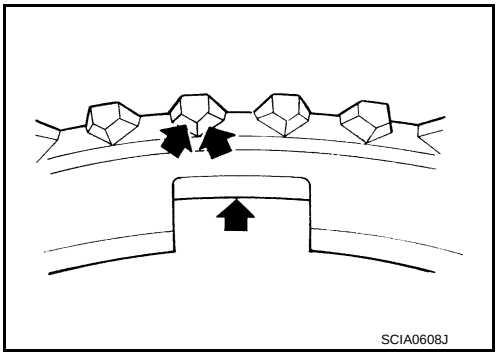
Synchronizer Hub and Coupling Sleeve

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.

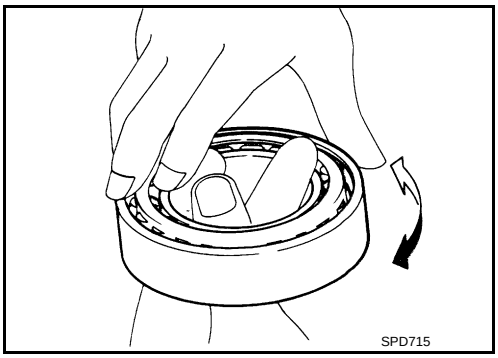

SCIA1753J

Baulk Ring

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



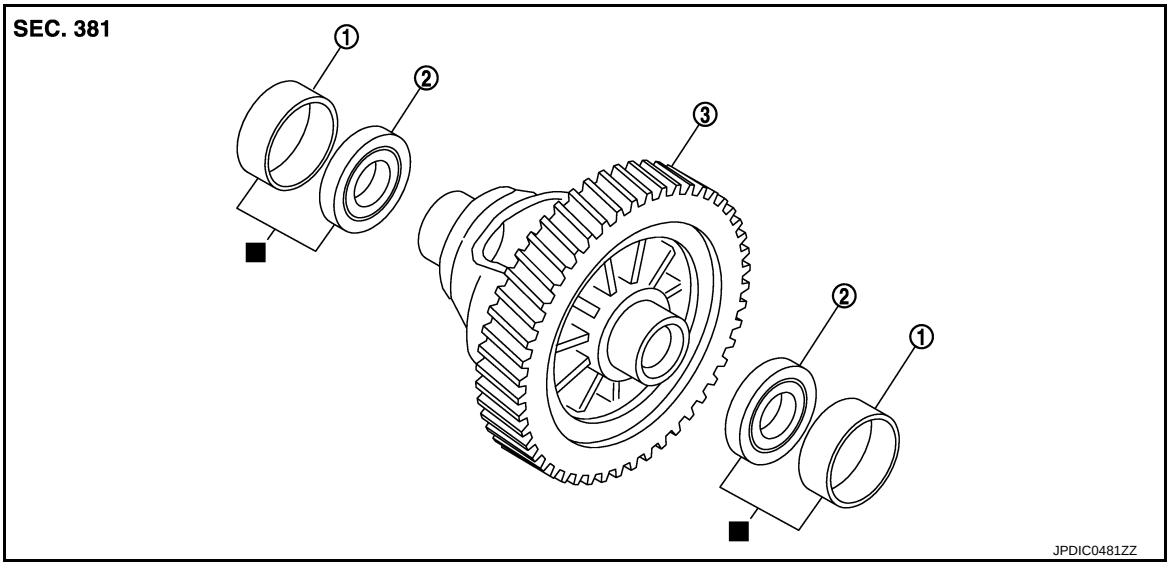
Bearing
Check bearing for damage and unsmooth rotation. Replace if necessary.



FINAL DRIVE

Exploded View

INFOID:0000000006415709



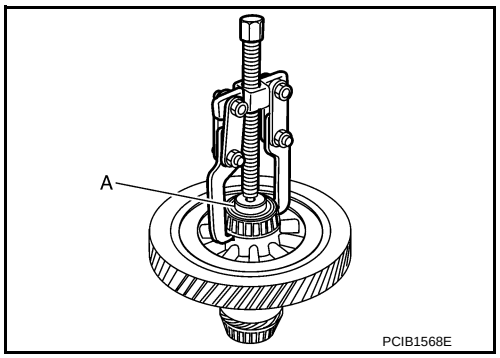
1. Differential side bearing outer race
2. Differential side bearing
3. Final drive

■ : Replace the parts as a set.

Disassembly

INFOID:0000000006415710

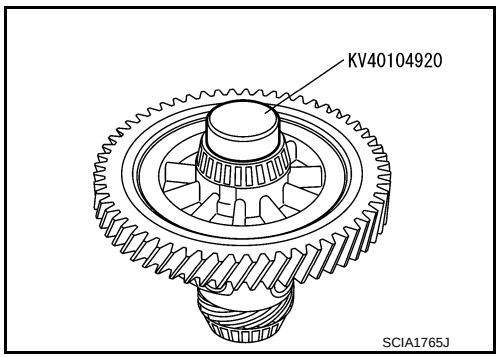
1. Remove differential side bearings, using the drift (A) [SST: ST33052000] and a puller [Commercial service tool].



Assembly

INFOID:0000000006415711

1. Install differential side bearings, using the drift [SST].
   CAUTION:
   Replace differential side bearing outer race and differential side bearing as a set.



Inspection

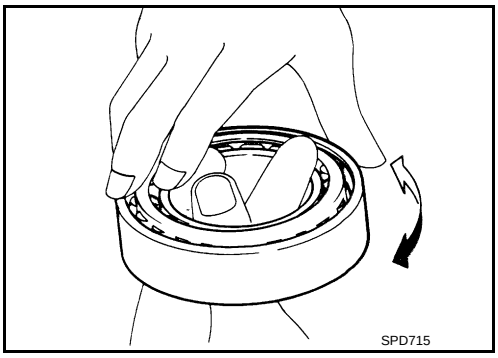
INFOID:0000000006415712

INSPECTION AFTER DISASSEMBLY

Case

Check differential case. Replace if necessary.

Bearing
Check bearing for damage and unsmooth rotation. Replace if necessary.

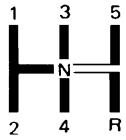


SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000006415714

Transaxle type			RS5F92R	
Engine type			HR16DE	
Model code number			1KA0A	1KA0C
Axle type			2WD	
Number of speed			5	
Synchromesh type			Warner	
Shift pattern			 SCIA0821E	
Gear ratio	1st		3.7273	
	2nd		2.0476	
	3rd		1.3929	
	4th		1.0968	
	5th		0.8919	
	Reverse		3.5455	
	Final gear		4.5000	4.0667
Number of teeth	Input gear	1st	11	
		2nd	21	
		3rd	28	
		4th	31	
		5th	37	
		Reverse	11	
	Main gear	1st	41	
		2nd	43	
		3rd	39	
		4th	34	
		5th	33	
		Reverse	39	
	Reverse idler gear		26	
	Final gear	Final gear/Pinion	63/14	61/15
		Side gear/Pinion mate gear	13/9	
Oil capacity (Reference)		ℓ (Imp pt)	Approx. 2.3 (4)	
Remarks	Reverse brake		Installed	
	Double-cone synchronizer		1st and 2nd	
	Speedometer drive gear		Not installed	

PRECAUTION

PRECAUTIONS

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

INFOID:0000000006415777

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 “SRS AIR BAG” and “SEAT BELT” of this Service Manual.

The vehicle may be equipped with a passenger air bag deactivation switch. Because no rear seat exists where a rear-facing child restraint can be placed, the switch is designed to turn off the passenger air bag so that a rear-facing child restraint can be used in the front passenger seat. The switch is located in the center of the instrument panel, near the ashtray. When the switch is turned to the ON position, the passenger air bag is enabled and could inflate for certain types of collision. When the switch is turned to the OFF position, the passenger air bag is disabled and will not inflate. A passenger air bag OFF indicator on the instrument panel lights up when the passenger air bag is switched OFF. The driver air bag always remains enabled and is not affected by the passenger air bag deactivation switch.

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 “SRS AIR BAG”.**
- **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.**
- **The vehicle may be equipped with a passenger air bag deactivation switch which can be operated by the customer. When the passenger air bag is switched OFF, the passenger air bag is disabled and will not inflate. When the passenger air bag is switched ON, the passenger air bag is enabled and could inflate for certain types of collision. After SRS maintenance or repair, make sure the passenger air bag deactivation switch is in the same position (ON or OFF) as when the vehicle arrived for service.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag 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 Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:0000000006415778

NOTE:

- Before removing and installing any control units, first turn the ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

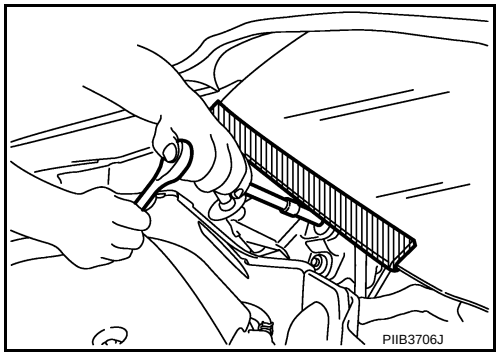
OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Turn the ignition switch to ACC position.
   (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

Precaution for Procedure without Cowl Top Cover

INFOID:0000000006415779

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



Service Notice or Precautions for Manual Transaxle

INFOID:0000000006415730

CAUTION:

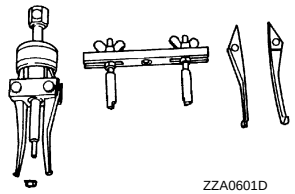
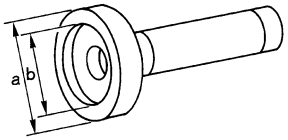
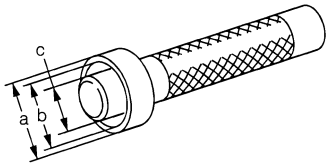
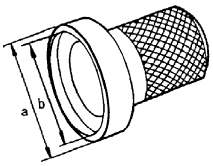
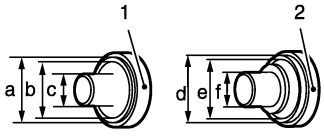
- **Never reuse CSC (Concentric Slave Cylinder). Because CSC slides back to the original position every time when removing transaxle assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage. Refer to CL-27, "Removal and Installation".**
- **Never 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.**
- **Never damage sliding surfaces and mating surfaces.**

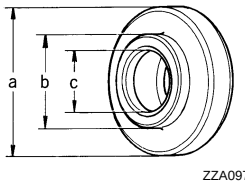
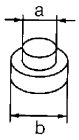
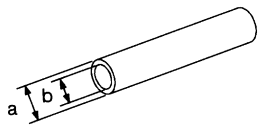
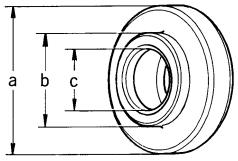
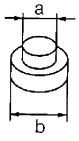
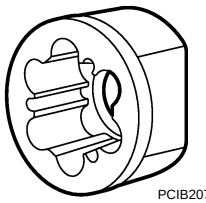
PREPARATION

PREPARATION

Special Service Tools

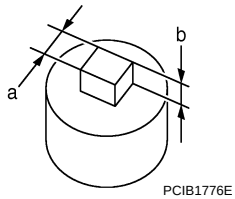
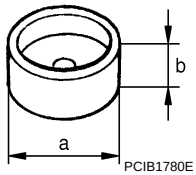
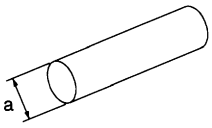
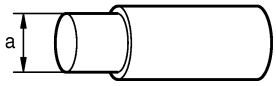
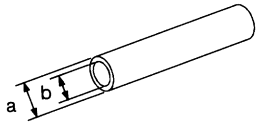
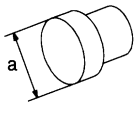
INFOID:0000000006415731

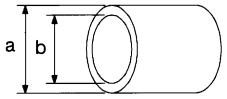
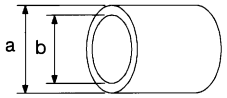
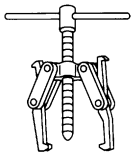
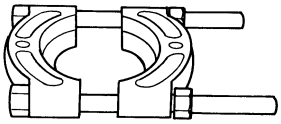
Tool number Tool name		Description
KV381054S0 Puller	 ZZA0601D	Removing mainshaft front bearing outer race
KV38100200 Drift a: 65 mm (2.56 in) dia. b: 49 mm (1.93 in) dia.	 ZZA1143D	• Installing mainshaft front bearing outer race • Installing mainshaft rear bearing outer race • Installing differential side bearing outer race (clutch housing side)
ST33220000 Drift a: 37 mm (1.46 in) dia. b: 31 mm (1.22 in) dia. c: 22 mm (0.87 in) dia.	 ZZA1046D	Installing input shaft oil seal
ST33400001 Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.	 ZZA0814D	Installing differential side bearing outer race (transaxle case side)
KV32500QAA (Renault SST: B.vi 1666) Drift set 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.	 JPDIC0730ZZ	Installing differential side oil seal

Tool number Tool name	Description
ST36720030 Drift a: 70 mm (2.76 in) dia. b: 40 mm (1.57 in) dia. c: 29 mm (1.14 in) dia.  ZZA0978D	• Installing input shaft rear bearing • Installing mainshaft front bearing inner race
ST33052000 Drift a: 22 mm (0.87 in) dia. b: 28 mm (1.10 in) dia.  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
KV32102700 Drift a: 48.6 mm (1.913 in) dia. b: 41.6 mm (1.638 in) dia.  S-NT065	• Installing bushing • Installing 2nd main gear • Installing 3rd main gear • Installing 4th main gear • Installing 5th main gear • Installing 6th main gear
ST30901000 Drift a: 79 mm (3.11 in) dia. b: 45 mm (1.77 in) dia. c: 35.2 mm (1.386 in) dia.  ZZA0978D	Installing mainshaft rear bearing inner race
ST33061000 Drift a: 28.5 mm (1.122 in) dia. b: 38 mm (1.50 in) dia.  ZZA0969D	Removing differential side bearing inner race (clutch housing side)
KV32300QAM (Renault SST: B.vi 1823) Drift  PCIB2078J	Removing and installing input shaft rear bearing mounting bolt

Commercial Service Tools

INFOID:0000000006415732

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

Tool name	Description
Drift a: 45 mm (1.77 in) dia. b: 39 mm (1.54 in) dia.  S-NT474	Installing differential side bearing inner race (clutch housing side)
Drift a: 52 mm (2.05 in) dia. b: 45 mm (1.77 in) dia.  S-NT474	Installing differential side bearing inner race (transaxle case side)
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

SYSTEM DESCRIPTION

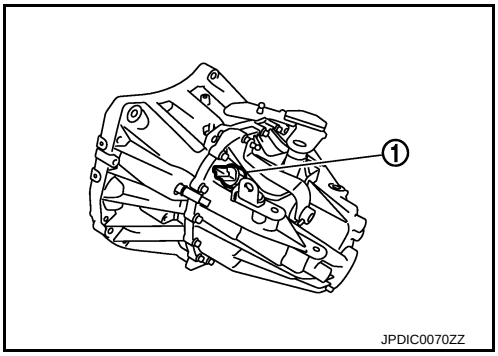
COMPONENT PARTS

Component Parts Location

INFOID:0000000006415733

POSITION SWITCH

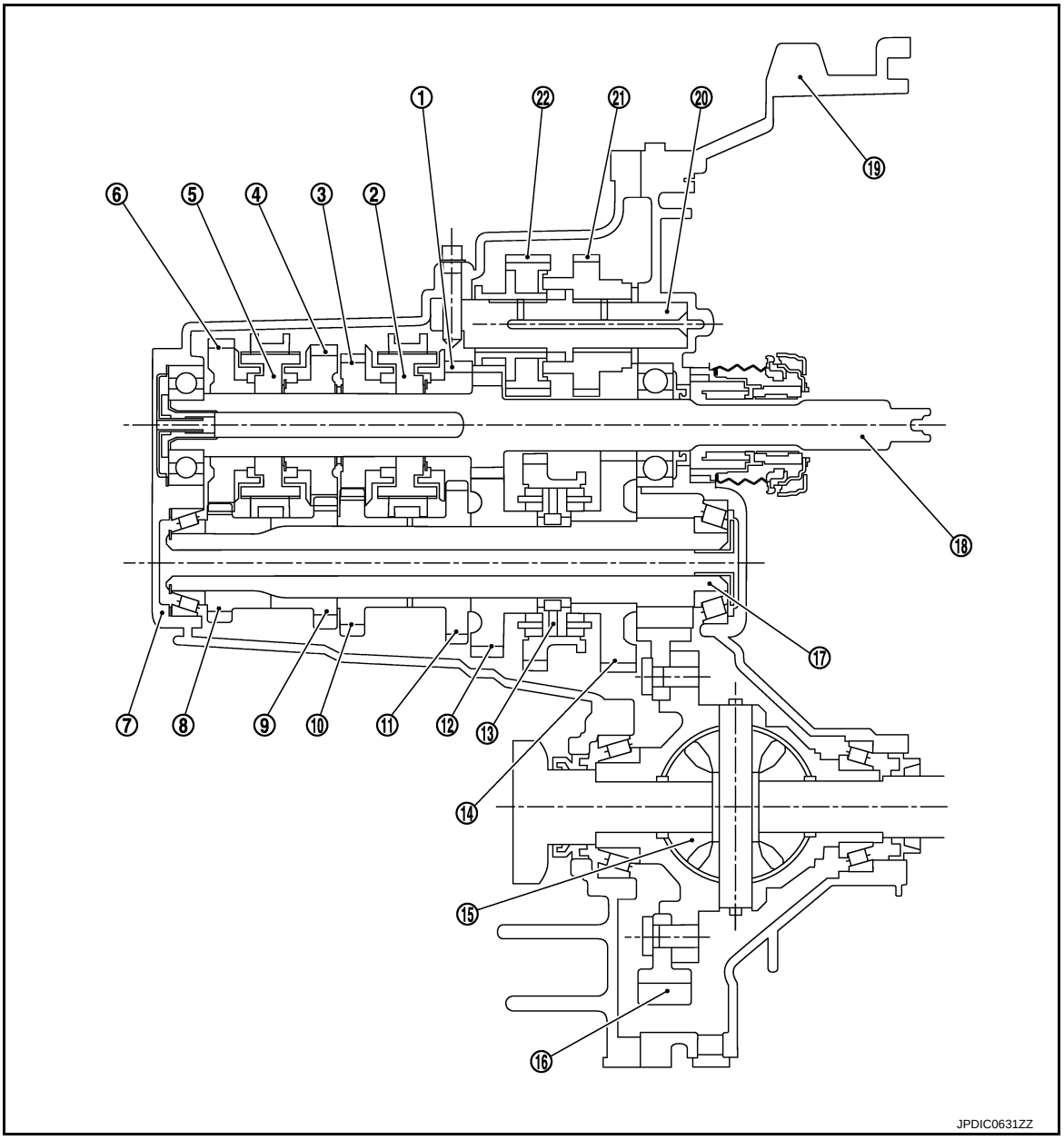
1 : Position switch



STRUCTURE AND OPERATION

Sectional View

INFOID:0000000006415734



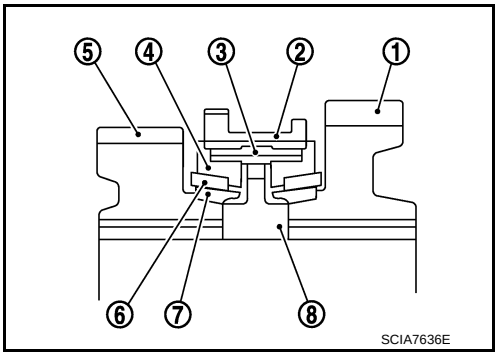
1. 3rd input gear
2. 3rd-4th synchronizer hub assembly
3. 4th input gear
4. 5th input gear
5. 5th-6th synchronizer hub assembly
6. 6th input gear
7. Transaxle case
8. 6th main gear
9. 5th main gear
10. 4th main gear
11. 3rd main gear
12. 2nd main gear
13. 1st-2nd synchronizer hub assembly
14. 1st main 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:0000000006415735

TRIPLE-CONE SYNCHRONIZER

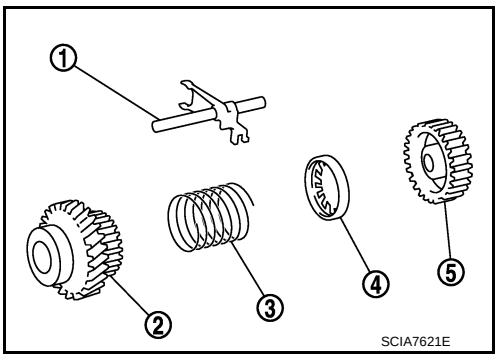
Triple-cone synchronizers are adopted for the 1st and the 2nd gears to reduce operating force of the shifter lever.



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 shifted 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

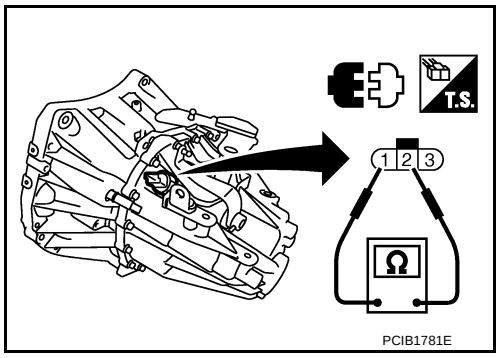
BACK-UP LAMP SWITCH : Component Inspection

INFOID:0000000006415736

1. CHECK BACK-UP LAMP SWITCH

1. Disconnect position switch connector. Refer to TM-77, "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-77, "Removal and Installation".

PARK/NEUTRAL POSITION (PNP) SWITCH

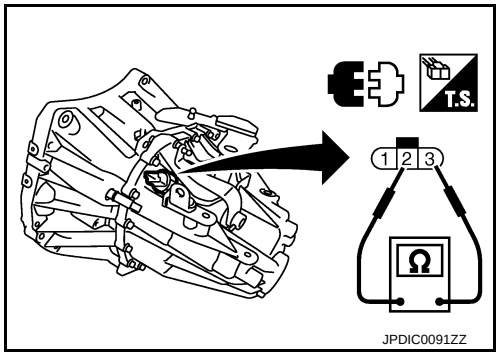
PARK/NEUTRAL POSITION (PNP) SWITCH : Component Inspection

INFOID:0000000006415737

1. CHECK PARK/NEUTRAL POSITION (PNP) SWITCH

1. Disconnect position switch connector. Refer to TM-77, "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-77, "Removal and Installation".

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:0000000006415738

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-75			TM-88		TM-81	TM-88		TM-88		
Symptoms	Noise	1	2							3	3		
	Oil leakage		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

GEAR OIL

Inspection

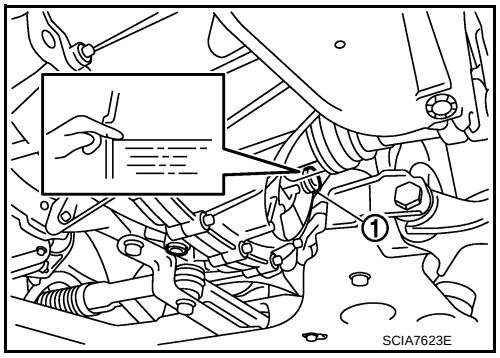
INFOID:0000000006415739

OIL LEAKAGE

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

OIL LEVEL

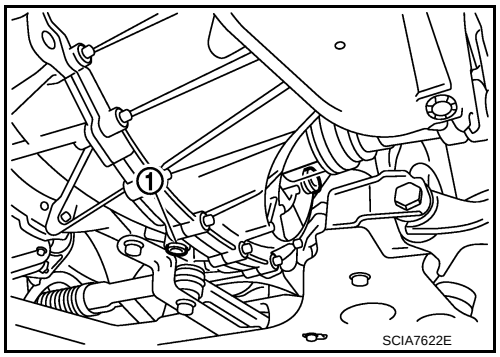
1. Remove filler plug (1) and gasket from transaxle case.
2. Check the oil level from filler plug mounting hole as shown in the figure.
   CAUTION:
   Never start engine while checking oil level.
3. Set a gasket on filler plug and then install it to transaxle case.
   CAUTION:
   Never reuse gasket.
4. Tighten filler plug to the specified torque. Refer to TM-88, "Exploded View".



Draining

INFOID:0000000006415740

1. Start engine and let it run to warm up transaxle.
2. Stop engine. Remove drain plug (1) and gasket, using a socket [Commercial service tool] and then drain gear oil.
3. Set a gasket on drain plug and install it to clutch housing, using a socket [Commercial service tool].
   CAUTION:
   Never reuse gasket.
4. Tighten drain plug to the specified torque. Refer to TM-88, "Exploded View".



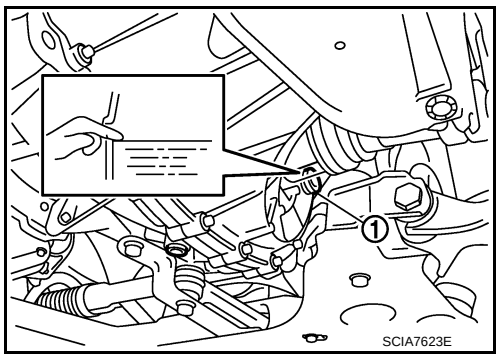
Refilling

INFOID:0000000006415741

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 in the figure.

Oil grade and viscosity	**: Refer to MA-13, "Fluids and Lubricants".**
Oil capacity	**: Refer to TM-123, "General Specifications".**

3. After refilling gear oil, check the oil level. Refer to TM-75, "Inspection".
4. Set a gasket on filler plug and then install it to transaxle case.
   CAUTION:
   Never reuse gasket.
5. Tighten filler plug to the specified torque. Refer to TM-88, "Exploded View".



REMOVAL AND INSTALLATION

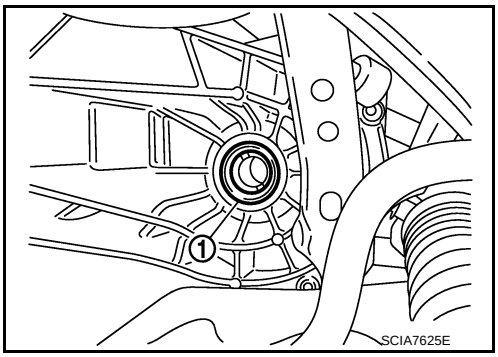
SIDE OIL SEAL

Removal and Installation

INFOID:0000000006415742

REMOVAL

1. Remove front drive shafts. (MR16DDT) Refer to FAX-22, "LEFT SIDE : Removal and Installation" (LEFT SIDE) and FAX-24, "RIGHT SIDE : Removal and Installation" (RIGHT SIDE).
2. Remove front drive shafts. (K9K) Refer to FAX-78, "LEFT SIDE : Removal and Installation" (LEFT SIDE) and FAX-79, "RIGHT SIDE : Removal and Installation" (RIGHT SIDE).
3. Remove differential side oil seals (1) from clutch housing and transaxle case, using an oil seal remover.
   CAUTION:
   Never damage transaxle case and clutch housing.

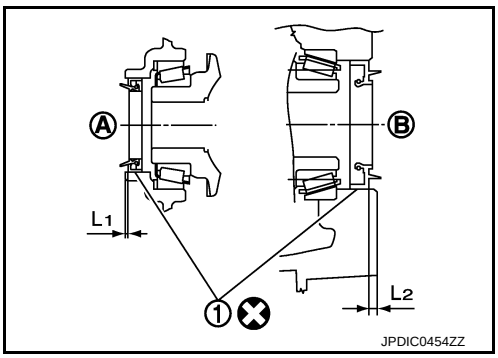


INSTALLATION

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

- Install differential side oil seals (1) to clutch housing and transaxle case, using the drift [Stamping number: B.vi 1666-B] of the drift set [SST: KV32500QAA].

A : Transaxle case side
B : Clutch housing side



Dimension “L1” : 1.2 – 1.8 mm (0.047 – 0.071 in)
Dimension “L2” : 2.7 – 3.3 mm (0.106 – 0.130 in)

CAUTION:
- **Never incline differential side oil seal.**
- **Never damage clutch housing and transaxle case.**

Inspection

INFOID:0000000006415743

INSPECTION AFTER INSTALLATION

Check the oil level and oil leakage. Refer to TM-75, "Inspection".

POSITION SWITCH

Removal and Installation

INFOID:0000000006415744

REMOVAL

1. Remove air cleaner case. (K9K) Refer to EM-280, "Removal and Installation".
2. Remove battery. (MR16DDT) Refer to PG-124, "Removal and Installation".
3. Disconnect position switch connector.
4. 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.**

   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-88, "Exploded View".
4. For the next step and after, install in the reverse order of removal.

Inspection

INFOID:0000000006415745

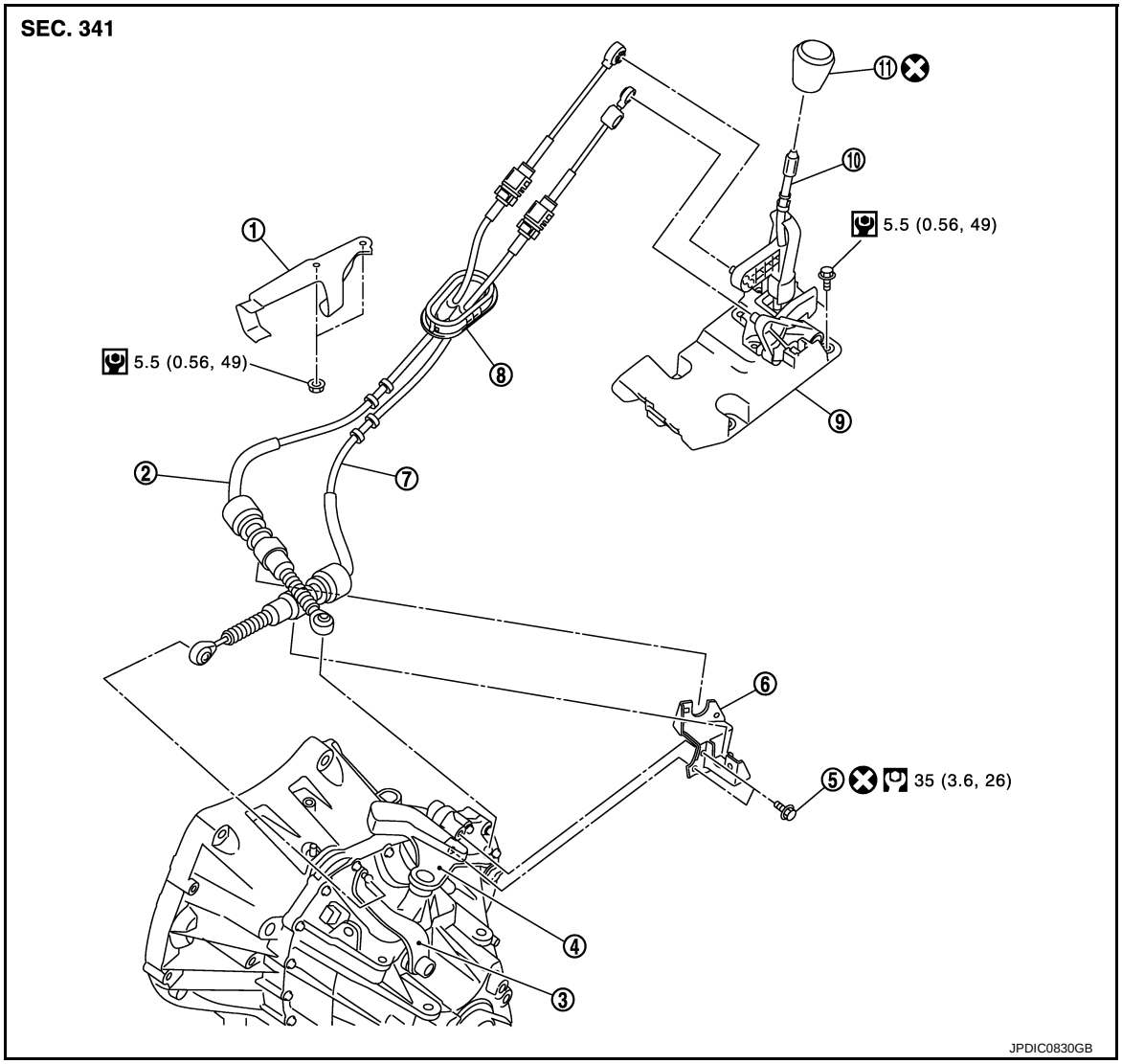
INSPECTION AFTER INSTALLATION

- Check continuity between position switch terminals. Refer to TM-73, "BACK-UP LAMP SWITCH : Component Inspection" (Back-up lamp switch) and TM-73, "PARK/NEUTRAL POSITION (PNP) SWITCH : Component Inspection" (PNP switch).
- Check the oil leakage. Refer to TM-75, "Inspection".

CONTROL LINKAGE

Exploded View

INFOID:0000000006417073



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

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000006417074

REMOVAL

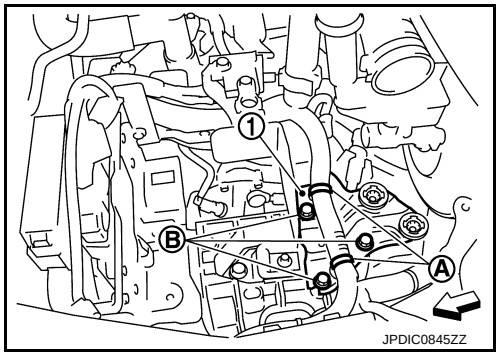
1. Shift the shifter lever to the neutral position.
2. Remove air cleaner case. Refer to EM-26, "Removal and Installation" (MR16DDT) or EM-280, "Removal and Installation" (K9K).

3. Remove bracket (1), as per the following procedure.

⇦ : Vehicle front

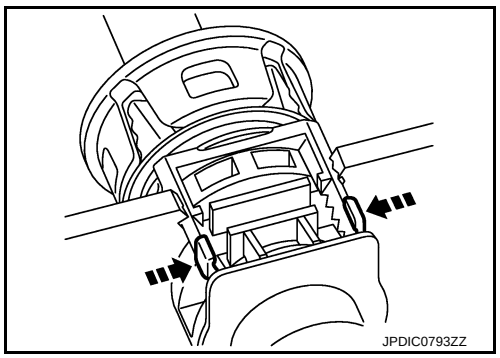
a. Disconnect clips (A) from bracket.
b. Remove bolts (B) from bracket.
c. Remove bracket.

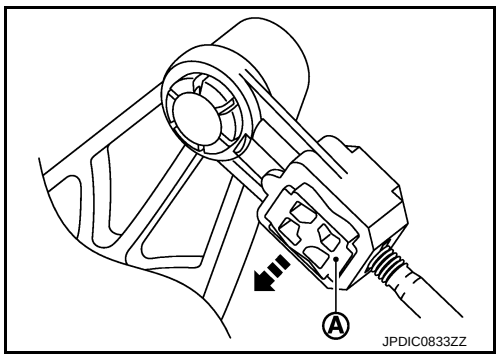
4. Pull out and disconnect the each cable from the shifter lever A and the selector lever, using a suitable remover.



JPDIC0845ZZ

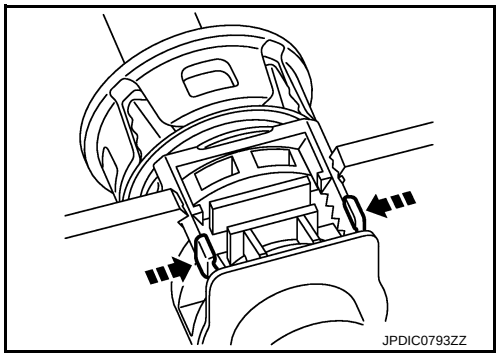
5. While pressing the lock of the selector cable in the direction of the arrow shown in the figure, remove the selector cable from the cable mounting bracket.
6. While pressing the lock of the shifter cable in the direction of the arrow shown in the figure, remove the shifter cable from the cable mounting bracket.
7. Remove cable mounting bracket from transaxle case.
8. Pull the shifter lever knob upward to remove.
9. Remove center console assembly. Refer to IP-23, "Removal and Installation".
10. Pull out and disconnect the shifter cable from the pin of the M/T shift selector assembly, using a suitable remover.
11. Pull up the stopper (A) of the selector cable in the direction of the arrow as shown in the figure.
12. Pull out and disconnect the selector cable from the pin of the M/T shift selector assembly, using a suitable remover.


JPDIC0793ZZ

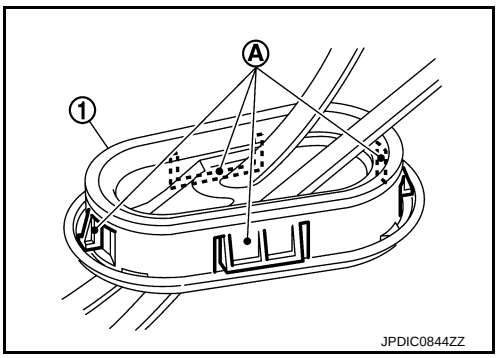


JPDIC0833ZZ

13. While pressing the lock of the selector cable in the direction of the arrow shown in the figure, remove the selector cable from the M/T shift selector assembly.
14. While pressing the lock of the shifter cable in the direction of the arrow shown in the figure, remove the shifter cable from the M/T shift selector assembly.
15. Remove the M/T shift selector assembly.
16. Remove three way catalyst and heat plate. (MR16DDT) Refer to EX-6, "Removal and Installation".
17. Remove diesel particulate filter assembly and heat plate. (K9K) Refer to EX-17, "Removal and Installation".
18. Remove the bracket from the vehicle.


JPDIC0793ZZ

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

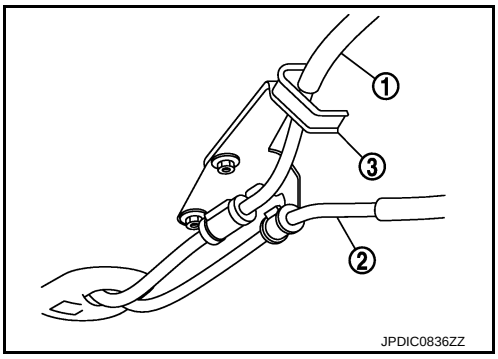


INSTALLATION

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

CAUTION:

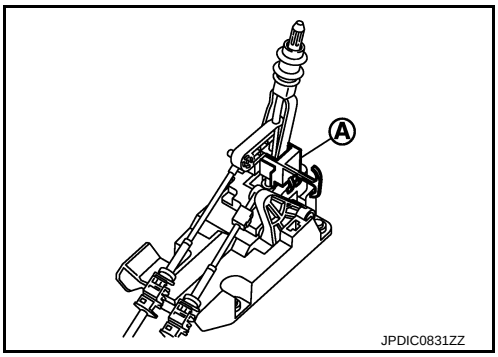
- **Install each cable without causing interference with other parts, a 120 mm (4.72 in)-or-less bend, and a 180-degrees-or-more twist.**
- **Install boot of each cable without causing interference with other parts and a 90-degrees-or-more twist.**
- **Fit boot of to center console assembly the groove on shifter lever knob.**
- To install the shifter lever knob, press it into the shifter lever.
  CAUTION:
  - **Never reuse shifter lever knob.**
  - **Be careful with orientation of shifter lever 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:
  Never reuse tapping bolt.
- Insert the each cable until it reaches the cable mounting bracket and M/T shift selector assembly.
- Insert the each cable until it reaches the shifter lever A and the selector lever.
- Shift the shifter lever to the neutral position.
- Install the shifter cable (1) and the selector cable (2) to the bracket (3) as shown in the figure.



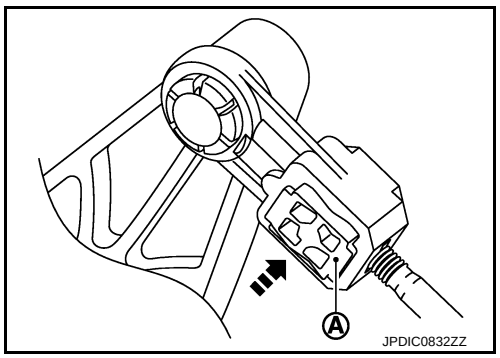
Install the selector cable (the M/T shift selector assembly side), as per the following procedure.

When M/T shift selector assembly is replaced:

1. Install the selector cable to the M/T shift selector assembly.
2. Shift the shifter lever to the neutral position.
3. Install the lever stopper (A) to the M/T shift selector assembly as shown in the figure.
   CAUTION:
   Selector cable cannot be adjusted accurately without using the lever stopper.
4. Check that the shifter lever does not move in the direction of the select. If it moves, repeat step 3.



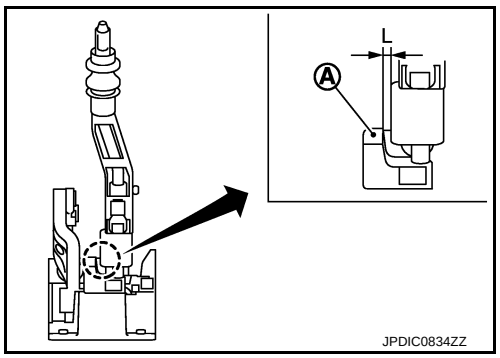
5. Insert the stopper (A) until it reaches the selector cable.
6. Remove the lever stopper from the M/T shift selector assembly.
7. Shift the shifter lever to each gear position to check that there are no bindings. If any, repeat step 3.



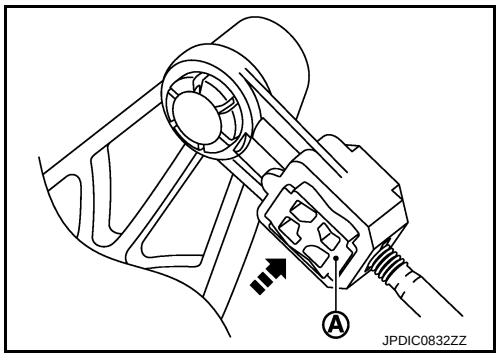
When M/T shift selector assembly is not replaced:

1. Install the selector cable to the M/T shift selector assembly.
2. Shift the shifter lever to the 4th gear position.
3. Adjust the length “L” between the stopper (A) and the lever 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. Shift the shifter lever to each gear position to check that there are no bindings. If any, repeat step 3.



Inspection

INFOID:0000000006417075

INSPECTION AFTER INSTALLATION

Shifter Lever Knob

Check that the shifter lever 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 M/T shift selector assembly.
- Pull grommet in the removal direction to check that it dose not disconnect from the vehicle.

M/T Shift Selector Assembly and Shifter Lever

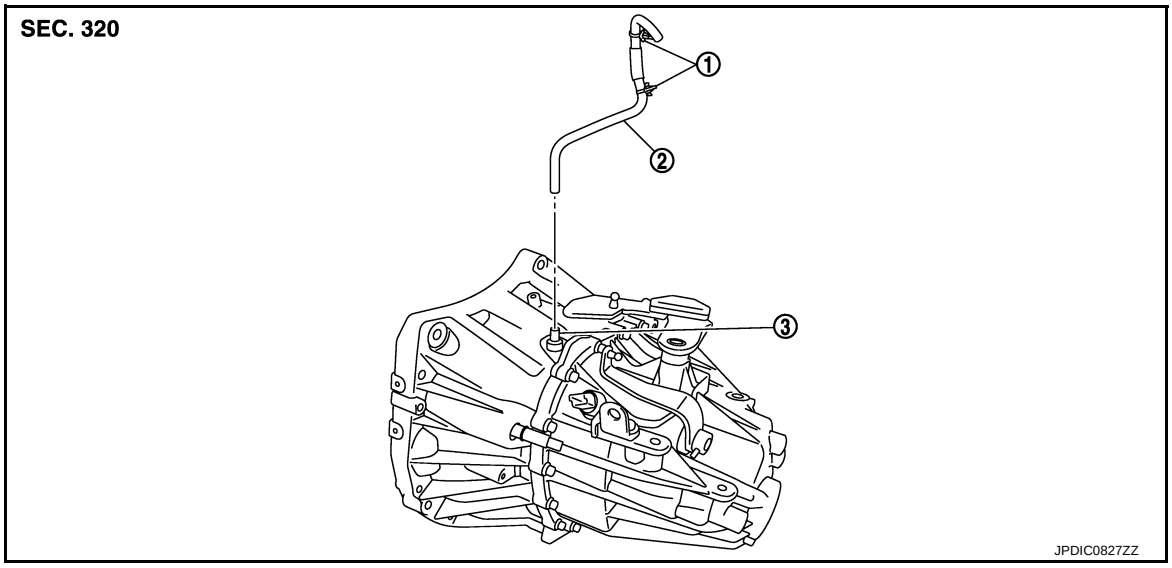
- Check that there is no tangle, hook, abnormal sound, looseness, and interference when the shifter lever is moved to each position. If there is a malfunction, then repair or replace the malfunctioning part.
- Check that the shifter lever smoothly returns to the neutral position after moving the lever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

AIR BREATHER HOSE

MR16DDT

MR16DDT : Exploded View

INFOID:0000000006417190



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

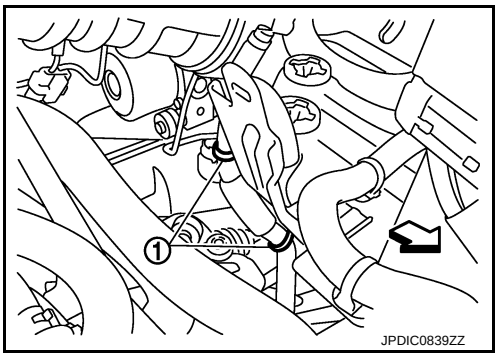
MR16DDT : Removal and Installation

INFOID:0000000006417191

REMOVAL

1. Remove air cleaner case. Refer to EM-26, "Removal and Installation".
2. Remove clips (1).

⇦ : Vehicle 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

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

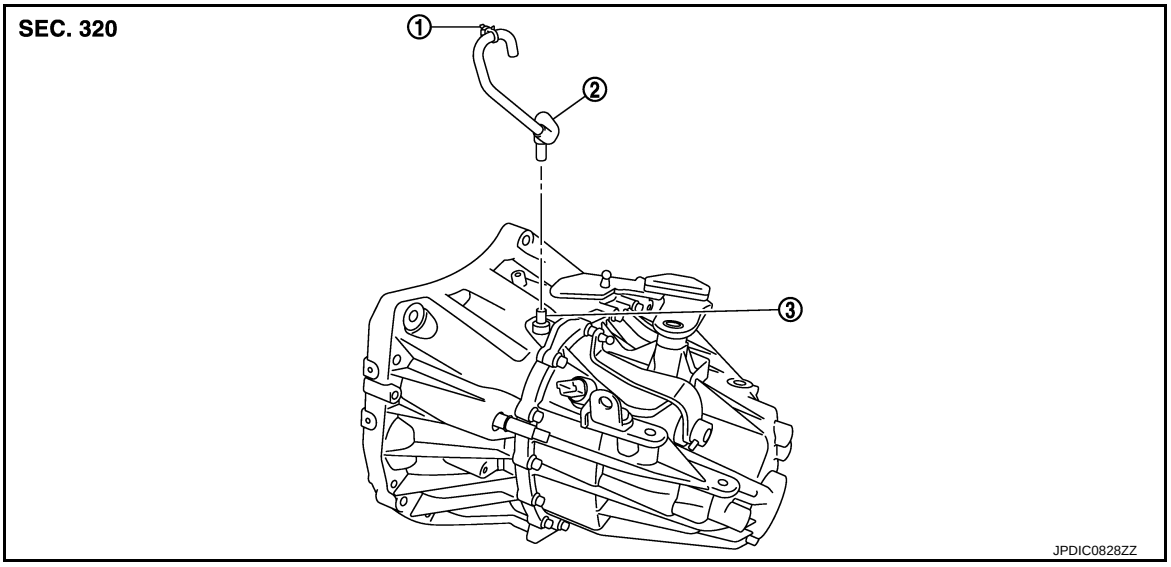
CAUTION:

- **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 mounting hole.**

K9K

K9K : Exploded View

INFOID:0000000006417192



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

K9K : Removal and Installation

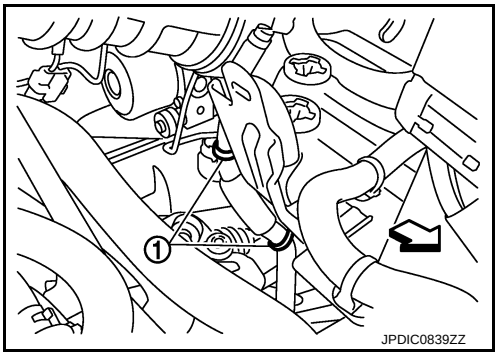
INFOID:0000000006417193

REMOVAL

1. Remove clips (1).

⇦ : Vehicle front

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



INSTALLATION

Note the following, and install 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 mounting hole.**

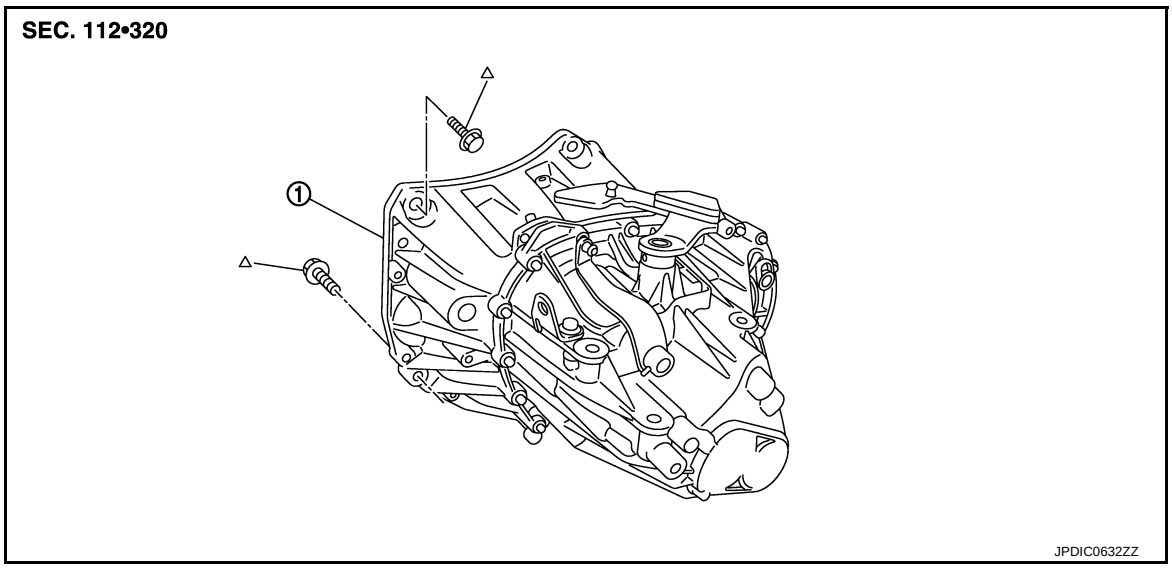
UNIT REMOVAL AND INSTALLATION

TRANSAXLE ASSEMBLY

MR16DDT

MR16DDT : Exploded View

INFOID:0000000006415751



1. Transaxle assembly

△ : Refer to "INSTALLATION" in TM-84, "MR16DDT : Removal and Installation" for the locations and tightening torque.

MR16DDT : Removal and Installation

INFOID:0000000006415752

CAUTION:
Never 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-27, "Removal and Installation".

REMOVAL

1. Disconnect battery cable from negative terminal. Refer to PG-124, "Removal and Installation".
2. Shift the shifter lever to the neutral position.
3. Remove battery. Refer to PG-124, "Removal and Installation".
4. Remove air cleaner case. Refer to EM-26, "Removal and Installation".
5. Remove air breather hose. Refer to TM-82, "MR16DDT : Removal and Installation".
6. Disconnect position switch connector. Refer to TM-77, "Removal and Installation".
7. Remove harness clip from transaxle assembly.
8. Disconnect selector cable and shifter cable from transaxle assembly. Refer to TM-78, "Removal and Installation".
9. Remove starter motor. Refer to STR-29, "MR16DDT : Removal and Installation".
10. Remove clutch tube from CSC (Concentric Slave Cylinder). Refer to CL-25, "Removal and Installation".
    CAUTION:
    - **Keep painted surface on the body or other parts free of clutch fluid. If it spills, wipe up immediately and wash the affected area with water.**
    - **Never depress clutch pedal during removal procedure.**
11. Remove engine under cover.
12. Remove fender protector LH. Refer to EXT-22, "Removal and Installation".
13. Disconnect ground cable.
14. Remove front suspension member. Refer to FSU-18, "Removal and Installation".

15. Remove front drive shafts. Refer to FAX-22, "LEFT SIDE : Removal and Installation" (LEFT SIDE) and FAX-24, "RIGHT SIDE : Removal and Installation" (RIGHT SIDE).
NOTE:
Insert a suitable plug into differential side oil seal after removing front drive shaft.
16. Set a suitable jack to transaxle assembly and then set a suitable jack to engine assembly.
CAUTION:
When setting a suitable jack, be careful so that it does not contact with the switch.
17. Remove engine mounting insulator (LH) mounting bolts from transaxle assembly. Refer to EM-55, "2WD : Removal and Installation".

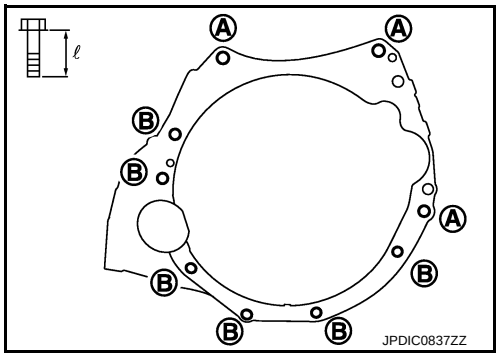
⇦ : Vehicle front

18. Remove rear engine mounting bracket and rear torque rod. Refer to EM-55, "2WD : Removal and Installation".
19. Remove transaxle assembly mounting bolts.
20. Remove transaxle assembly from the engine.
CAUTION:
- **Fix transaxle assembly to a suitable jack.**
- **The transaxle assembly must not interfere with the wire harnesses and clutch tube.**

21. Remove CSC. Refer to CL-27, "Removal and Installation".

INSTALLATION

Note the following, and install in the reverse order of removal.
CAUTION:
- **Fix transaxle assembly to a suitable jack.**
- **The transaxle assembly must not interfere with the wire harnesses and clutch tube.**
- **When installing transaxle assembly, never 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. The figure is the view 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)	

MR16DDT : Inspection

INFOID:0000000006415753

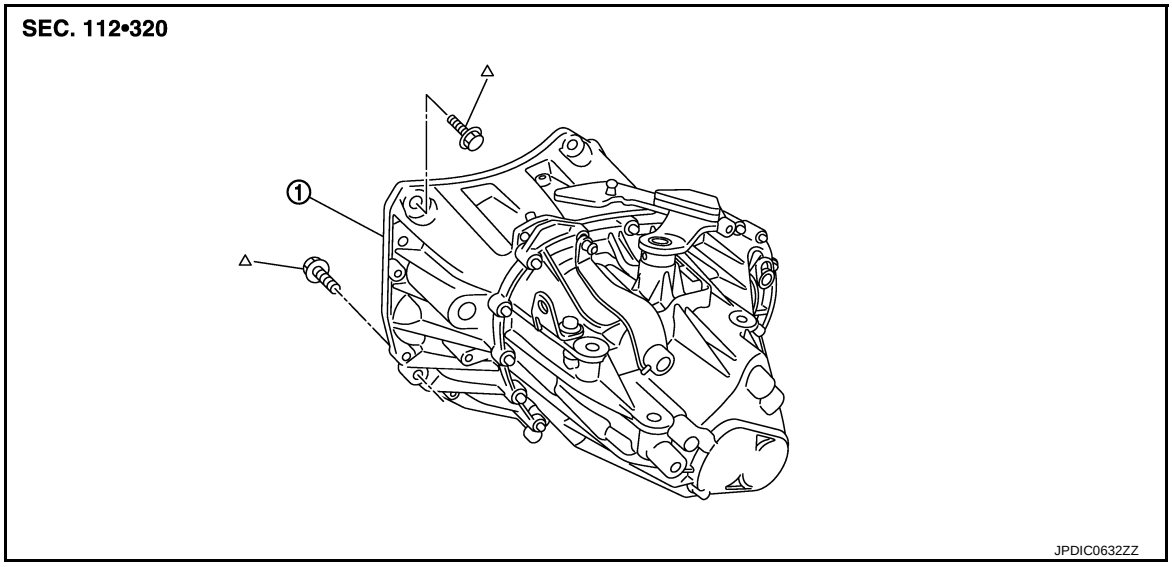
INSPECTION AFTER INSTALLATION

- Check the operation of the control linkage. Refer to TM-81, "Inspection".
- Check the oil leakage and the oil level. Refer to TM-75, "Inspection".

K9K

K9K : Exploded View

INFOID:0000000006417155



1. Transaxle assembly

△ : Refer to "INSTALLATION" in TM-86, "K9K : Removal and Installation" for the locations and tightening torque.

K9K : Removal and Installation

INFOID:0000000006417156

CAUTION:
Never 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-27, "Removal and Installation".

REMOVAL

1. Disconnect battery cable from negative terminal. Refer to PG-124, "Removal and Installation".
2. Shift the shifter lever to the neutral position.
3. Remove battery. Refer to PG-124, "Removal and Installation".
4. Remove air cleaner case. Refer to EM-280, "Removal and Installation".
5. Remove air breather hose. Refer to TM-83, "K9K : Removal and Installation".
6. Disconnect position switch connector. Refer to TM-77, "Removal and Installation".
7. Remove harness clip from transaxle assembly.
8. Remove crankshaft position sensor. Refer to EM-288, "Removal and Installation".
9. Disconnect selector cable and shifter cable from transaxle assembly. Refer to TM-78, "Removal and Installation".
10. Remove starter motor. Refer to EM.
11. Remove clutch tube from CSC (Concentric Slave Cylinder). Refer to CL-25, "Removal and Installation".
    CAUTION:
    - **Keep painted surface on the body or other parts free of clutch fluid. If it spills, wipe up immediately and wash the affected area with water.**
    - **Never depress clutch pedal during removal procedure.**
12. Remove engine under cover.
13. Remove fender protector LH. Refer to EXT-22, "Removal and Installation".
14. Disconnect ground cable.
15. Remove front drive shafts. Refer to FAX-78, "LEFT SIDE : Removal and Installation" (LEFT SIDE) and FAX-79, "RIGHT SIDE : Removal and Installation" (RIGHT SIDE).
    NOTE:
    Insert a suitable plug into differential side oil seal after removing front drive shaft.
16. Remove bracket from clutch housing.

17. Set a suitable jack to transaxle assembly and then set a suitable jack to engine assembly.
CAUTION:
When setting a suitable jack, be careful so that it does not contact with the switch.
18. Remove engine mounting bracket (LH) (TBD) mounting bolts from transaxle assembly. Refer to EM-326, "Removal and Installation".

⇦ : Vehicle front

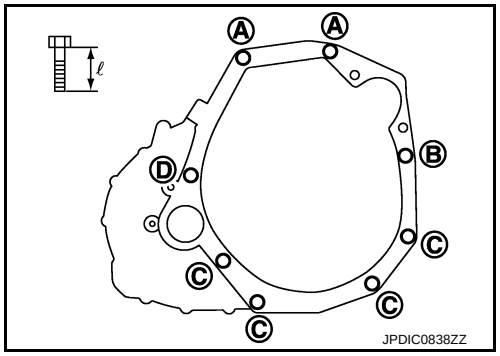
19. Remove bracket stay mounting bolts and move thermo plunger unit aside not to interfere with work. Refer to CO-72, "Removal and Installation".
20. Remove transaxle assembly mounting bolts.
21. Remove transaxle assembly from the engine.
CAUTION:
- **Fix transaxle assembly to a suitable jack.**
- **The transaxle assembly must not interfere with the wire harnesses and clutch tube.**

22. Remove CSC. Refer to CL-27, "Removal and Installation".

INSTALLATION

Note the following, and install in the reverse order of removal.
CAUTION:
- **Fix transaxle assembly to a suitable jack.**
- **The transaxle assembly must not interfere with the wire harnesses and clutch tube.**
- **When installing transaxle assembly, never 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. The figure is the view from the engine.

Bolt symbol	A	B	C	D
Insertion direction	Transaxle to engine		Engine to transaxle	
Quantity	2	1	4	1
Bolt length “ℓ” mm (in)	50 (1.97)	80 (3.15)	65 (2.56)	80 (3.15)
Tightening torque N·m (kg-m, ft-lb)	48 (4.9, 35)			



K9K : Inspection

INFOID:0000000006417157

INSPECTION AFTER INSTALLATION

- Check the operation of the control linkage. Refer to TM-81, "Inspection".
- Check the oil leakage and the oil level. Refer to TM-75, "Inspection".

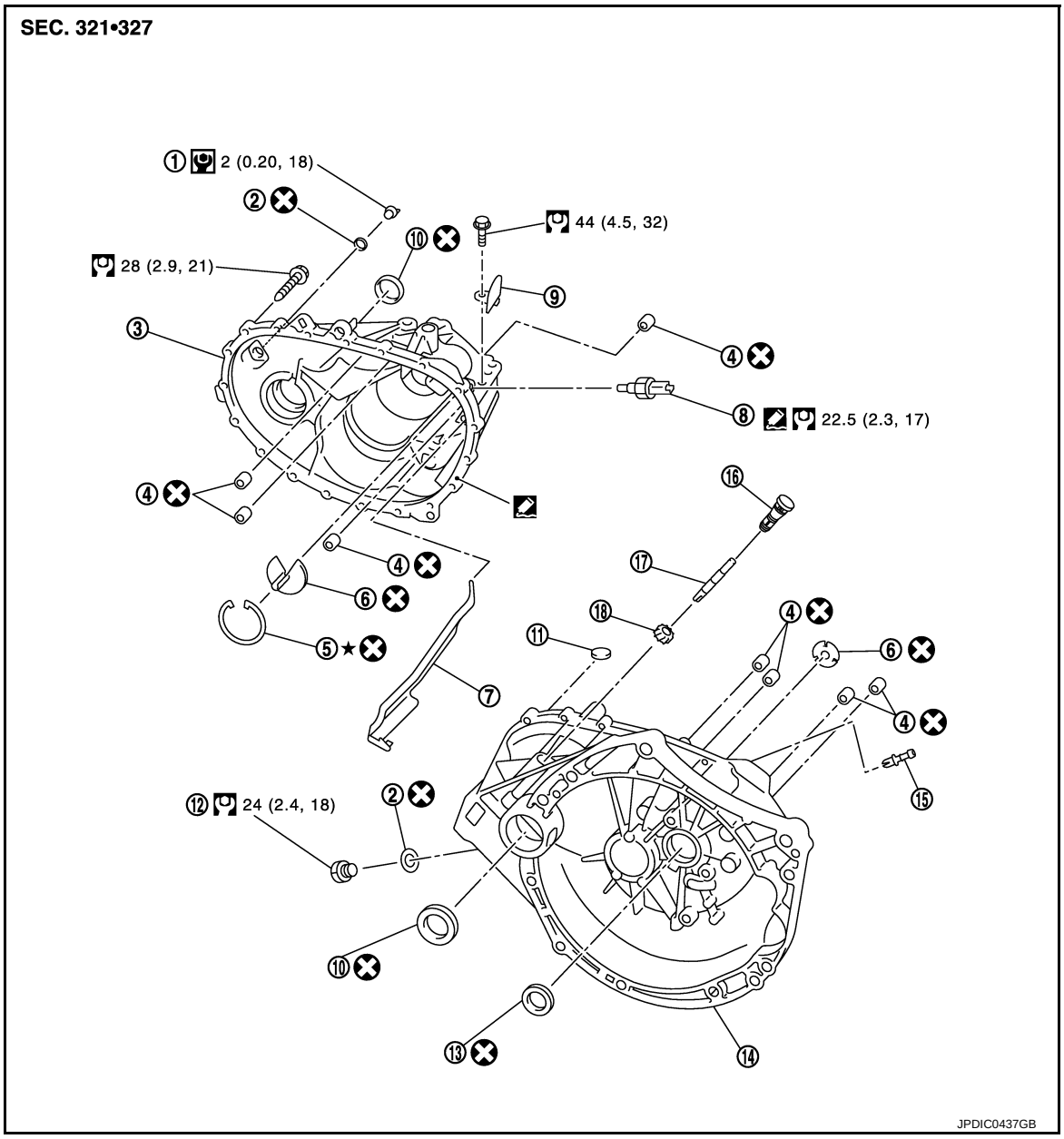
UNIT DISASSEMBLY AND ASSEMBLY

TRANSAXLE ASSEMBLY

Exploded View

INFOID:0000000006415754

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

: Apply Genuine Liquid Gasket, Three Bond 1215 or an equivalent.

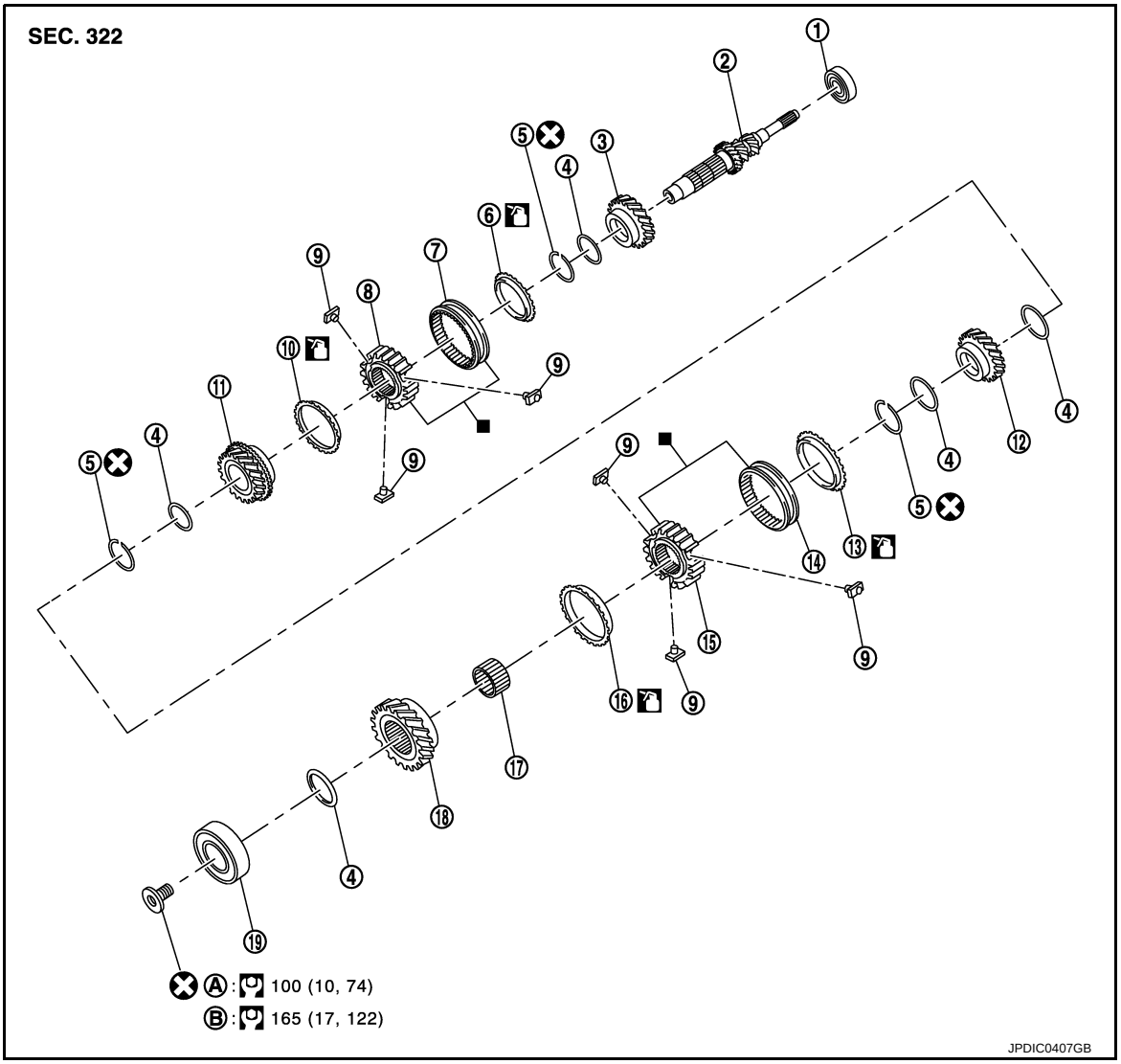
: Always replace after every disassembly.

★ : Select with proper thickness.

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

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

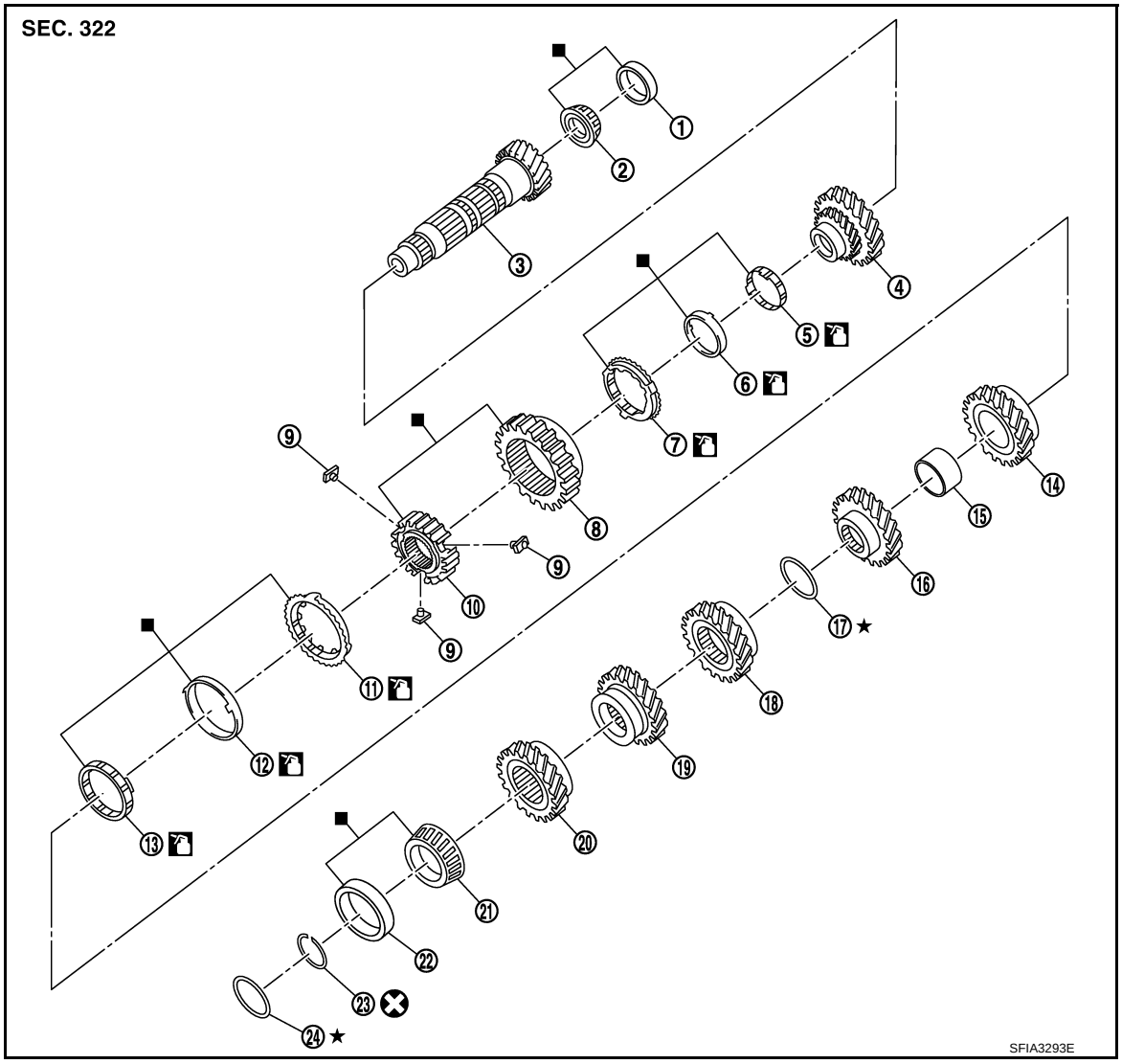
A. First step
B. Final step

: Apply gear oil.

: Replace the parts as a set.

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)



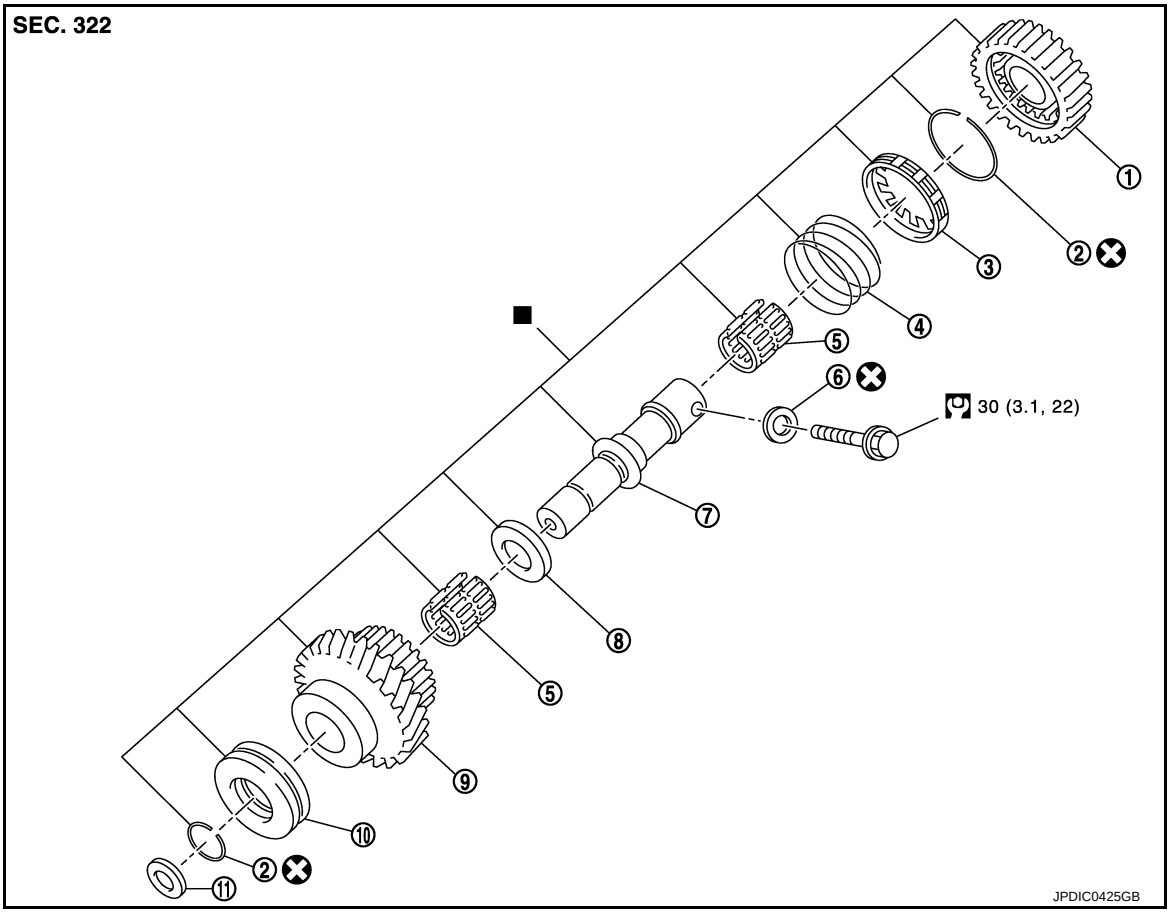
1. Mainshaft front bearing outer race
2. Mainshaft front bearing inner race
3. Mainshaft
4. 1st main gear
5. 1st inner baulk ring
6. 1st synchronizer cone
7. 1st outer baulk ring
8. 1st-2nd coupling sleeve
9. Insert key
10. 1st-2nd synchronizer hub
11. 2nd outer baulk ring
12. 2nd synchronizer cone
13. 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

: Apply gear oil.

■ : Replace the parts as a set.

★ : Select with proper thickness.

⊗ : Always replace after every disassembly.



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

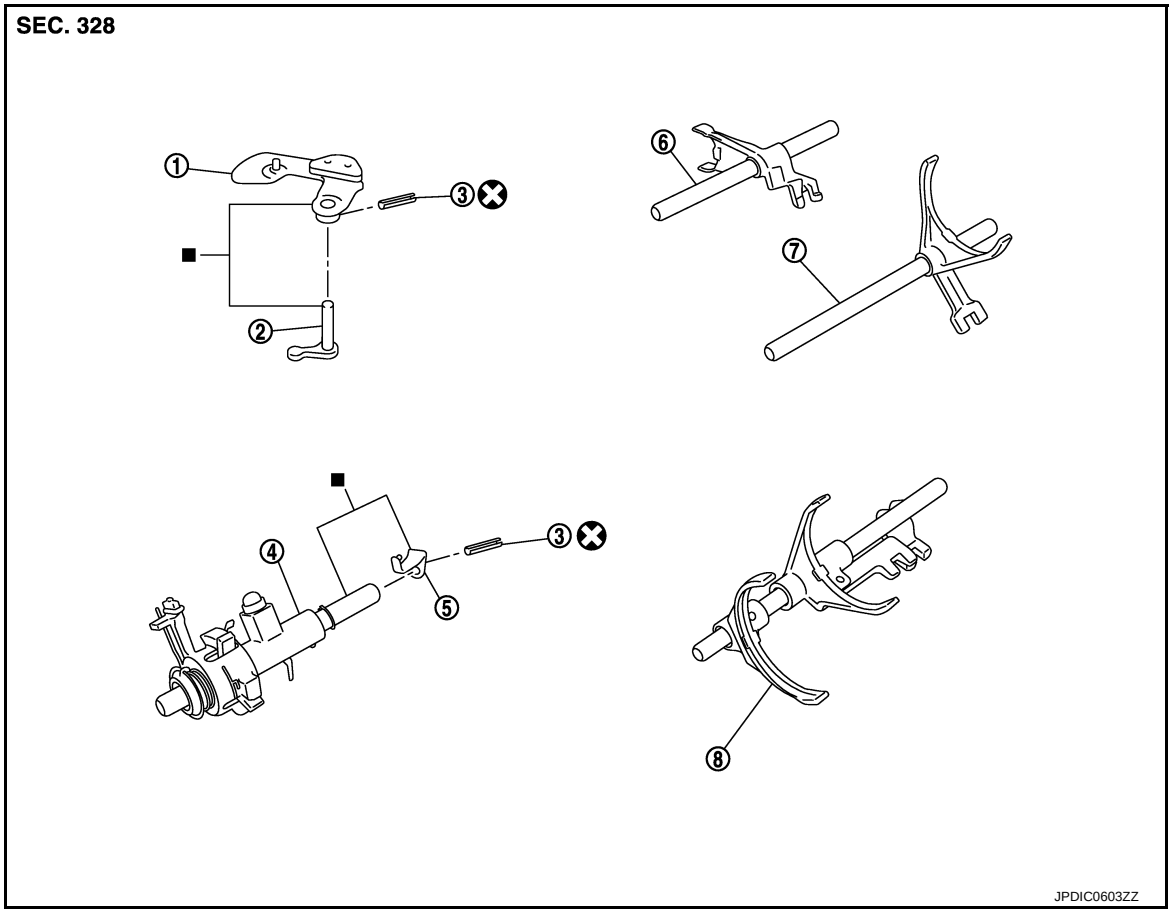
■ : Replace the parts as a set.

⊗ : Always replace after every disassembly.

: N·m (kg-m, ft-lb)

SHIFT FORK AND FORK ROD

SEC. 328

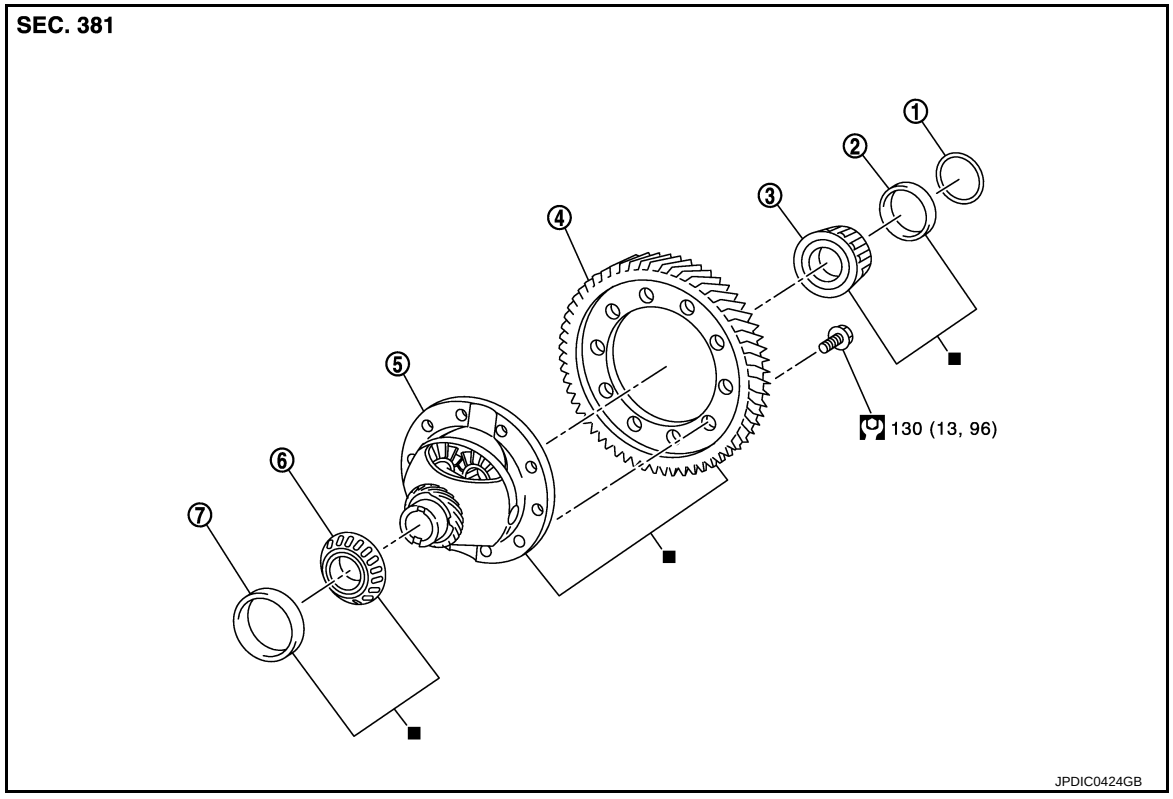


1. Shifter lever A
2. Shifter lever B
3. Retaining pin
4. Selector
5. Selector lever
6. Reverse fork rod
7. 1st-2nd fork rod
8. Fork rod

■ : Replace the parts as a set.

⊗ : Always replace after every disassembly.

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)

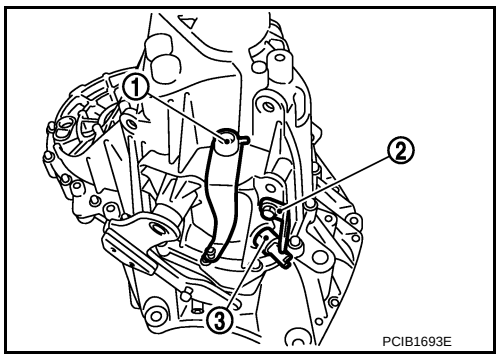
■ : Replace the parts as a set.

: N·m (kg-m, ft-lb)

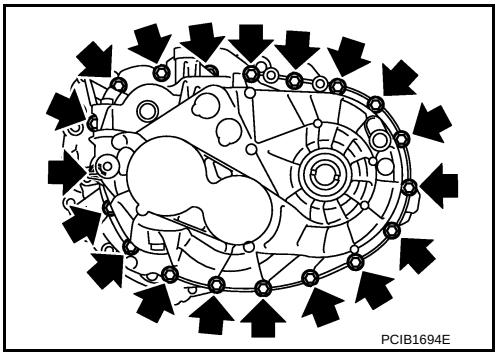
Disassembly

INFOID:0000000006415755

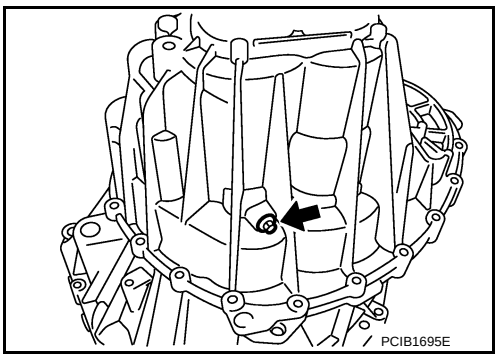
1. Remove drain plug and gasket from clutch housing, using a socket [Commercial service tool] and then drain gear oil.
2. Remove filler plug and gasket from transaxle case.
3. Remove selector lever (1) retaining pin with a pin punch to remove selector lever.
4. Remove bracket (2) and position switch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



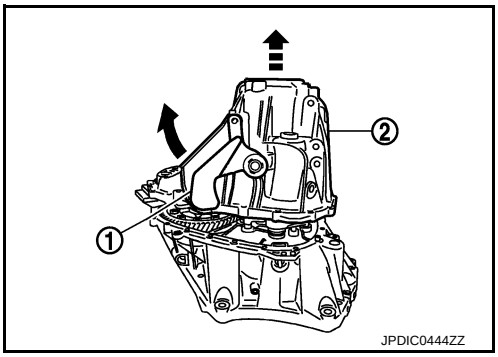
5. Remove transaxle case mounting bolts (⬅).



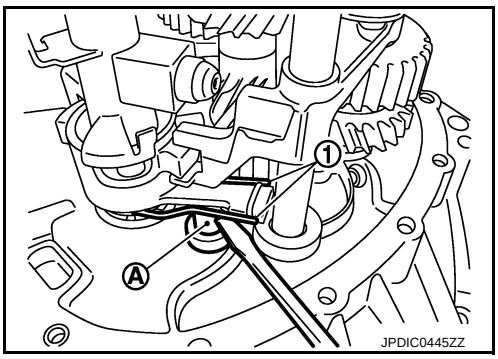
6. Remove reverse idler shaft mounting bolt (⬅) and seal washer.



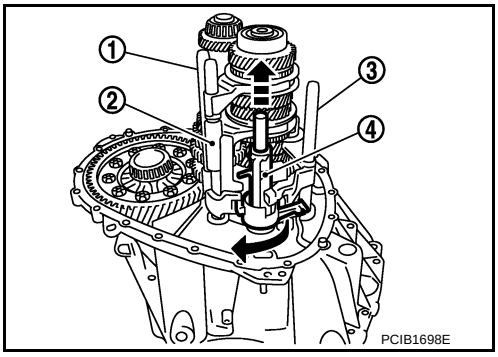
7. Remove transaxle case (2) while rotating shifter lever A (1) in the direction as shown in the figure.



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.

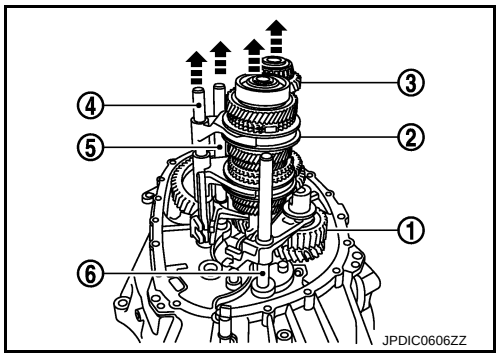


11. Remove reverse idler shaft assembly (1), as per the following procedure.

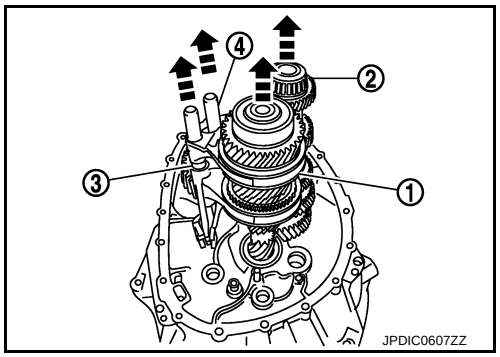
a. Pull up input shaft assembly (2), mainshaft assembly (3), fork rod (4), and 1st-2nd fork rod (5).
NOTE:
It is easier to pull up when shifting each fork rod to each shaft side.

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

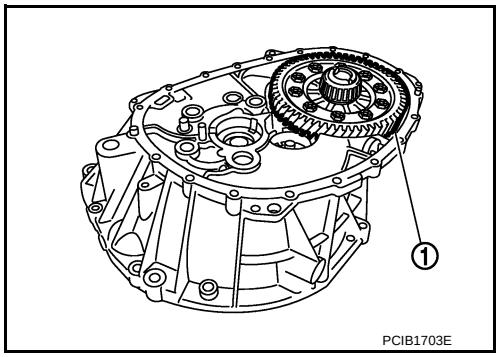
12. Remove spring washer from clutch housing.



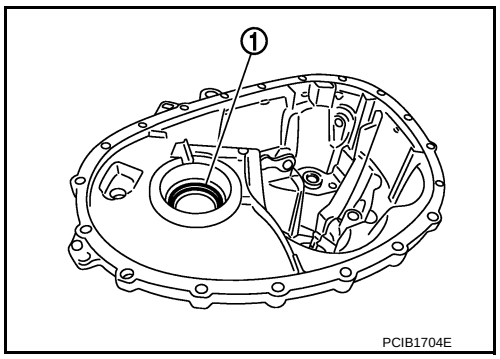
13. Pull up and remove input shaft assembly (1), mainshaft assembly (2), fork rod (3), and 1st-2nd fork rod (4) from clutch housing.
NOTE:
It is easier to pull up when shifting each fork rod to each shaft side.



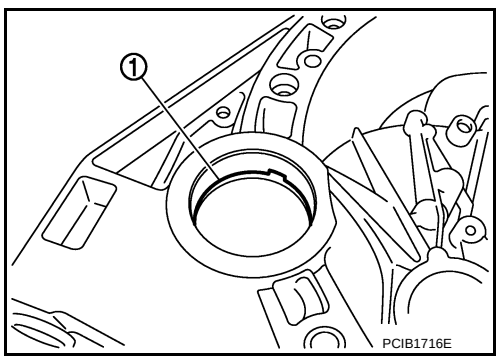
14. Remove final drive assembly (1) from clutch housing.
15. Remove magnet from clutch housing.



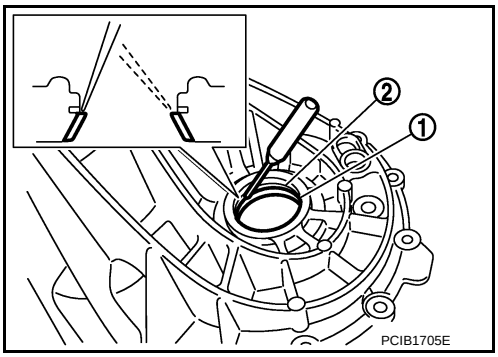
16. Remove differential side oil seals (1) from clutch housing and transaxle case.
CAUTION:
Never damage clutch housing and transaxle case.



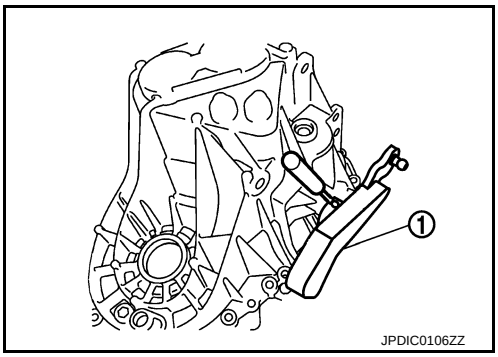
17. Remove differential side bearing outer race (1) from clutch housing, using a brass rod.
CAUTION:
Never damage clutch housing.



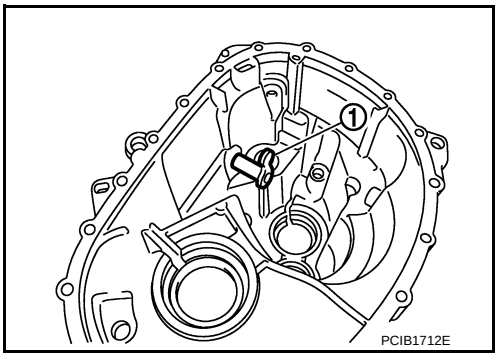
18. Remove differential side bearing outer race (1) from transaxle case, using a brass rod.
    CAUTION:
    Never damage transaxle case.
19. Remove shim (2) from transaxle case.



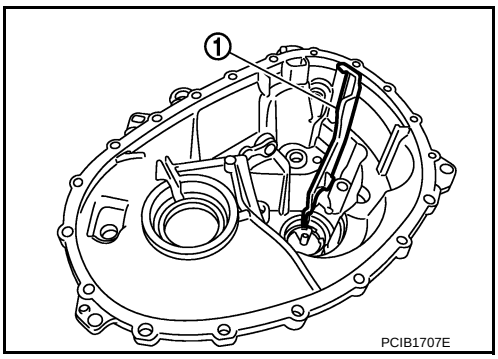
20. Remove shifter lever A (1) retaining pin, using a pin punch.
21. Remove shifter lever A from transaxle case.



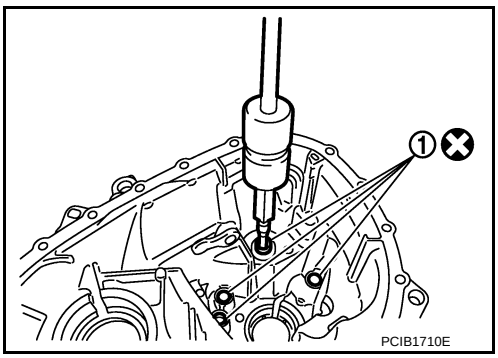
22. Remove shifter lever B (1) from transaxle case.



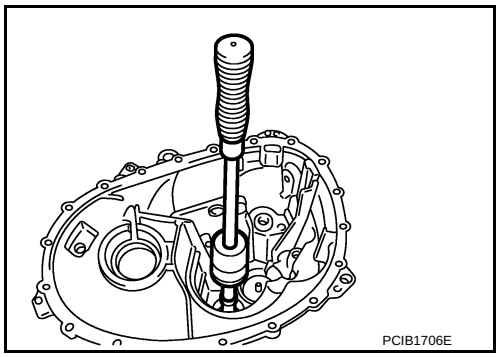
23. Remove oil gutter (1) from transaxle case.



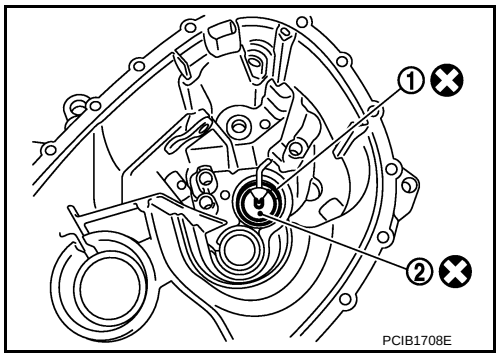
24. Remove bushings (1) from transaxle case, using a remover [Commercial service tool].



25. Remove mainshaft rear bearing outer race from transaxle case, using a remover [Commercial service tool].
26. Remove mainshaft rear bearing adjusting shim from transaxle case.

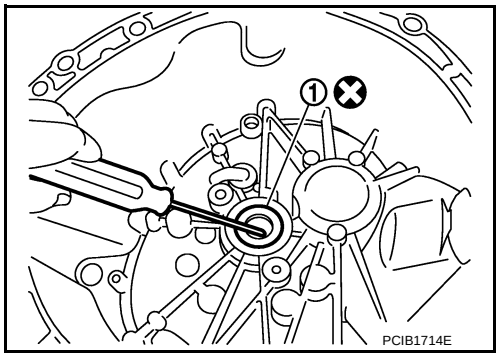

PCIB1706E

27. Remove snap ring (1) and oil channel (2) from transaxle case.



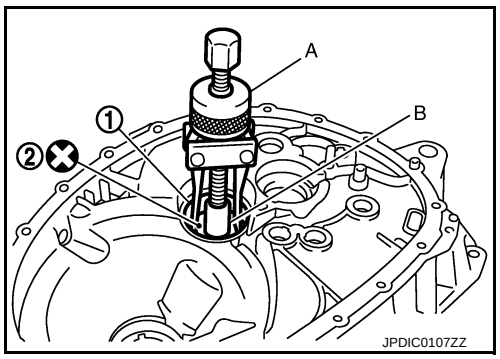
PCIB1708E

28. Remove input shaft oil seal (1) from clutch housing, using an oil seal remover.
CAUTION:
Never damage clutch housing.



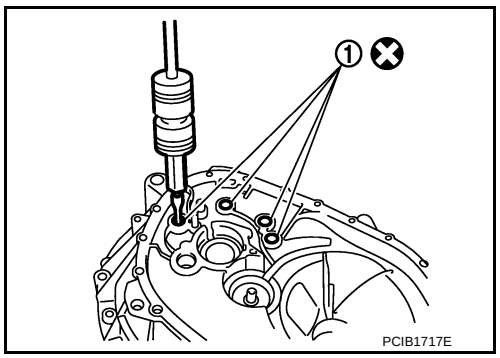
PCIB1714E

29. Remove mainshaft front bearing outer race (1) from clutch housing, using the puller (A) [SST: KV381054S0] and a spacer (B) [Commercial service tool].
30. Remove oil channel (2) from clutch housing.



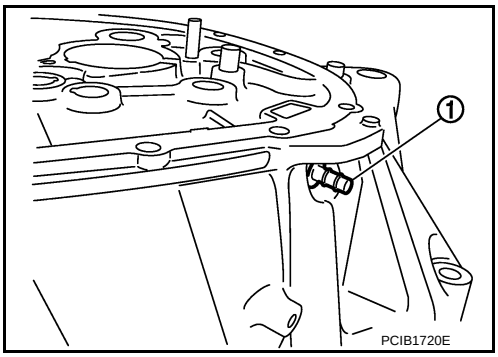
JPDIC0107ZZ

31. Remove bushing (1) from clutch housing, using a remover [Commercial service tool].

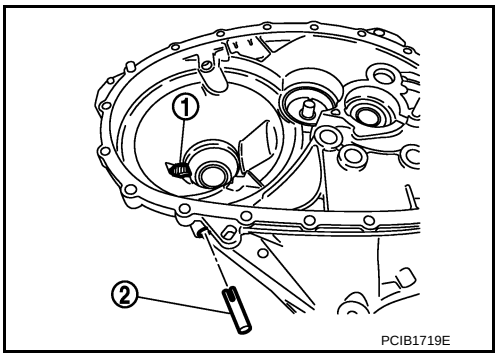


PCIB1717E

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



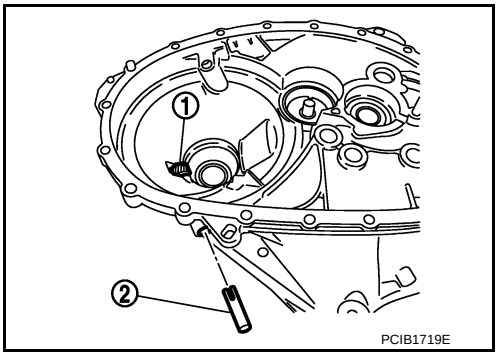
34. Remove pinion gear (1) and pinion shaft (2) from clutch housing.



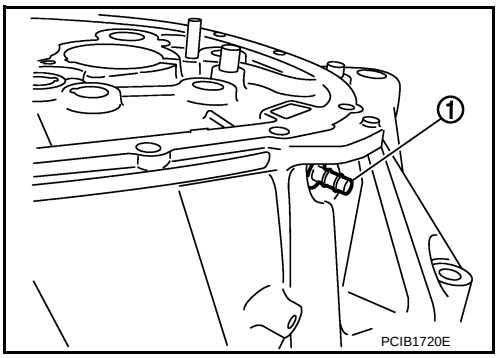
Assembly

INFOID:0000000006415756

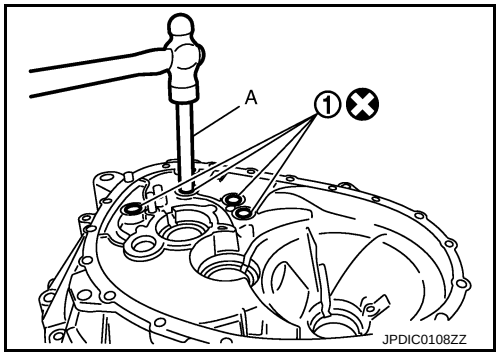
1. Install pinion gear (1) and pinion shaft (2) to clutch housing.
   CAUTION:
   Replace transaxle assembly when replacing clutch housing.
2. Install plug to clutch housing.



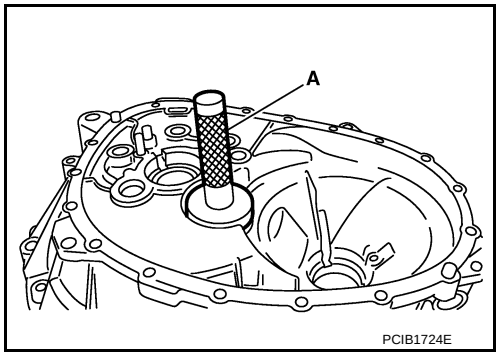
3. Install 2 way connector (1) to clutch housing.



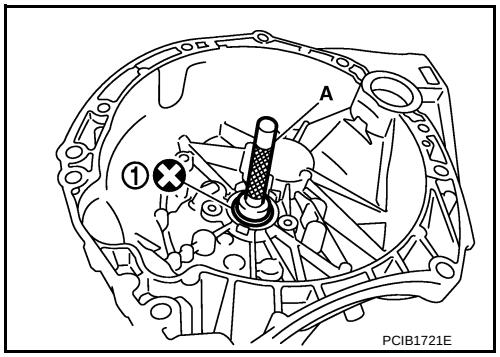
4. Install bushings (1) so that they becomes even to clutch housing edge surface, using a drift (A) [Commercial service tool].
5. Install oil channel to clutch housing.
CAUTION:
Never reuse oil channel.



6. Install mainshaft front bearing outer race to clutch housing, using the drift (A) [SST: KV38100200].
CAUTION:
Replace mainshaft front bearing outer race and mainshaft front bearing inner race as a set.

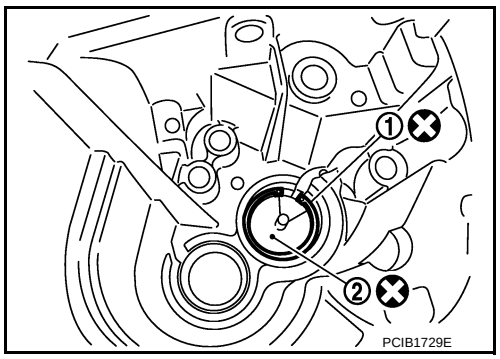


7. Install input shaft oil seal (1) to clutch housing, using the drift (A) [SST: ST33220000].

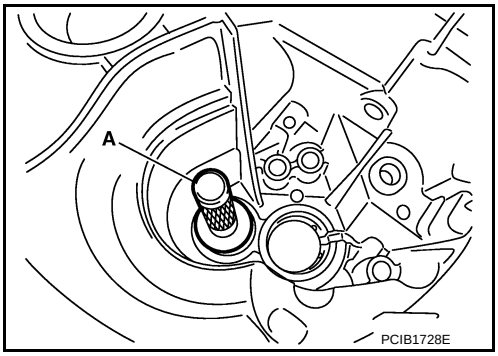


8. Install snap ring (1) and oil channel (2) to transaxle case.
CAUTION:
- **Select and install snap ring that has the same thickness as previous one.**
- **Replace transaxle assembly when replacing transaxle case.**

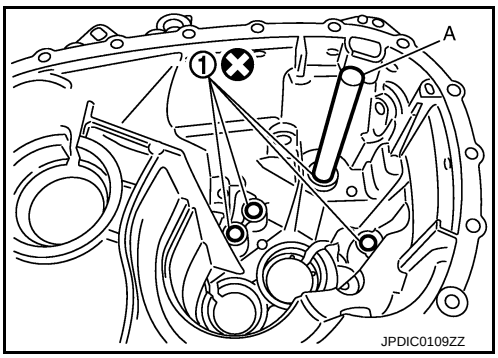
9. Install mainshaft rear bearing adjusting shim to transaxle case.
CAUTION:
Select mainshaft rear bearing adjusting shim, as per the following procedure when replacing mainshaft adjusting shim, 6th main gear, 5th main gear, or 4th main gear.
- **Replace mainshaft adjusting shim.**
  - **If new mainshaft 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).**
  - **Decrease the thickness of the mainshaft rear bearing adjusting shim, if the difference is greater than 0.025 mm (0.0010 in).**



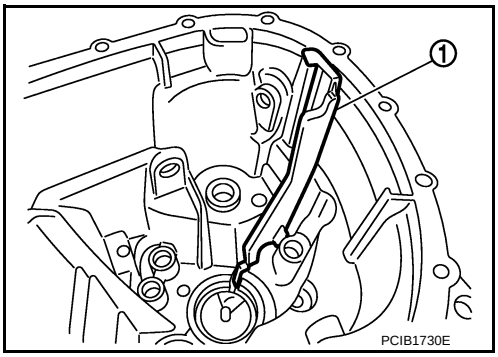
10. Install mainshaft rear bearing outer race to transaxle case, using the drift (A) [SST: KV38100200].
CAUTION:
Replace mainshaft rear bearing outer race and mainshaft rear bearing inner race as a set.



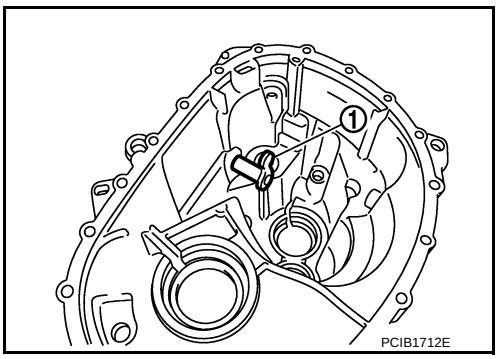
11. Install bushings (1) to transaxle case, using a drift (A) [Commercial service tool].



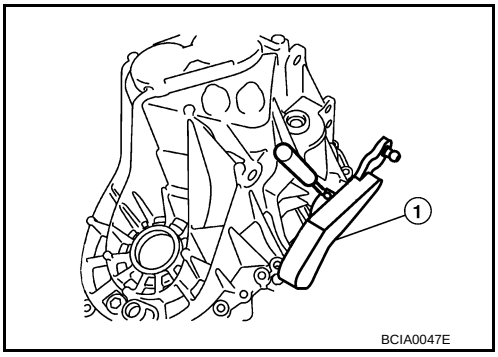
12. Install oil gutter (1) to transaxle case.



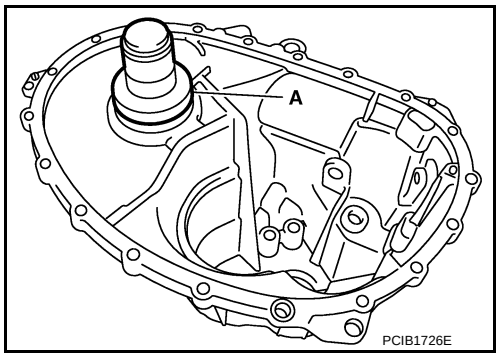
13. Install shifter lever B (1) to transaxle case.
CAUTION:
Replace shifter lever A and shifter lever B as a set.
14. Install shifter lever A to transaxle case.
CAUTION:
Replace shifter lever A and shifter lever B as a set.



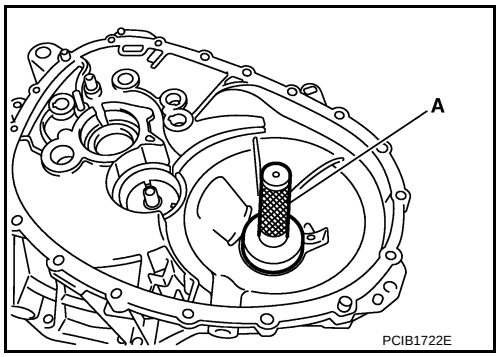
15. Install retaining pin to shifter lever A (1), using a pin punch.
CAUTION:
Never reuse retaining pin.
16. Install shim to transaxle case.



17. Install differential side bearing outer race (transaxle case side) to transaxle case, using the drift (A) [SST: ST33400001].
CAUTION:
Replace differential side bearing outer race (transaxle case side) and differential side bearing inner race (transaxle case side) as a set.



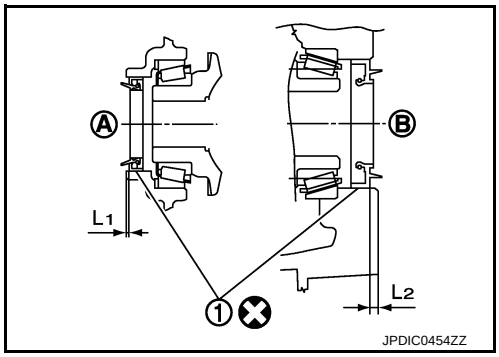
18. Install differential side bearing outer race (clutch housing side) to clutch housing, using the drift (A) [SST: KV38100200].
CAUTION:
Replace differential side bearing outer race (clutch housing side) and differential side bearing inner race (clutch housing side) as a set.



19. Install differential side oil seals (1) to clutch housing and transaxle case, using the drift [Stamping number: B.vi 1666-B] of the drift set [SST: KV32500QAA].

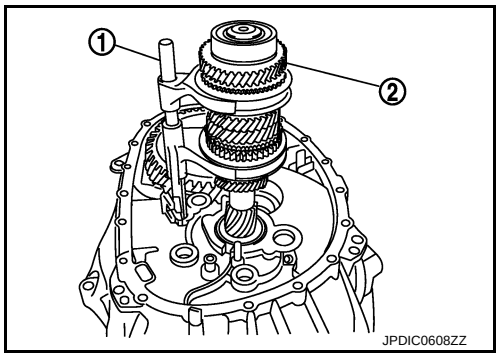
A : Transaxle case side
B : Clutch housing side

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)

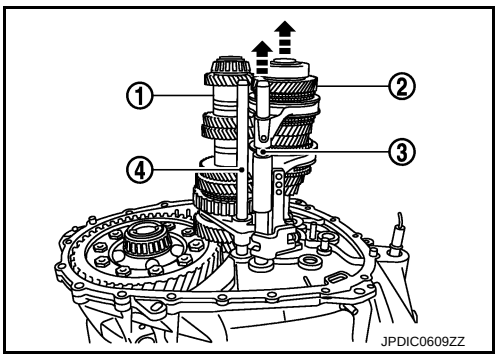


CAUTION:
- **Never incline differential side oil seal.**
- **Never damage clutch housing and transaxle case.**

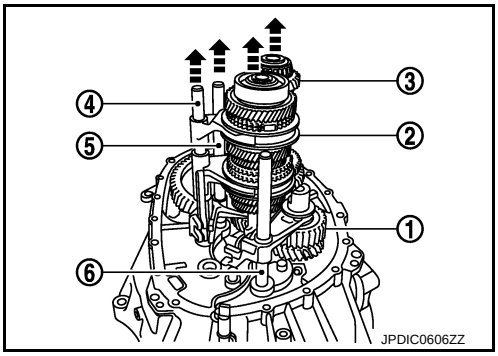
20. Install magnet to clutch housing.
21. Install final drive assembly to clutch housing.
22. Set fork rod (1) to input shaft assembly (2), and then install them to clutch housing.



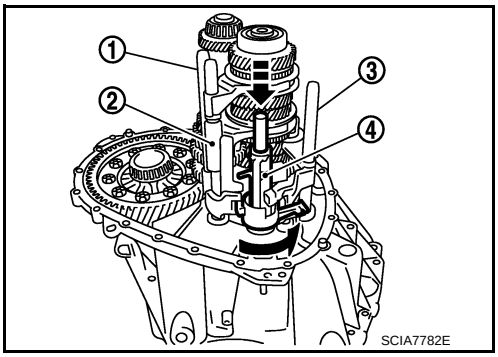
23. Install mainshaft assembly (1), as per the following procedure.
a. Pull up input shaft assembly (2) and fork rod (3).
b. Set 1st-2nd fork rod (4) to mainshaft assembly, and then install them to clutch housing.



24. Install reverse idler shaft assembly (1), as per 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 then install them to clutch housing.

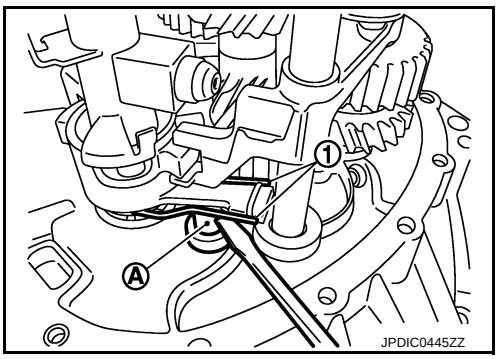


25. Shift 1st-2nd fork rod (1), fork rod (2), and reverse fork rod (3) to the neutral position.
26. Install selector (4) to clutch housing.
CAUTION:
Replace selector lever and selector as a set.

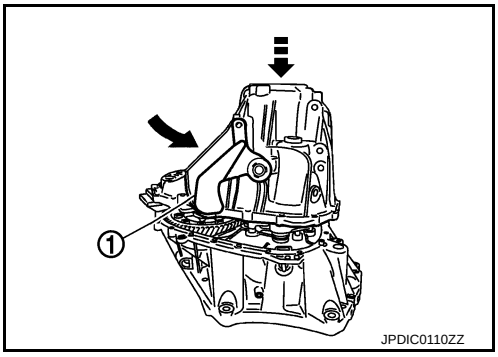


27. Install selector spring (1) to return bushing (A).
28. Apply recommended sealant to mounting surface of transaxle case.
- **Use Genuine Liquid Gasket, Three Bond 1215 or an equivalent.**

CAUTION:
- **Never allow old liquid gasket, moisture, oil, or foreign matter to remain on mounting surface.**
- **Check that mounting surface is not damaged.**
- **Apply sealant bead continuously.**



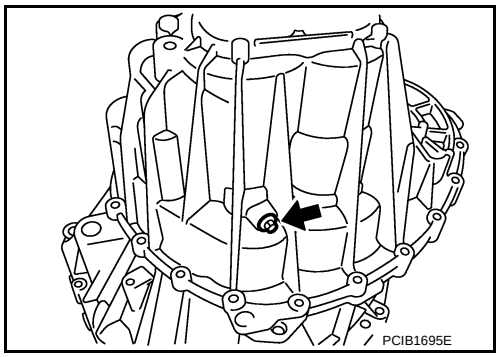
29. Install transaxle case to clutch housing while rotating shifter lever A (1) in the direction as shown in the figure.



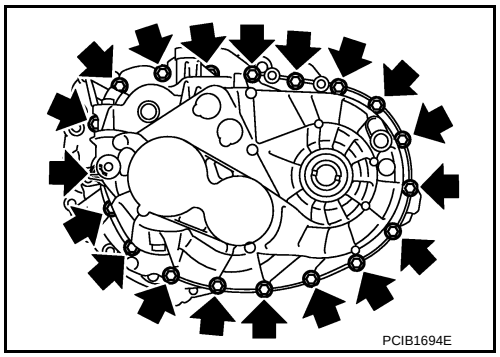
30. Install reverse idler shaft mounting bolt (⬅), as per the following procedure.

a. Install seal washer to reverse idler shaft mounting bolt, and install reverse idler shaft mounting bolt to transaxle case.
CAUTION:
Never reuse seal washer.

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


PCIB1695E

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


PCIB1694E

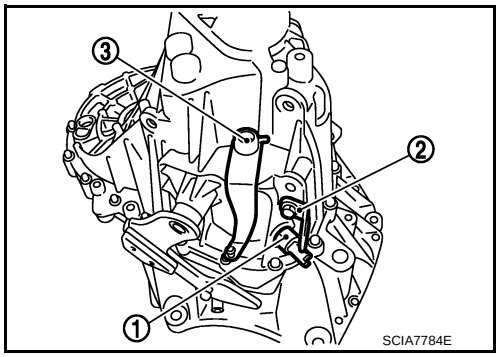
32. Install position switch (1), as per the following procedure.

a. Apply recommended sealant to threads of position switch.
- **Use Genuine Liquid Gasket, Three Bond 1215 or an equivalent.**

CAUTION:
Never 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.

33. Install bracket (2) to transaxle case, and tighten mounting bolt to the specified torque.



SCIA7784E

34. Install selector lever (3), as per 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 pin punch.
CAUTION:
Never reuse retaining pin.

35. Install drain plug, as per the following procedure.

a. Install gasket to drain plug.
CAUTION:
Never reuse gasket.

b. Install drain plug to clutch housing, using a socket [Commercial service tool].

c. Tighten drain plug to the specified torque.

36. Install filler plug, as per the following procedure.

a. Install gasket to filler plug, and then install them to transaxle case.
CAUTION:
Never reuse gasket.

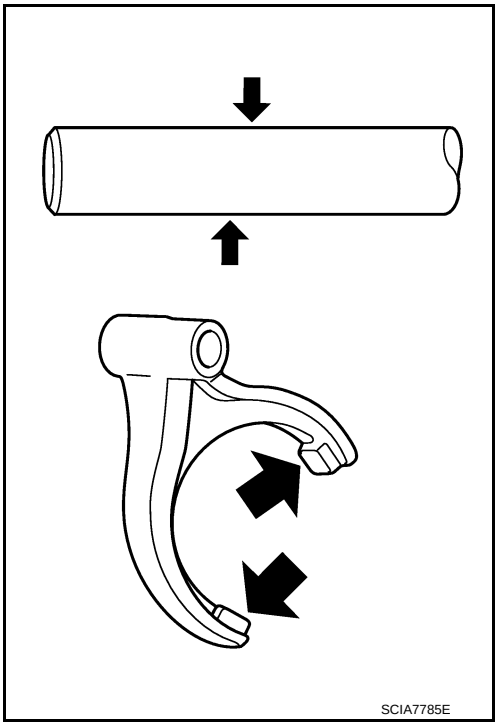
b. Tighten filler plug to the specified torque.
CAUTION:
Fill with gear oil before tighten filler plug to the specified torque.

Inspection

INFOID:0000000006641535

INSPECTION AFTER DISASSEMBLY

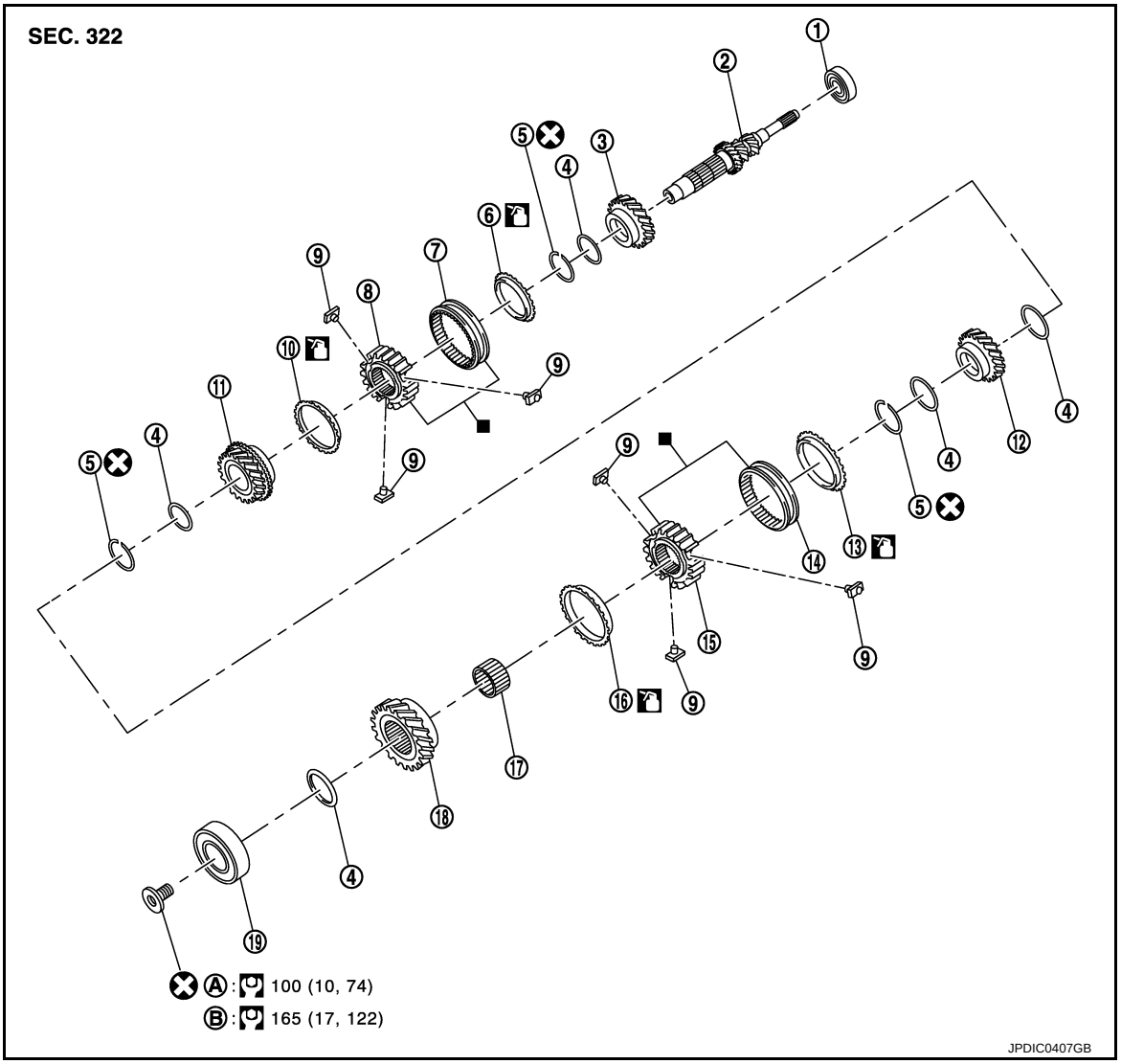
Check contact surface and sliding surface for excessive wear, uneven wear, bend, and damage. Replace if necessary.



INPUT SHAFT AND GEAR

Exploded View

INFOID:0000000006415757



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

: Apply gear oil.

: Replace the parts as a set.

: Always replace after every disassembly.

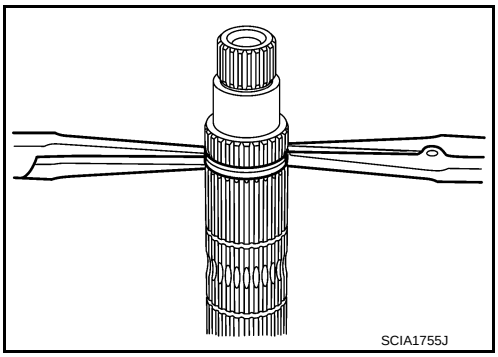
: N·m (kg-m, ft-lb)

Disassembly

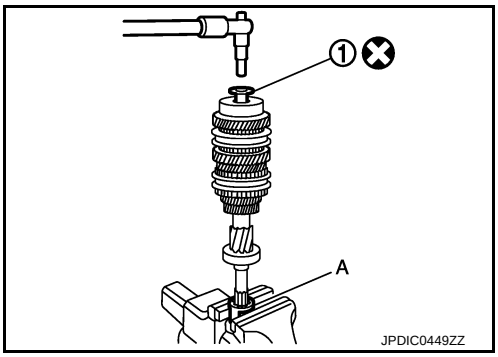
INFOID:0000000006415758

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.**



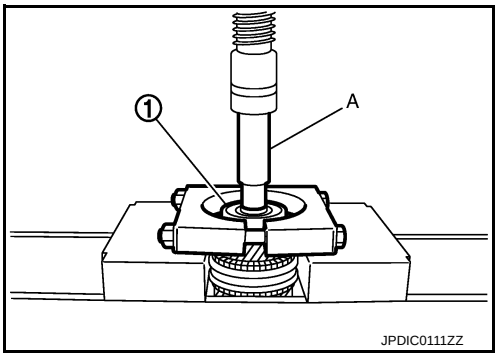
1. Remove input shaft rear bearing mounting bolt (1), using the drift (A) [SST: KV32300QAM].



2. Remove input shaft rear bearing (1), as per the following procedure.

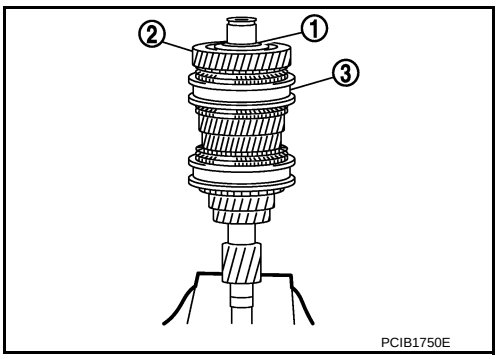
a. Set a puller [Commercial service tool] to input shaft rear bearing.

b. Remove input shaft rear bearing, using a drift (A) [Commercial service tool].

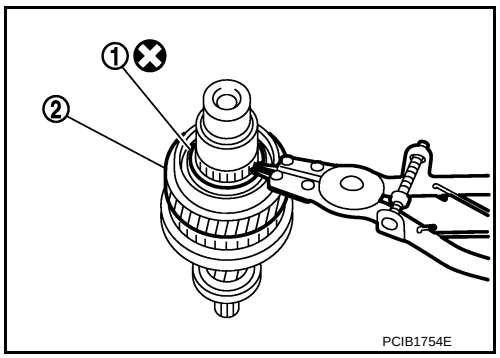


3. Remove spacer (1), 6th input gear (2), needle bearing, 6th baulk ring, and 5th-6th synchronizer hub assembly (3).

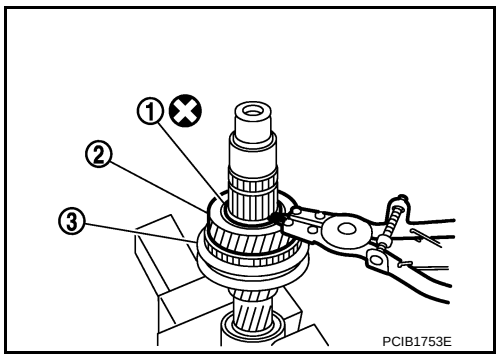
4. Remove insert keys and 5th-6th coupling sleeve from 5th-6th synchronizer hub.



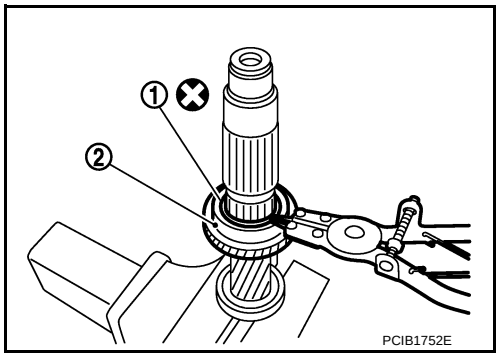
5. Remove snap ring (1).
6. Remove spacer, 5th baulk ring, 5th input gear (2), and spacer.



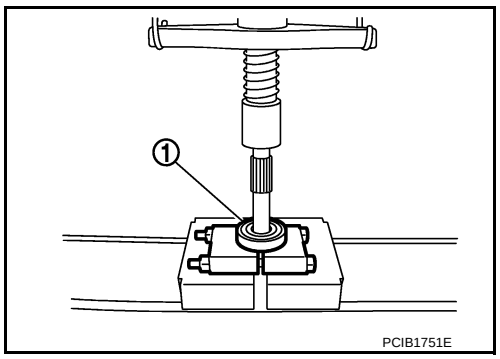
7. Remove snap ring (1).
8. Remove spacer, 4th input gear (2), 4th baulk ring, and 3rd-4th synchronizer hub assembly (3).
9. Remove insert keys and 3rd-4th coupling sleeve from 3rd-4th synchronizer hub.



10. Remove snap ring (1).
11. Remove spacer, 3rd baulk ring, and 3rd input gear (2).



12. Set a puller [Commercial service tool] to input shaft front bearing (1), and then remove input shaft front bearing.



Assembly

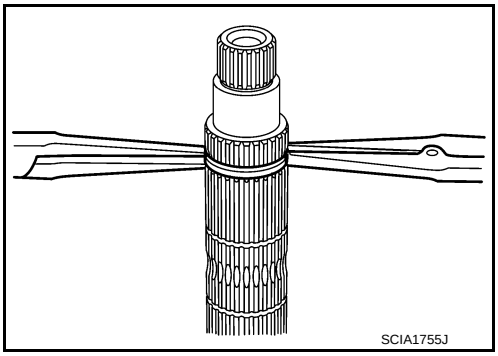
INFOID:0000000006415759

Note the following procedures, and assemble in the reverse order of disassembly.

CAUTION:

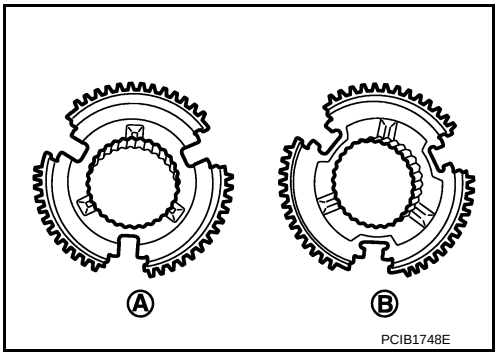
- **Replace transaxle assembly when replacing input shaft.**

- **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.**
- **Never 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.**


SCIA1755J

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

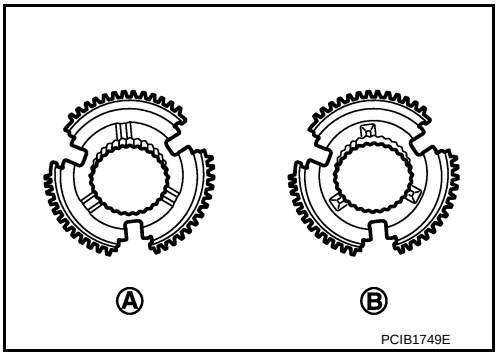
A : 3rd input gear side
B : 4th input gear side



PCIB1748E

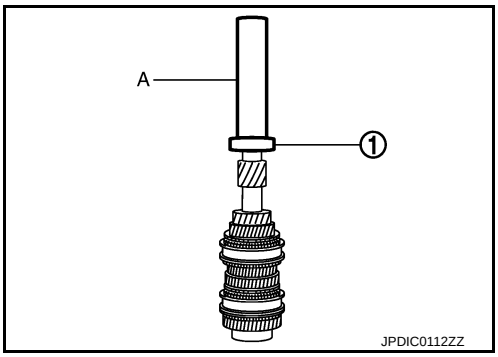
- **Be careful to install 5th-6th synchronizer hub according to the specified direction.**

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



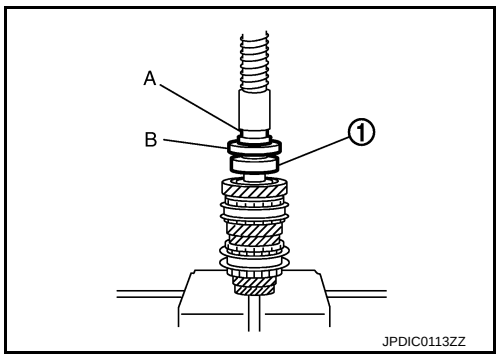
PCIB1749E

- Install input shaft front bearing (1), using a drift (A) [Commercial service tool].



JPDIC0112ZZ

- Install input shaft rear bearing (1), using a drift (A) [Commercial service tool] and the drift (B) [SST: ST36720030].
- Apply gear oil to 3rd baulk ring, 4th baulk ring, 5th baulk ring, and 6th baulk ring.

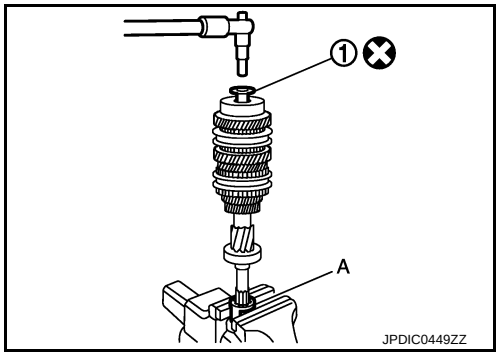


- Install input shaft rear bearing mounting bolt (1), as per the following procedure.

CAUTION:

Follow the procedures. Otherwise it may cause a transaxle malfunction.

1. Fix the drift (A) [SST: KV32300QAM] in a vise, and then set input shaft assembly.
2. Install input shaft rear bearing mounting bolt, and then tighten it to the specified torque of the first step.
3. Loosen input shaft rear bearing mounting bolt by a half turn.
4. Tighten input shaft rear bearing mounting bolt to the specified torque of the final step.



Inspection

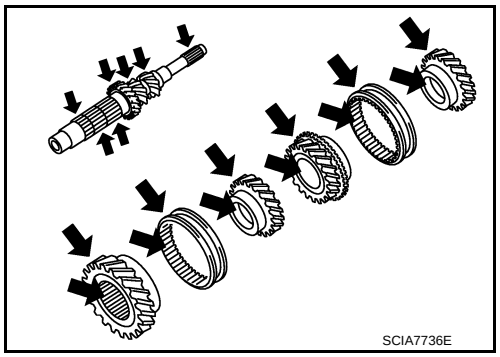
INFOID:0000000006415760

INSPECTION AFTER DISASSEMBLY

Input Shaft and Gear

Check the following items and replace if necessary.

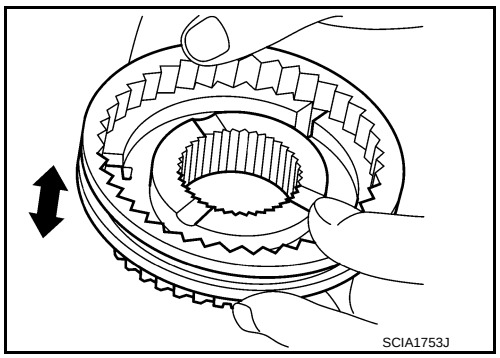
- Damage, peeling, bend, uneven wear, and distortion of shaft.
- Excessive wear, damage, and peeling of gear.



Synchronizer Hub and Coupling Sleeve

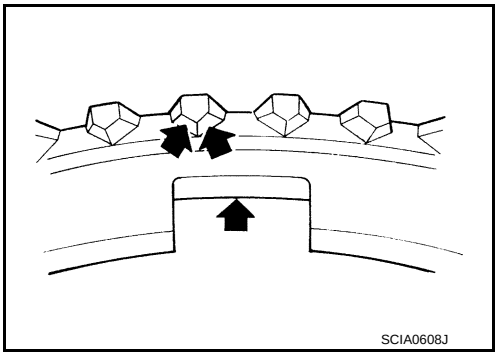
Check the following items and replace if necessary.

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

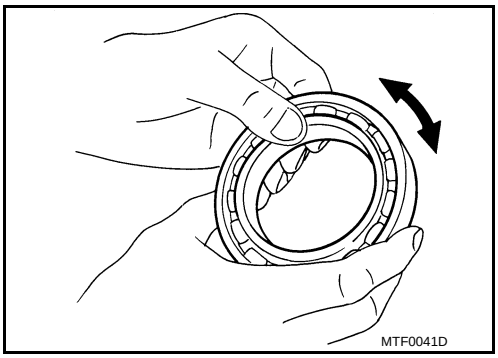


Baulk Ring

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


SCIA0608J

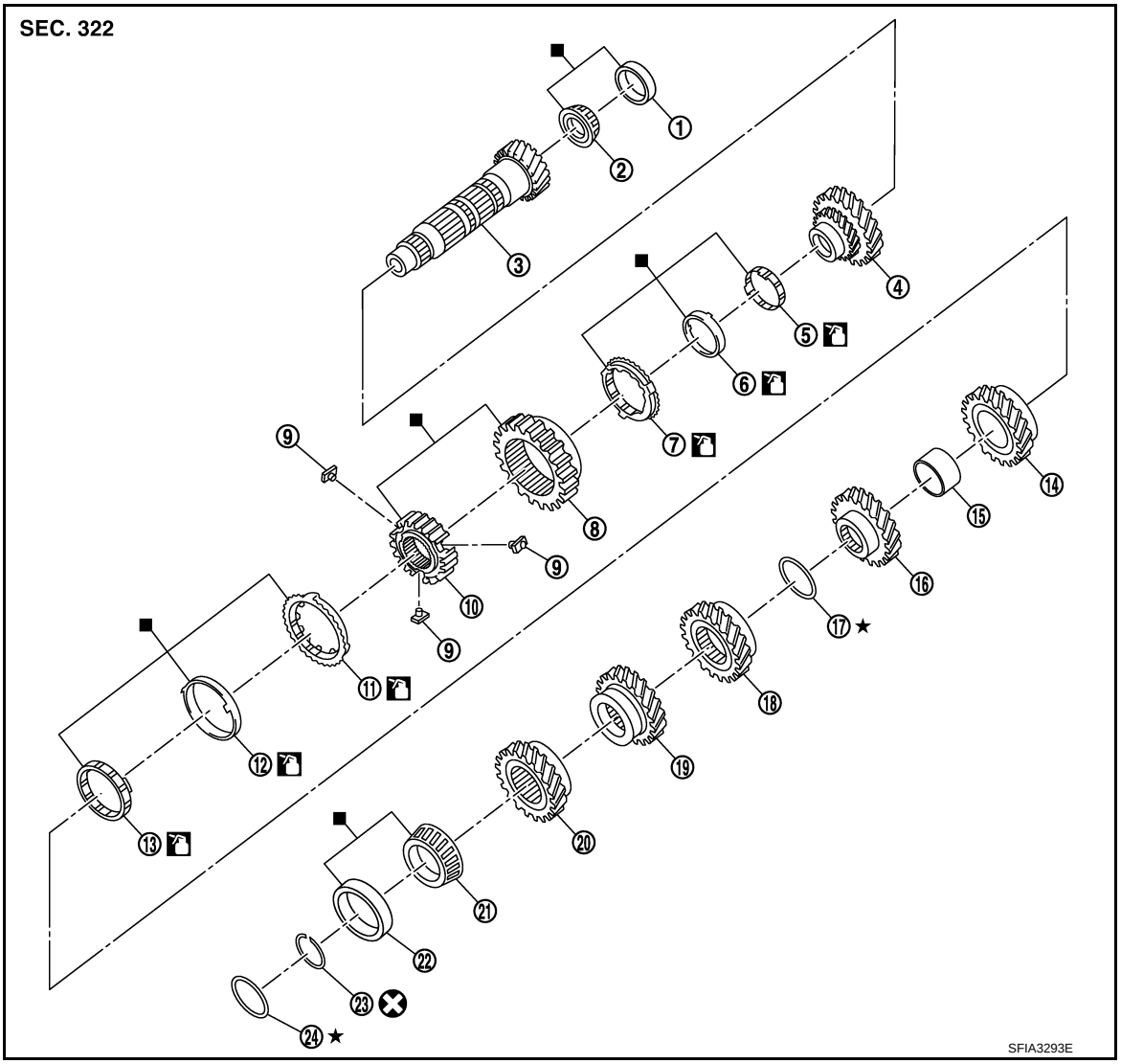
Bearing
Check bearing for damage and unsmooth rotation. Replace if necessary.


MTF0041D

MAINSHAFT AND GEAR

Exploded View

INFOID:0000000006415761



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

: Apply gear oil.

■ : Replace the parts as a set.

★ : Select with proper thickness.

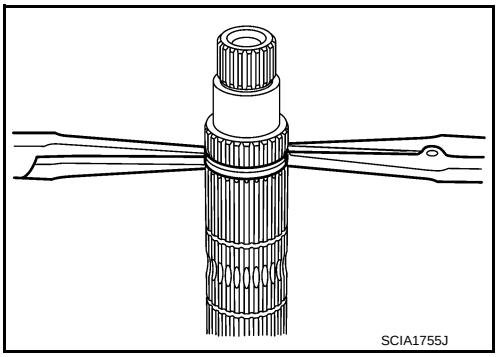
⊗ : Always replace after every disassembly.

Disassembly

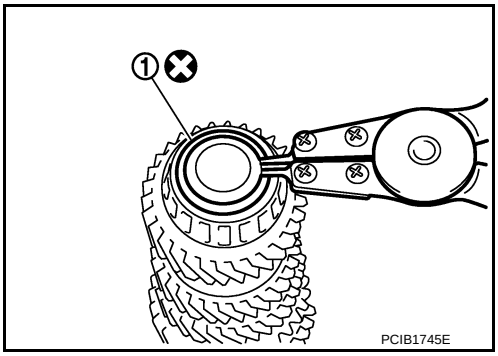
INFOID:0000000006415762

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.**



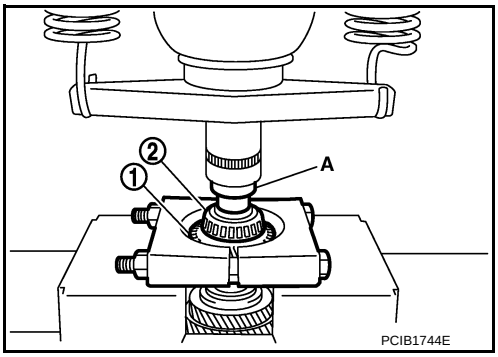
1. Remove snap ring (1).



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

a. Set a puller [Commercial service tool] to 6th main gear.

b. Remove mainshaft rear bearing inner race and 6th main gear, using the drift (A) [SST: ST33052000].

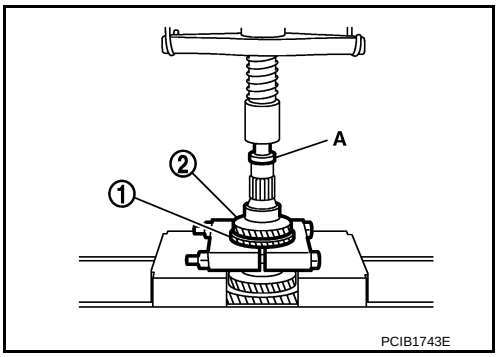


3. Remove 4th main gear (1) and 5th main gear (2), as per the following procedure.

a. Set a puller [Commercial service tool] to 4th main gear.

b. Remove 5th main gear and 4th main gear, using the drift (A) [SST: ST33052000].

4. Remove mainshaft adjusting shim.

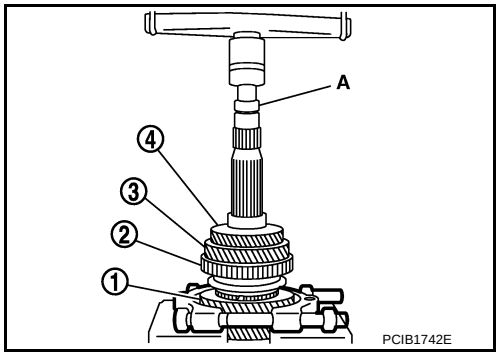


5. Remove 1st main gear (1), 1st-2nd synchronizer hub assembly (2), 2nd main gear (3), and 3rd main gear (4), as per the following procedure.

a. Set a puller [Commercial service 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 the drift (A) [SST: ST33052000].

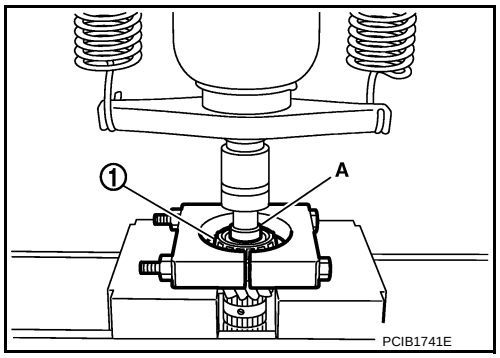
c. Remove insert keys and 1st-2nd coupling sleeve from 1st-2nd synchronizer hub.



6. Remove mainshaft front bearing inner race (1), as per the following procedure.

a. Set a puller [Commercial service tool] to mainshaft front bearing inner race.

b. Remove mainshaft front bearing inner race, using the drift (A) [SST: ST33052000].

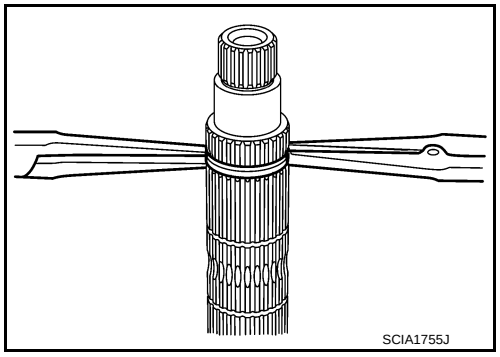


Assembly

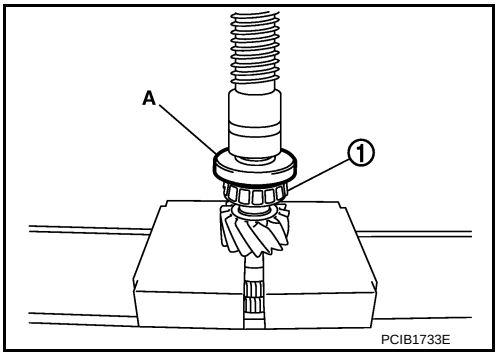
INFOID:0000000006415763

CAUTION:

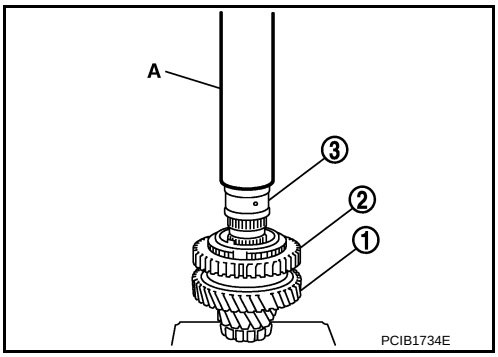
- **Select mainshaft rear bearing adjusting shim, as per the following procedure when replacing mainshaft adjusting shim, 6th main gear, 5th main gear, or 4th main gear.**
- **Replace mainshaft adjusting shim.**
- **If new mainshaft adjusting shim is thinner than previous one, offset the thickness difference 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.**



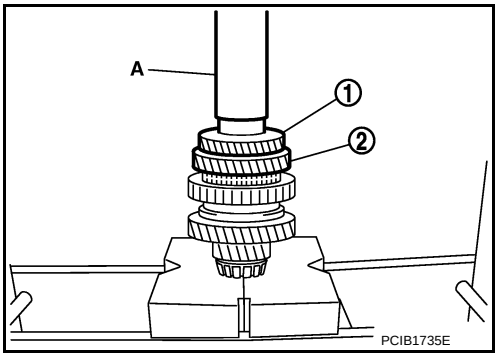
1. Install mainshaft front bearing inner race (1), using the drift (A) [SST: ST36720030].
   CAUTION:
   Replace mainshaft front bearing outer race and mainshaft front bearing inner race as a set.
2. Apply gear oil to 1st inner baulk ring, 1st synchronizer cone, 1st outer baulk ring, 2nd inner baulk 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.**



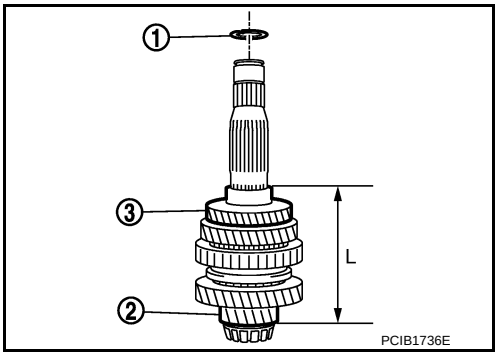
3. Install insert keys and 1st-2nd coupling sleeve to 1st-2nd synchronizer hub.
   CAUTION:
   Replace 1st-2nd synchronizer hub and 1st-2nd coupling sleeve as a set.
4. Install 1st main gear (1), 1st inner baulk ring, 1st synchronizer cone, 1st outer baulk ring, 1st-2nd synchronizer hub assembly (2), 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring.
5. Install bushing (3), using the drift (A) [SST: KV32102700].



6. Install 3rd main gear (1) and 2nd main gear (2), using the drift (A) [SST: 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.



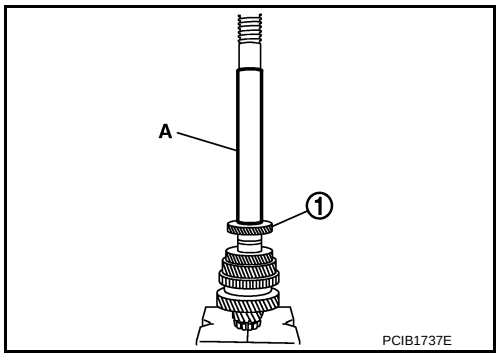
2 : Mainshaft
3 : 3rd main gear

Unit: mm (in)

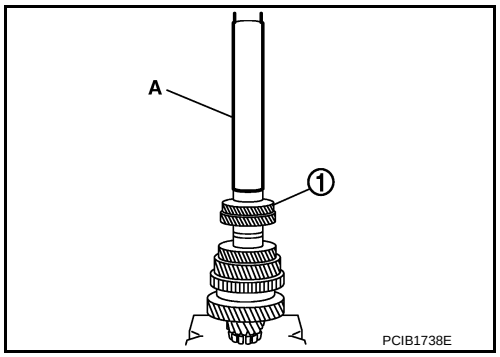
Dimension “L”	Mainshaft adjusting shim thickness
147.690 – 147.666 (5.8146 – 5.8136)	1.500 (0.0591)
147.665 – 147.641 (5.8136 – 5.8126)	1.525 (0.0600)
147.640 – 147.616 (5.8126 – 5.8116)	1.550 (0.0610)
147.615 – 147.591 (5.8116 – 5.8107)	1.575 (0.0620)
147.590 – 147.566 (5.8106 – 5.8097)	1.600 (0.0630)
147.565 – 147.541 (5.8096 – 5.8087)	1.625 (0.0640)
147.540 – 147.516 (5.8086 – 5.8077)	1.650 (0.0650)
147.515 – 147.491 (5.8077 – 5.8067)	1.675 (0.0659)

Dimension “L”	Mainshaft adjusting shim thickness
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)

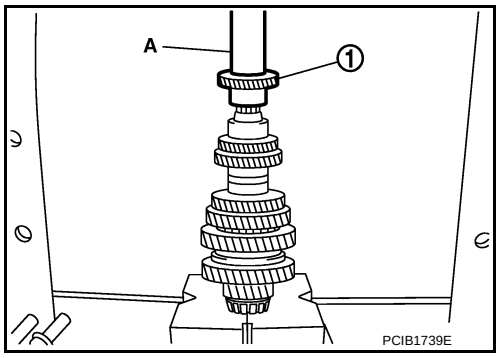
8. Install 4th main gear (1), using the drift (A) [SST: KV32102700].



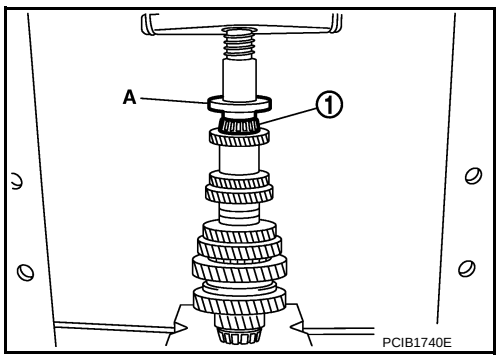
9. Install 5th main gear (1), using the drift (A) [SST: KV32102700].



10. Install 6th main gear (1), using the drift (A) [SST: KV32102700].



11. Install mainshaft rear bearing inner race (1), using the drift (A) [SST: ST30901000].
CAUTION:
Replace mainshaft rear bearing inner race and mainshaft rear bearing outer race as a set.
12. Install snap ring.
CAUTION:
Never reuse snap ring.



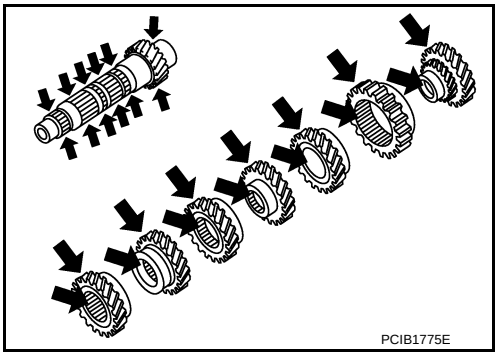
Inspection

INFOID:0000000006415764

INSPECTION AFTER DISASSEMBLY

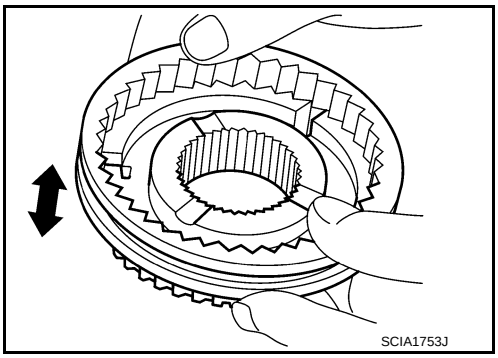
Mainshaft and Gear

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


PCIB1775E

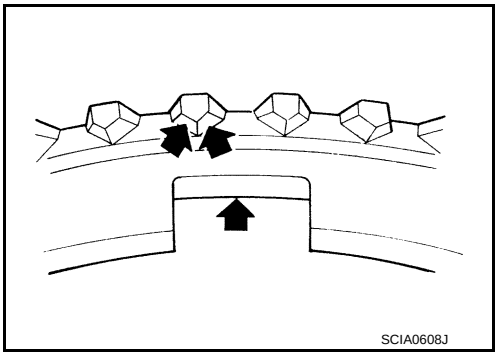
Synchronizer Hub and Coupling Sleeve

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.


SCIA1753J

Baulk Ring

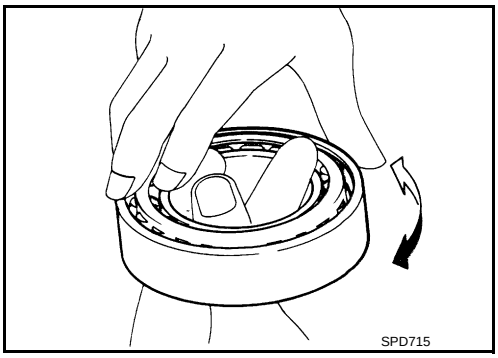
Check contact surface of baulk ring cam and insert key for excessive wear, uneven wear, bend, and damage. Replace if necessary.


SCIA0608J

Bearing

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

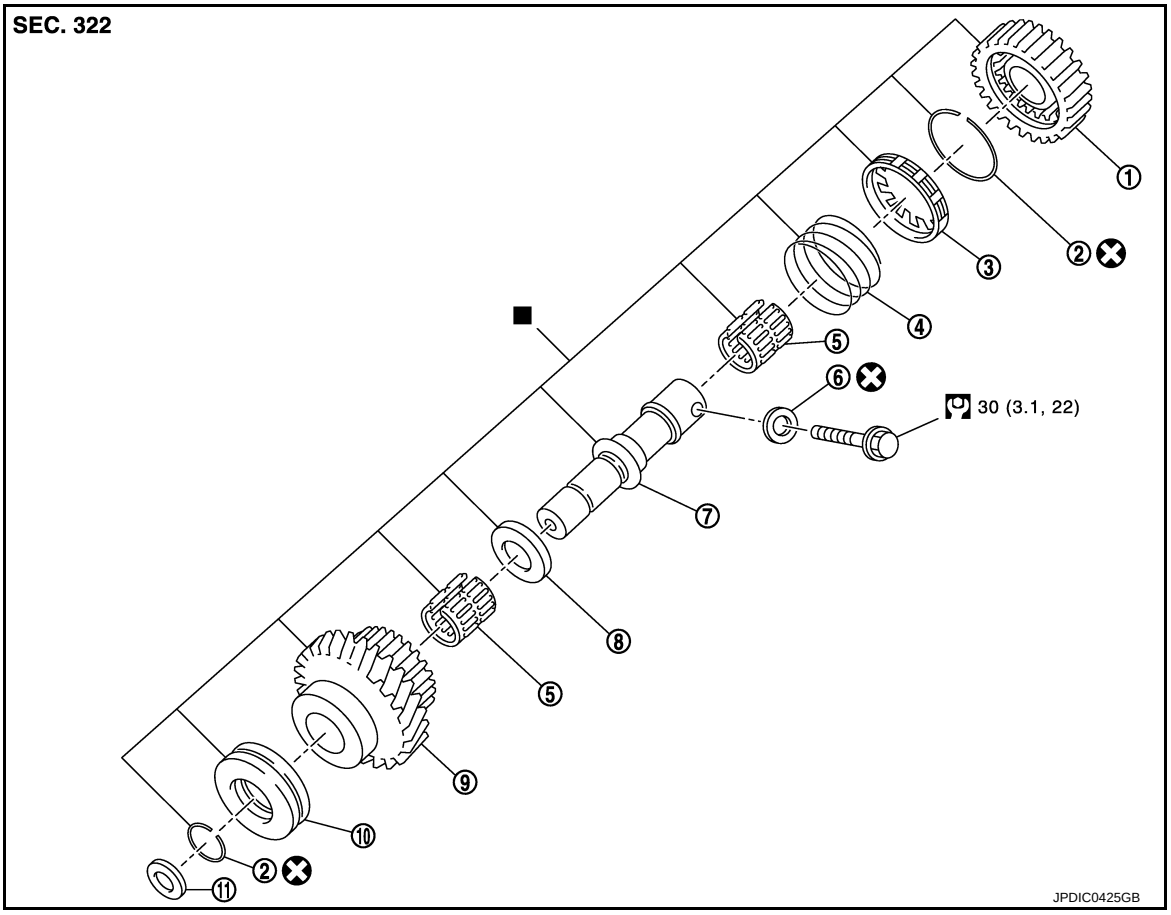
CAUTION:
- **Replace mainshaft front bearing outer race and mainshaft front bearing inner race as a set.**
- **Replace mainshaft rear bearing inner race and mainshaft rear bearing outer race as a set.**


SPD715

REVERSE IDLER SHAFT AND GEAR

Exploded View

INFOID:0000000006415765



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

■ : Replace the parts as a set.

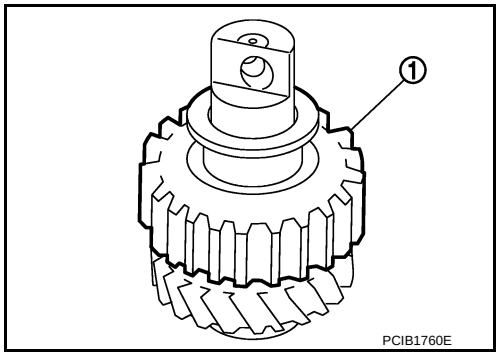
⊗ : Always replace after every disassembly.

: N·m (kg-m, ft-lb)

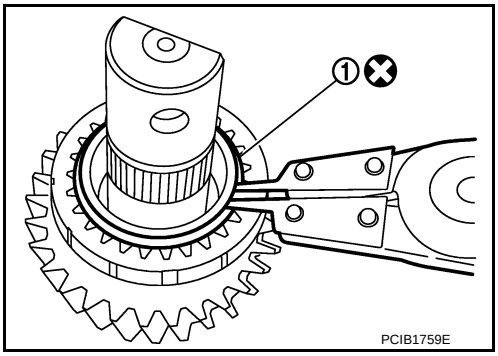
Disassembly

INFOID:0000000006415766

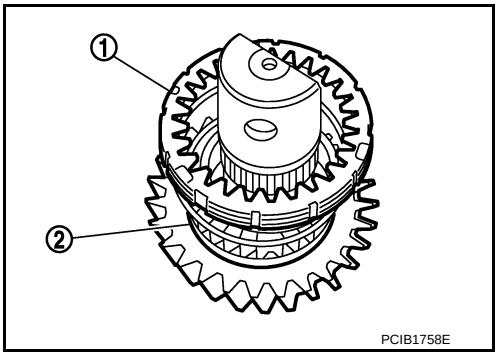
1. Remove reverse output gear (1).



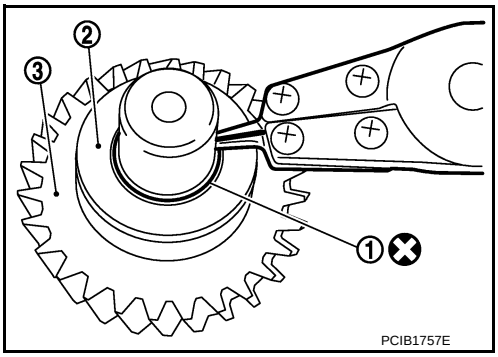
2. Remove snap ring (1).



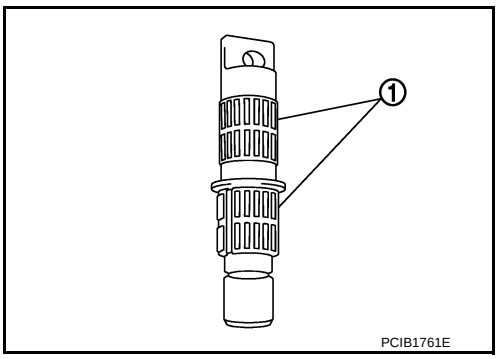
3. Remove reverse baulk ring (1) and return spring (2).



4. Remove snap ring (1), lock washer (2), and reverse input gear (3).



5. Remove needle bearings (1) and washer.



Assembly

INFOID:0000000006415767

Note the following procedures, and assemble in the reverse order of disassembly.

CAUTION:

- **Never 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:0000000006415768

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

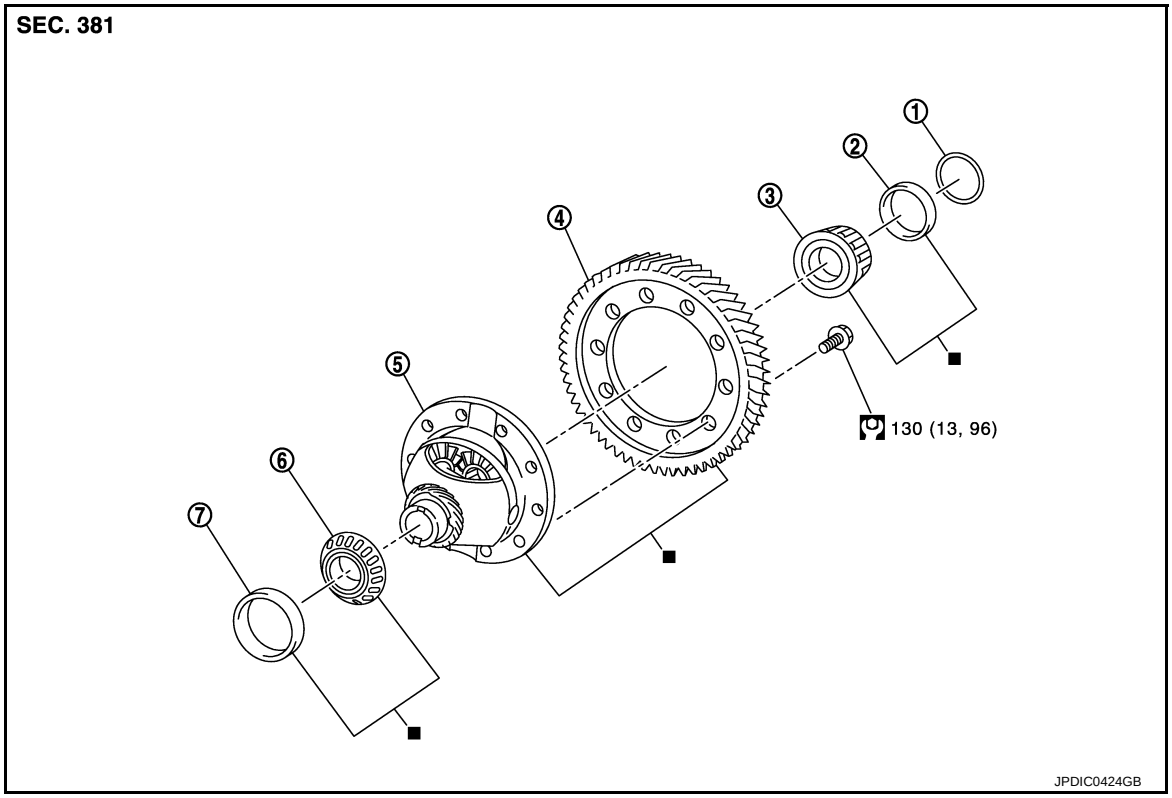
Bearing

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:0000000006415769



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)

■ : Replace the parts as a set.

: N·m (kg-m, ft-lb)

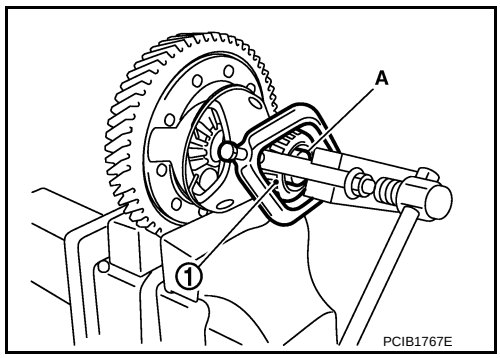
Disassembly

INFOID:0000000006415770

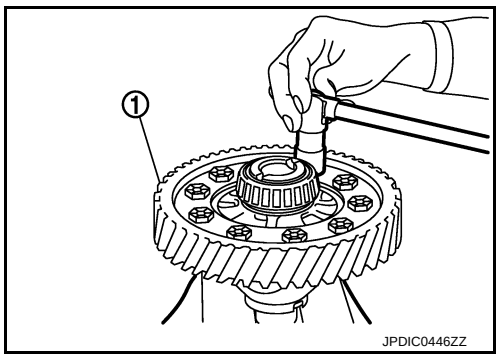
1. Remove differential side bearing inner race (clutch housing side) (1), as per the following procedure.

a. Set a puller [Commercial service tool] to differential side bearing inner race (clutch housing side).

b. Remove differential side bearing inner race (clutch housing side), using the drift (A) [SST: ST33061000].



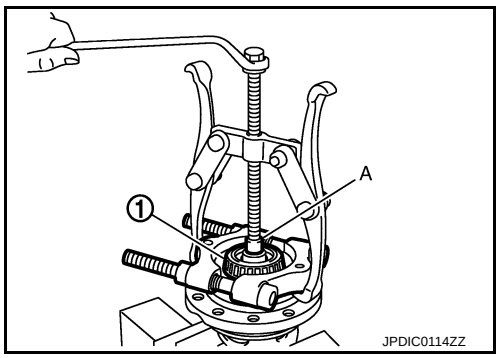
2. Remove final gear mounting bolts, and then remove final gear (1).



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

a. Set a puller [Commercial service tool] to differential side bearing inner race (transaxle case side).

b. Remove differential side bearing inner race (transaxle case side), using a drift (A) [Commercial service tool].

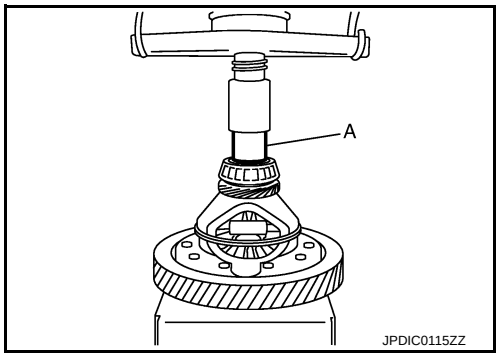


Assembly

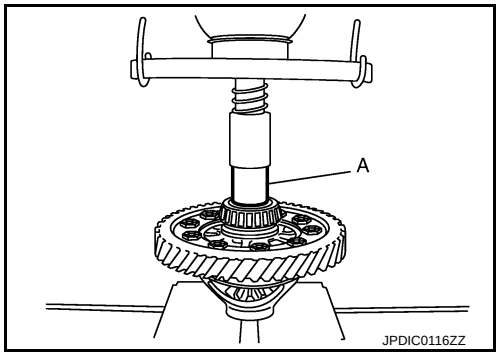
INFOID:0000000006415771

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 drift (A) [Commercial service tool].
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 drift (A) [Commercial service tool].
CAUTION:
Replace differential side bearing inner race (transaxle case side) and differential side bearing outer race (transaxle case side) as a set.



Inspection

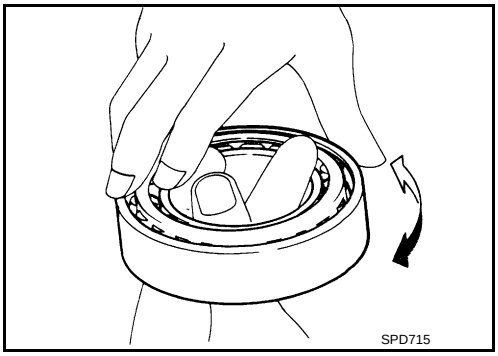
INFOID:0000000006415772

INSPECTION AFTER DISASSEMBLY

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

Bearing

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

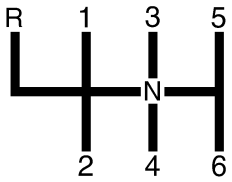


SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

INFOID:0000000006415774

Transaxle type			RS6F94R	
Engine type			MR16DDT	K9K
Axle type			2WD	
Number of speed			6	
Synchromesh type			Warner	
Shift pattern			 PCIB1769E	
Gear ratio	1st		3.3636	3.7273
	2nd		1.9474	
	3rd		1.3929	1.3226
	4th		1.1143	0.9750
	5th		0.9143	0.7632
	6th		0.7674	0.6383
	Reverse		3.2915	3.6865
	Final gear		4.2143	
Number of teeth	Input gear	1st	11	
		2nd	19	
		3rd	28	31
		4th	35	40
		5th	35	38
		6th	43	47
		Reverse	11	
	Main gear	1st	37	41
		2nd	37	
		3rd	39	41
		4th	39	
		5th	32	29
		6th	33	30
		Reverse	42	
	Reverse idler gear	Input/Output	25/29	28/29
	Final gear	Final gear/Pinion	59/14	
		Side gear/Pinion mate gear	13/10	
Oil capacity (Reference)		ℓ (Imp pt)	Approx. 2.0 (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:0000000006706075

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 “SRS AIR BAG” and “SEAT BELT” of this Service Manual.

The vehicle may be equipped with a passenger air bag deactivation switch. Because no rear seat exists where a rear-facing child restraint can be placed, the switch is designed to turn off the passenger air bag so that a rear-facing child restraint can be used in the front passenger seat. The switch is located in the center of the instrument panel, near the ashtray. When the switch is turned to the ON position, the passenger air bag is enabled and could inflate for certain types of collision. When the switch is turned to the OFF position, the passenger air bag is disabled and will not inflate. A passenger air bag OFF indicator on the instrument panel lights up when the passenger air bag is switched OFF. The driver air bag always remains enabled and is not affected by the passenger air bag deactivation switch.

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 “SRS AIR BAG”.**
- **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.**
- **The vehicle may be equipped with a passenger air bag deactivation switch which can be operated by the customer. When the passenger air bag is switched OFF, the passenger air bag is disabled and will not inflate. When the passenger air bag is switched ON, the passenger air bag is enabled and could inflate for certain types of collision. After SRS maintenance or repair, make sure the passenger air bag deactivation switch is in the same position (ON or OFF) as when the vehicle arrived for service.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag 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 Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:0000000006706076

NOTE:

- Before removing and installing any control units, first turn the ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

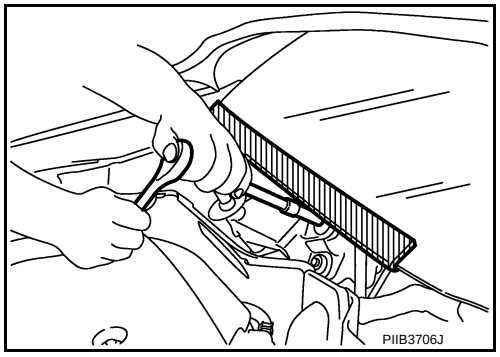
OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Turn the ignition switch to ACC position.
   (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

Precaution for Procedure without Cowl Top Cover

INFOID:0000000006706077

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



Precaution for On Board Diagnosis (OBD) System of CVT and Engine

INFOID:0000000006601687

The ECM has an on board diagnostic system. It will light up the malfunction indicator (MI) 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 MI to light up.**
- **Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MI 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 MI 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 MI to light up due to a malfunction of the EVAP 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.**

Precaution for TCM and Transaxle Assembly Replacement

INFOID:0000000006706078

CAUTION:

- **To replace TCM, refer to TM-178, "Description".**
- **To replace transaxle assembly, refer to TM-180, "Description".**

Precaution for G Sensor Removal/Installation or Replacement

INFOID:0000000006706079

CAUTION:

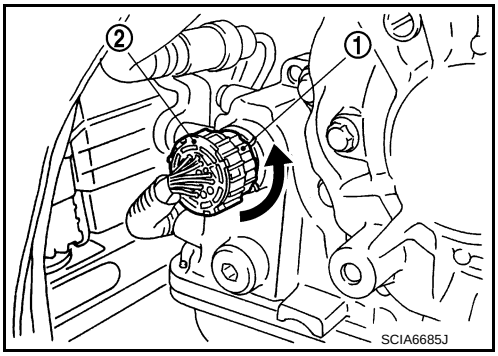
To remove/install or replace G sensor, refer to TM-182, "Description".

Removal and Installation Procedure for CVT Unit Connector

INFOID:0000000006601689

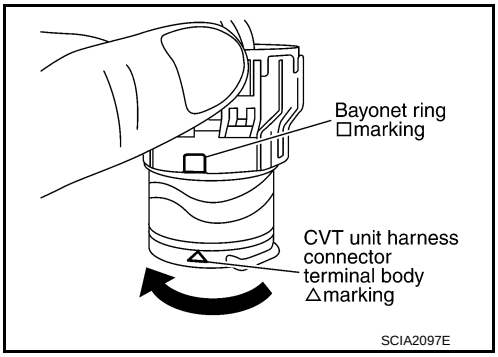
REMOVAL

Rotate bayonet ring (1) counterclockwise, pull out CVT unit harness connector (2) upward and remove it.

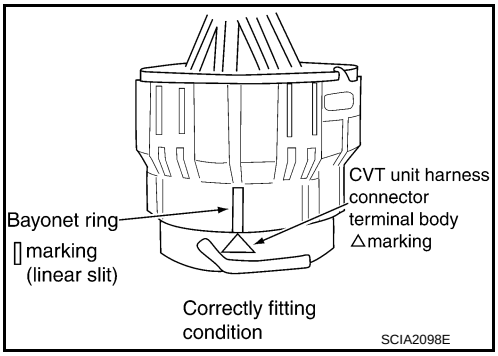


INSTALLATION

1. Align Δ marking on CVT unit harness connector terminal body with □ marking on bayonet ring, insert CVT unit harness connector, and then rotate bayonet ring clockwise.

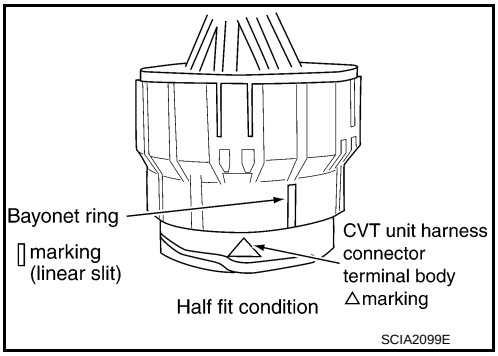


2. Rotate bayonet ring clockwise until Δ marking on CVT unit harness connector terminal body is aligned with the slit on bayonet ring as shown in the figure (correctly fitting condition), install CVT unit harness connector to CVT unit harness connector terminal body.



CAUTION:

- **Securely align Δ marking on CVT unit harness connector terminal body with bayonet ring slit. 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.**

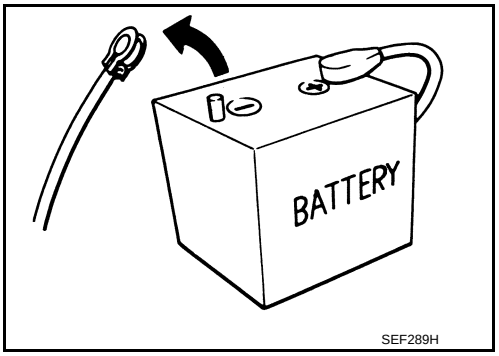


Precaution

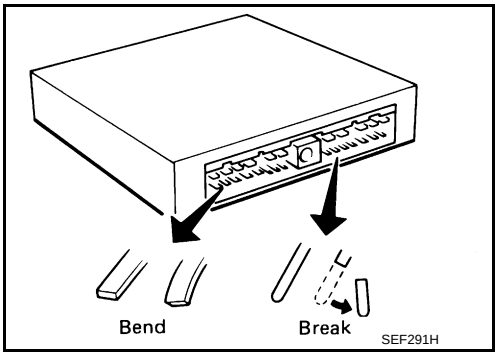
INFOID:0000000006601690

NOTE:
If any malfunction occurs in the RE0F10A model transaxle, replace the entire transaxle assembly.

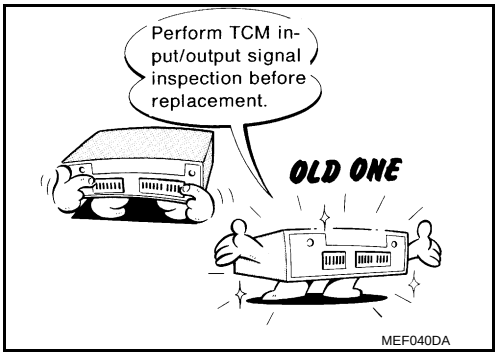
- **Before connecting or disconnecting the TCM harness connector, turn ignition switch OFF and disconnect negative battery cable. Because battery voltage is applied to TCM even if ignition switch is turned OFF.**



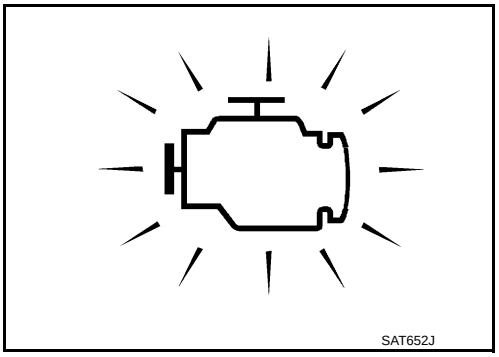
- **When connecting or disconnecting pin connectors into or from TCM, take care not to damage pin terminals (bend or break).**
  When connecting pin connectors make sure that there are not any bends or breaks on TCM pin terminal.



- **Before replacing TCM, perform TCM input/output signal inspection and make sure whether TCM functions properly or not. TM-164, "Reference Value"**.



- **After performing each TROUBLE DIAGNOSIS, perform "DTC Confirmation Procedure".**
  If the repair is completed the DTC should not be displayed in the "DTC Confirmation Procedure".
- Always use the specified brand of CVT fluid. Refer to MA-13, "Fluids and Lubricants".
- Use lint-free paper, not cloth rags, during work.
- After replacing the CVT fluid, dispose of the waste oil using the methods prescribed by law, ordinance, etc.



Service Notice or Precaution

INFOID:0000000006601691

OBD SELF-DIAGNOSIS (WITH OBD)

- CVT self-diagnosis is performed by the TCM in combination with the ECM. The results can be read through the blinking pattern of the malfunction indicator (MI). Refer to the table on TM-159, "CONSULT-III Function (TRANSMISSION)" for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MI are automatically stored in both the ECM and TCM memories. **Always perform the procedure on TM-157, "Diagnosis Description" to complete the repair and avoid unnecessary blinking of the MI.**

For details of OBD, refer to EC-72, "Diagnosis Description".

- **Certain systems and components, especially those related to OBD, may use the new style slide-locking type harness connector. For description and how to disconnect, refer to PG-4.**

ATFTEMP COUNT Conversion Table

INFOID:0000000006601692

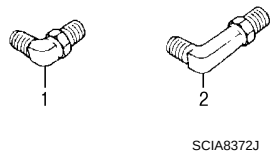
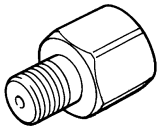
ATFTEMP COUNT	Temperature °C (°F)	ATFTEMP COUNT	Temperature °C (°F)
4	–30 (–22)	177	90 (194)
8	–20 (–4)	183	95 (203)
13	–10 (14)	190	100 (212)
17	–5 (23)	196	105 (221)
21	0 (32)	201	110 (230)
27	5 (41)	206	115 (239)
32	10 (50)	210	120 (248)
39	15 (59)	214	125 (257)
47	20 (68)	218	130 (266)
55	25 (77)	221	135 (275)
64	30 (86)	224	140 (284)
73	35 (95)	227	145 (293)
83	40 (104)	229	150 (302)
93	45 (113)	231	155 (311)
104	50 (122)	233	160 (320)
114	55 (131)	235	165 (329)
124	60 (140)	236	170 (338)
134	65 (149)	238	175 (347)
143	70 (158)	239	180 (356)
152	75 (167)	241	190 (374)
161	80 (176)	243	200 (392)
169	85 (185)	—	—

PREPARATION

PREPARATION

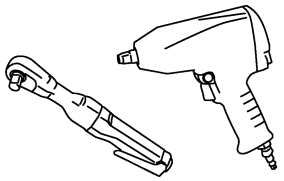
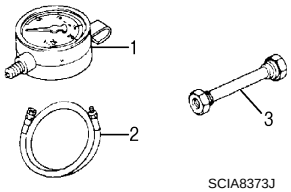
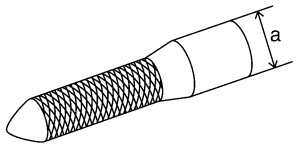
Special Service Tool

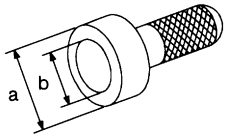
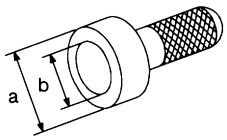
INFOID:0000000006601693

Tool number Tool name	Description
1. ST25054000 Adapter 2. ST25055000 Adapter  SCIA8372J	Measuring line pressure
KV31103600 Joint pipe adapter (With ST25054000)  ZZA1227D	Measuring line pressure

Commercial Service Tool

INFOID:0000000006601694

Tool number Tool name	Description
Power tool  PBIC0190E	Loosening nuts and bolts
Oil pressure gauge set 1. Oil pressure gauge 2. Hose 3. Joint pipe  SCIA8373J	Measuring line pressure
31197CA000 Drive plate location guide a: Ø 14 mm (0.55 in)  SCIA2013E	Installing transaxle assembly

Tool number Tool name	Description
Drift a: 56 mm (2.20 in) dia. b: 50 mm (1.97 in) dia.  NT115	Installing differential side oil seal
Drift a: 60 mm (2.36 in) dia. b: 55 mm (2.17 in) dia.  NT115	Installing converter housing oil seal

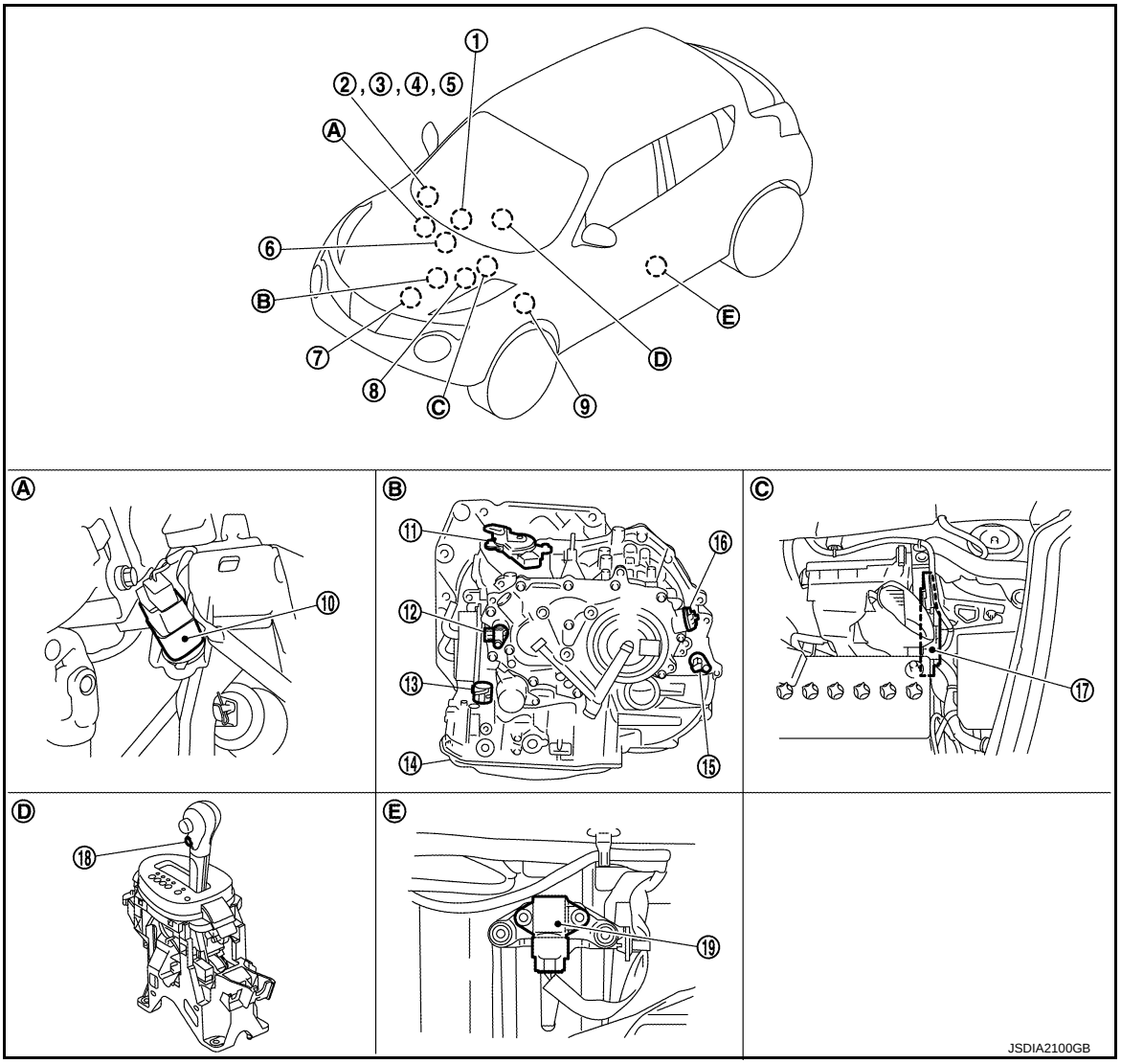
SYSTEM DESCRIPTION

COMPONENT PARTS

CVT CONTROL SYSTEM

CVT CONTROL SYSTEM : Component Parts Location

INFOID:0000000006601797



1. Multi display unit (MDU)* Refer to DMS-3, "Component Parts Location".
2. Combination meter
3. Manual mode indicator (On the combination meter)
4. Shift position indicator (On the combination meter)
5. Malfunction indicator lamp (MIL) (On the combination meter)
6. ABS actuator and electric unit (control unit) Refer to BRC-97, "Component Parts Location".
7. ECM Refer to EC-25, "ENGINE CONTROL SYSTEM : Component Parts Location".
8. IPDM E/R Refer to PCS-5, "Component Parts Location" (With Intelligent Key system), PCS-37, "Component Parts Location" (Without Intelligent Key system).
9. BCM Refer to BCS-6, "BODY CONTROL SYSTEM : Component Parts Location" (With Intelligent Key system), BCS-96, "BODY CONTROL SYSTEM : Component Parts Location" (Without Intelligent Key system)
10. Stop lamp switch
11. Transmission range switch
12. Primary speed sensor
13. CVT unit connector
14. Control valve assembly
15. Output speed sensor

16. Secondary speed sensor
17. TCM
18. S mode switch
19. G sensor
A. Brake pedal, upper
B. Transaxle assembly
C. Engine room
D. CVT shift selector assembly
E. Driver seat (LHD) or passenger seat (RHD), under
Transaxle assembly

*: With Nissan Dynamic Control System

NOTE:

The following components are included in control valve assembly (13).

- CVT fluid temperature sensor
- Secondary pressure sensor
- ROM assembly
- Line pressure solenoid valve
- Low brake solenoid valve
- High clutch & reverse brake solenoid valve
- Torque converter clutch solenoid valve

CVT CONTROL SYSTEM : Component Description

INFOID:0000000006601798

Name	Function
TCM	TM-133, "CVT CONTROL SYSTEM : TCM"
Transmission range switch	TM-133, "CVT CONTROL SYSTEM : Transmission Range Switch"
Input speed sensor	TM-133, "CVT CONTROL SYSTEM : Input Speed Sensor"
Primary speed sensor	TM-133, "CVT CONTROL SYSTEM : Primary Speed Sensor"
Secondary speed sensor	TM-134, "CVT CONTROL SYSTEM : Secondary Speed Sensor"
CVT fluid temperature sensor	TM-134, "CVT CONTROL SYSTEM : CVT Fluid Temperature Sensor"
Secondary pressure sensor	TM-135, "CVT CONTROL SYSTEM : Secondary Pressure Sensor"
Line pressure solenoid valve	TM-135, "CVT CONTROL SYSTEM : Line Pressure Solenoid Valve"
Lock-up select solenoid valve	TM-135, "CVT CONTROL SYSTEM : Lock-up Select Solenoid Valve"
Step motor	TM-136, "CVT CONTROL SYSTEM : Step Motor"
G sensor	TM-136, "CVT CONTROL SYSTEM : G Sensor"
Manual mode switch	TM-136, "CVT CONTROL SYSTEM : Manual Mode Switch"
Shift position indicator	TM-136, "CVT CONTROL SYSTEM : Shift Position Indicator"
Accelerator pedal position sensor	EC-32, "Accelerator Pedal Position Sensor"
Stop lamp switch	BRC-104, "Stop Lamp Switch"
ECM	• For purposes including improving the feeling when shifting speeds and preventing drops in engine speed, control signals are exchanged between the ECM and TCM, and real-time cooperative control is performed according to the vehicle driving conditions. (Engine and CVT integrated control) - 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. • The TCM receives the following signal via CAN communications from the ECM for judging the vehicle driving conditions. - Engine speed signal - Accelerator pedal position signal - Closed throttle position signal • TCM sends and receives the following signals with ECM through CAN communication to perform D position N idle control. - N idle instruction signal
BCM	The TCM receives the following signal via CAN communications from the BCM for judging the vehicle driving conditions. • Stop lamp switch signal • Turn indicator signal

Name	Function
ABS actuator and electric unit (control unit)	The TCM receives the following signal via CAN communications from the ABS actuator and electric unit (control unit) for judging the vehicle driving conditions. • Vehicle speed signal (ABS) • ABS operation signal • EPS operation signal
Combination meter	The TCM receives the following signal via CAN communications from the combination meter for judging the driving request from the driver. • Manual mode signal • Non-manual mode signal • Manual mode shift up signal • Manual mode shift down signal
MDU*	The TCM receives the following signals from MDU via CAN communication to switch driving mode of the Nissan Dynamic Control System. • NORMAL mode signal • ECO mode signal • SPORT mode signal

*: With Nissan Dynamic Control System

CVT CONTROL SYSTEM : TCM

INFOID:0000000006601799

- 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-144, "CVT CONTROL SYSTEM : System Description".

CVT CONTROL SYSTEM : Transmission Range Switch

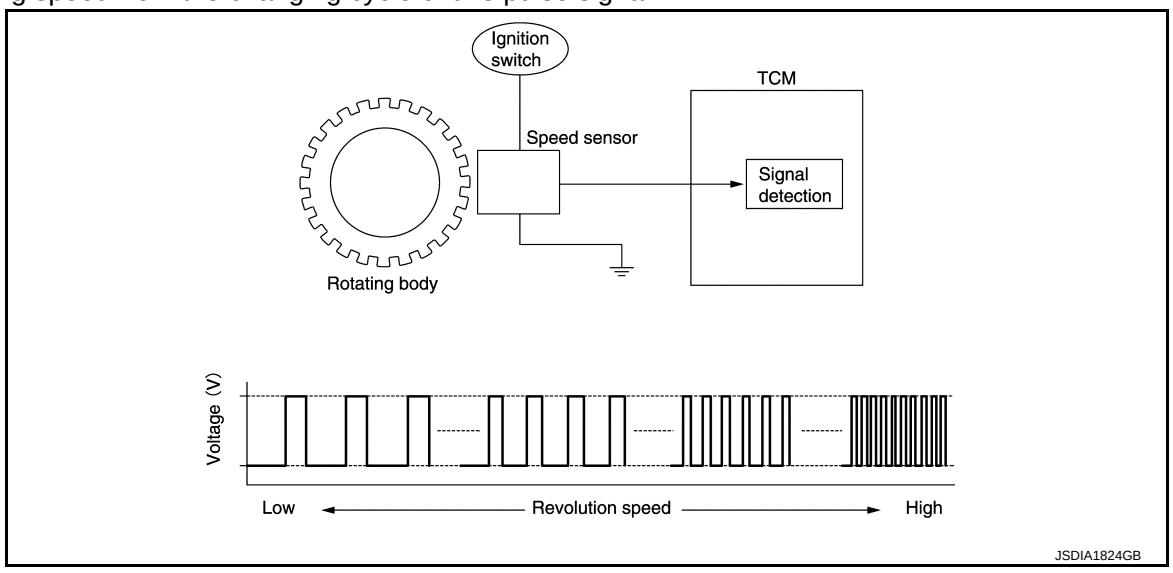
INFOID:0000000006601800

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

CVT CONTROL SYSTEM : Input Speed Sensor

INFOID:0000000006601803

- The input speed sensor is installed to transaxle assembly.
- The input speed sensor detects input shaft speed. TCM evaluates input speed the from the input shaft revolution.
- The input speed sensor generates the ON-OFF pulse (short waveform) in proportion to the rotating body speed which is “The higher the rotating body speed is, the faster the change cycle is”. The TCM judges the rotating speed from the changing cycle of this pulse signal.

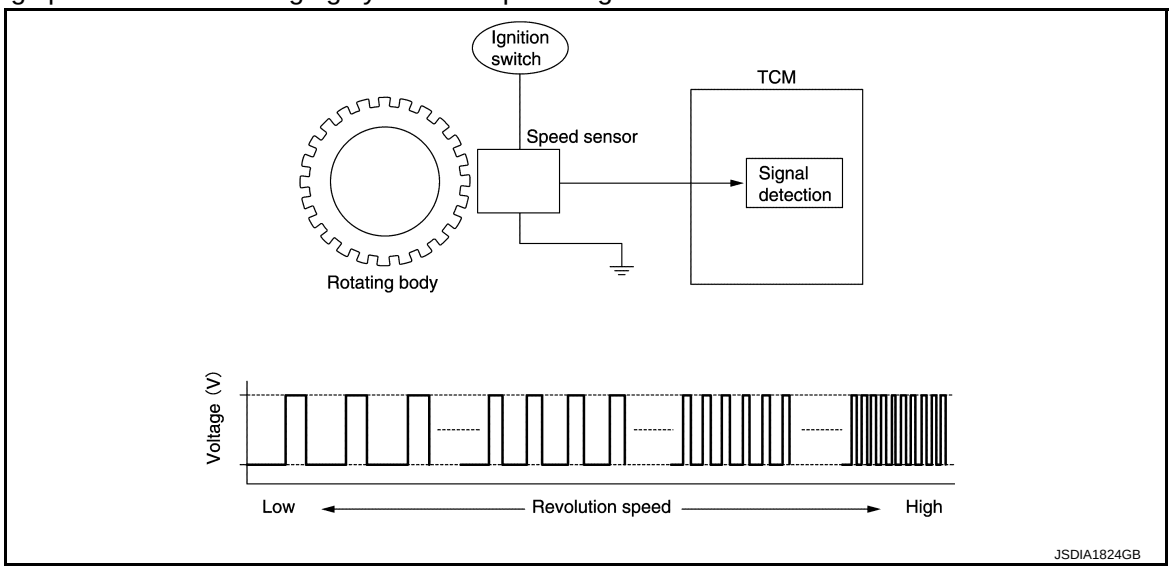


CVT CONTROL SYSTEM : Primary Speed Sensor

INFOID:0000000006601801

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

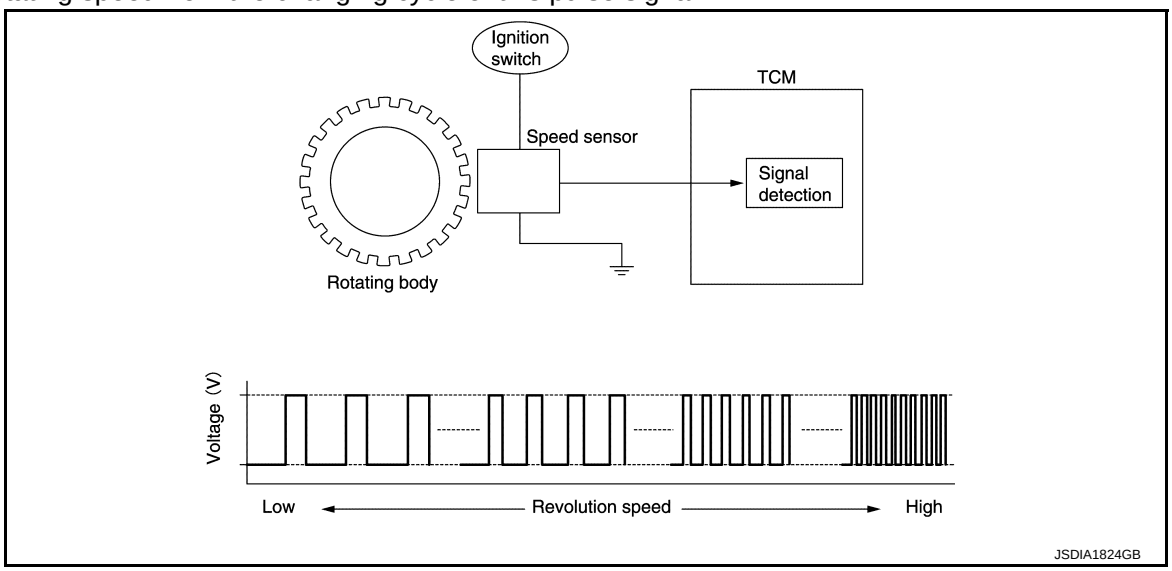
- The primary speed sensor generates the ON-OFF pulse (short waveform) in proportion to the rotating body speed which is “The higher the rotating body speed is, the faster the change cycle is”. The TCM judges the rotating speed from the changing cycle of this pulse signal.



CVT CONTROL SYSTEM : Secondary Speed Sensor

INFOID:0000000006601802

- The secondary speed sensor is installed to side cover of transaxle.
- The secondary speed sensor detects secondary pulley speed.
- The secondary speed sensor generates the ON-OFF pulse (short waveform) in proportion to the rotating body speed which is “The higher the rotating body speed is, the faster the change cycle is”. The TCM judges the rotating speed from the changing cycle of this pulse signal.

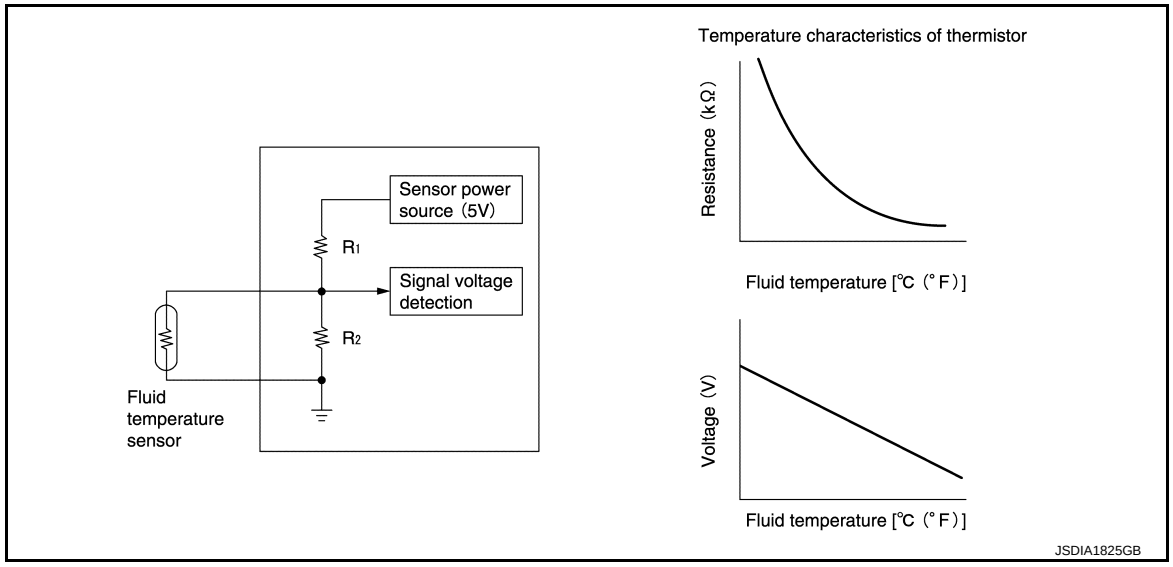


CVT CONTROL SYSTEM : CVT Fluid Temperature Sensor

INFOID:0000000006601804

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

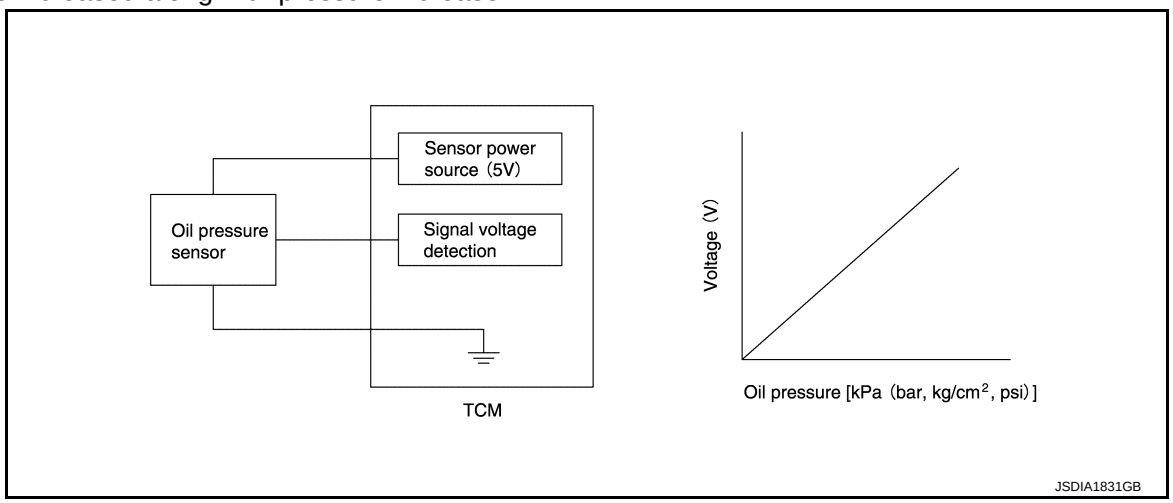
- The fluid temperature sensor uses a thermistor, and changes the signal voltage by converting changes in the CVT fluid temperature to a resistance value. TCM evaluates the CVT fluid temperature from the signal voltage value.



CVT CONTROL SYSTEM : Secondary Pressure Sensor

INFOID:0000000006601805

- The secondary pressure sensor 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 : Line Pressure Solenoid Valve

INFOID:0000000006601810

- The line pressure solenoid valve 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-141, "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 : Lock-up Select Solenoid Valve

INFOID:0000000006601809

- The lock-up select solenoid valve is installed to control valve.

- The lock-up select solenoid valve controls the select switch valve that switches the oil pressure applied to the lock-up clutch, forward clutch or reverse clutch.
- The lock-up select solenoid valve utilizes an ON-OFF solenoid valve.

NOTE:

- The only operations of the valve spool installed inside the coil are pressing or not pressing the ball which seals the hydraulic supply section into the seat. This A/T uses N/L (normal low) type.
- When voltage is not applied to the coil, the force of the pilot pressure presses the ball against the seat, stopping the pilot pressure at that point.
- When voltage is applied to the coil, the valve is pulled in the direction of the coil, disengaging the hydraulic seal which the ball creates. This supplies pilot pressure to the operating locations.

CVT CONTROL SYSTEM : Step Motor

INFOID:0000000006601807

The step motor changes the step with turning 4 coils ON/OFF according to the signal from TCM. As a result, the flow of line pressure to primary pulley is changed and pulley ratio is controlled.

CVT CONTROL SYSTEM : G Sensor

INFOID:0000000006601811

- 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 : Manual Mode Switch

INFOID:0000000006601812

Manual mode switch is installed in shift CVT shift selector. The manual mode switch sends shift up and shift down switch signals to TCM.
TCM sends the switch signals to combination meter via CAN communication line. Then manual mode switch position is indicated on the shift position indicator.

CVT CONTROL SYSTEM : Shift Position Indicator

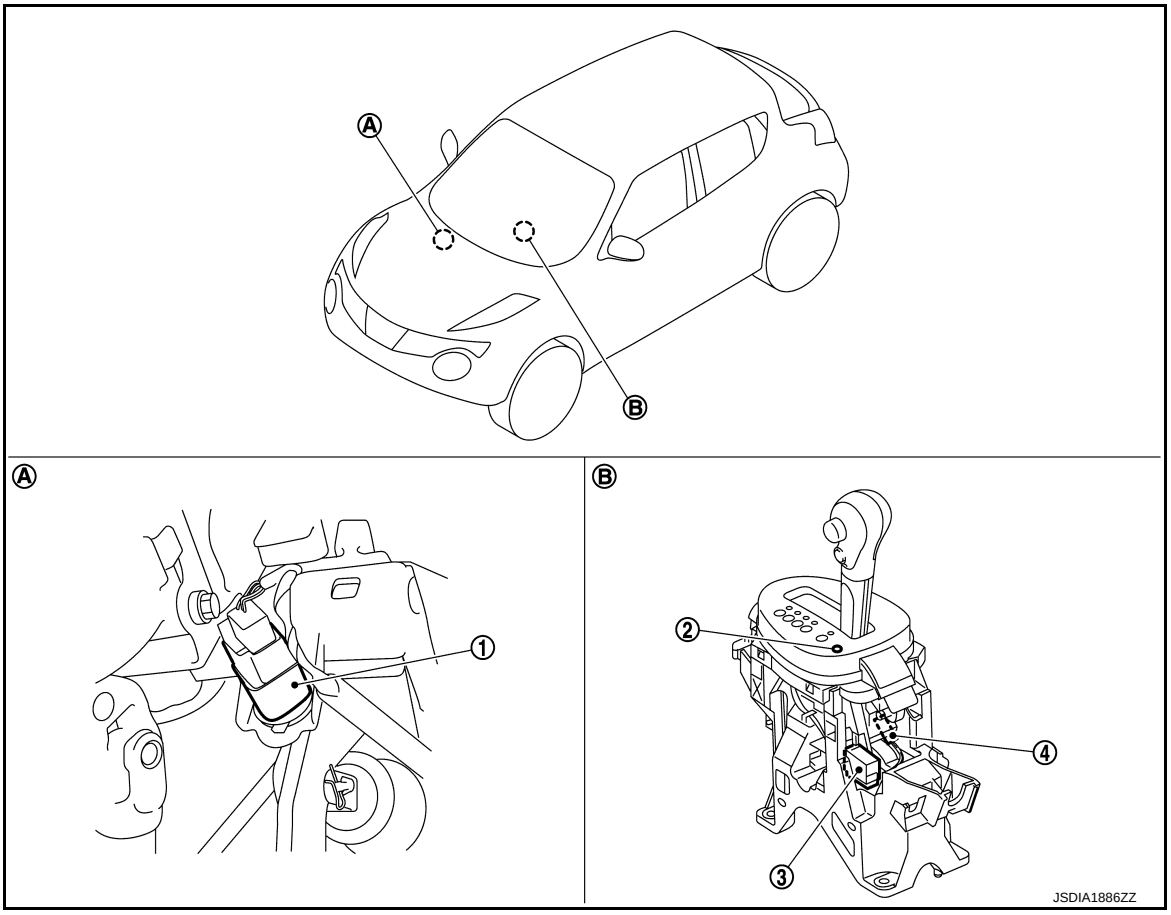
INFOID:0000000006601814

TCM transmits shift position signal to combination meter via CAN communication. The actual shift position is displayed on combination meter according to the signal.

SHIFT LOCK SYSTEM

SHIFT LOCK SYSTEM : Component Parts Location

INFOID:0000000006601815



1. Shift lock release button
2. Park position switch
3. Shift lock solenoid
4. Stop lamp switch
A: CVT shift selector assembly
B: Brake pedal, upper

SHIFT LOCK SYSTEM : Component Description

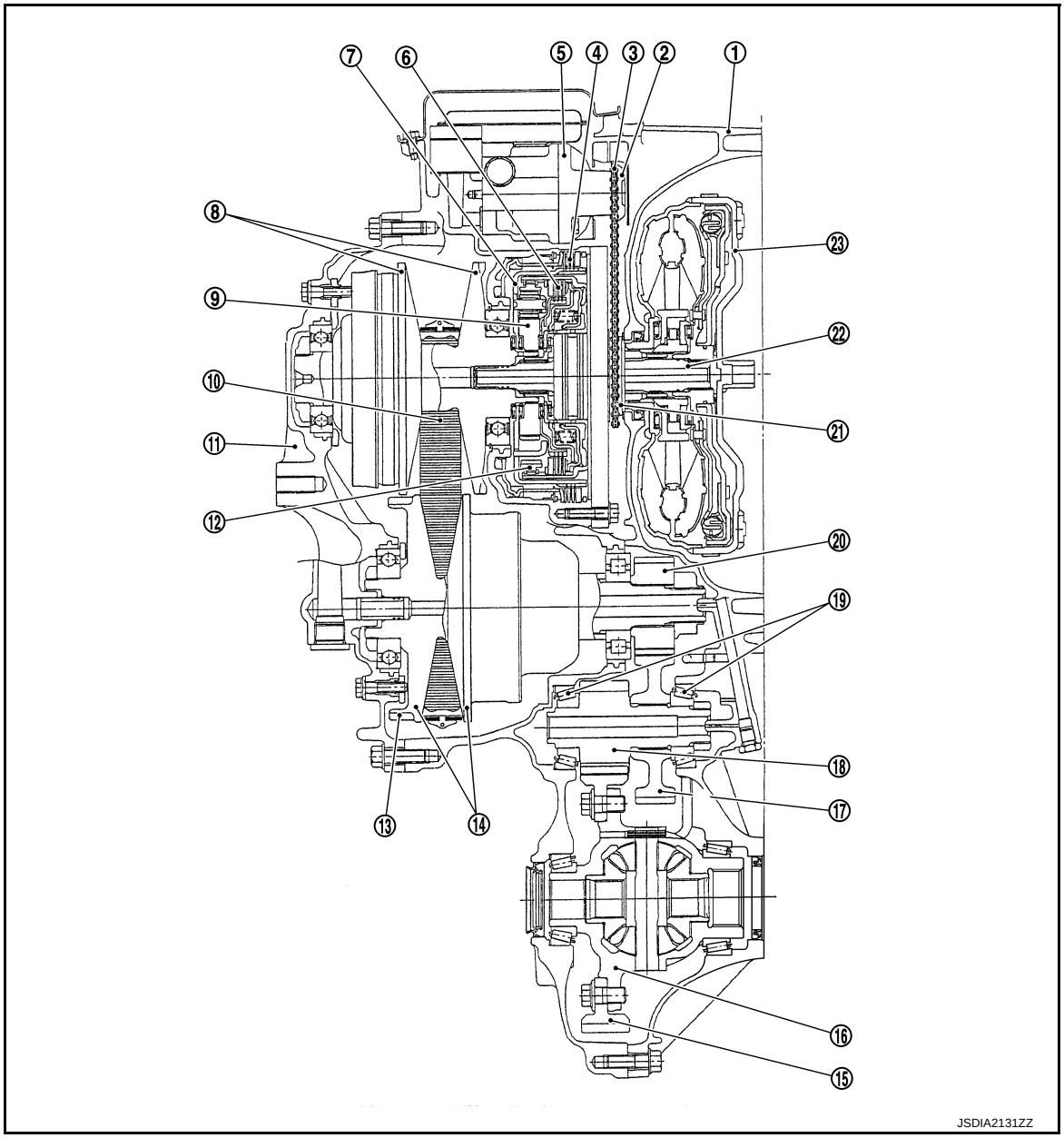
INFOID:0000000006601816

Component	Function
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
Lock lever	• Rotates according to shift lock solenoid activation and releases the shift lock. • If shift lock solenoid does not activate, lock lever can be rotated when shift lock release button is pressed and shift lock is released.
Detent rod	It links with the selector button and restricts the selector lever movement.
Park position switch	It detects that the selector lever is in “P” position.
Shift lock release button	Forcibly releases the shift lock when pressed.
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:0000000006601549



1. Converter housing
2. Driven sprocket
3. Chain
4. Reverse brake
5. Oil pump
6. Forward clutch
7. Planetary carrier
8. Primary pulley
9. Sun gear
10. Steel belt
11. Side cover
12. Internal gear
13. Parking gear
14. Secondary pulley
15. Final gear
16. Differential case
17. Idler gear
18. Reduction gear
19. Taper roller bearing
20. Output gear
21. Drive sprocket
22. Input shaft
23. Torque converter

TRANSAXLE : Operation Status

INFOID:0000000006601818

×: Engaged or applied.

Slector 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:0000000006601819

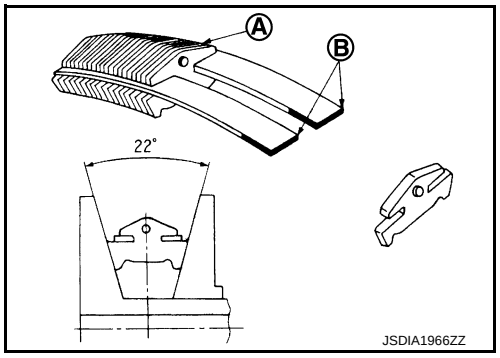
BELT & PULLEY

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 (A) and two steel rings (B) 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:

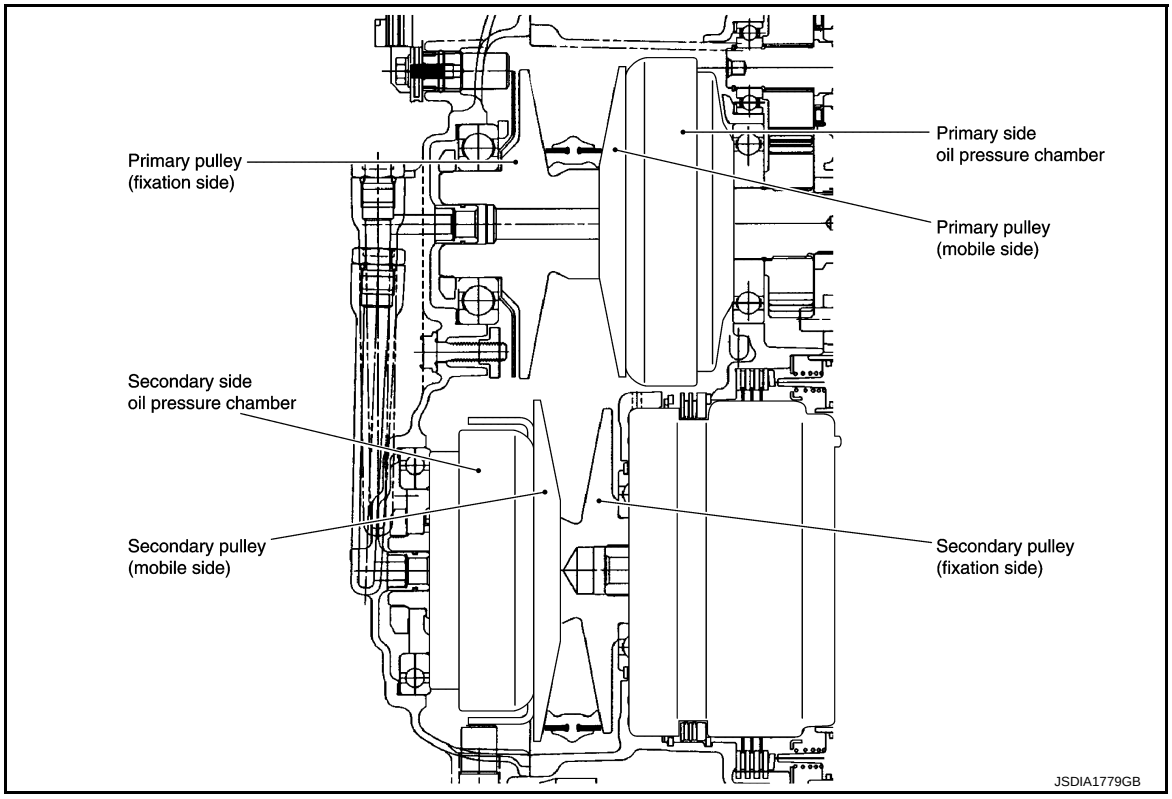


Oil pressure applies to the secondary pulley to nip the plate. ⇒The plate is pushed and extended outward. ⇒The steel ring shows withstands. ⇒Pulling force is generated on the steel ring. ⇒The plate of the primary pulley is nipped between the pulley. ⇒Friction force is generated between the steel belt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

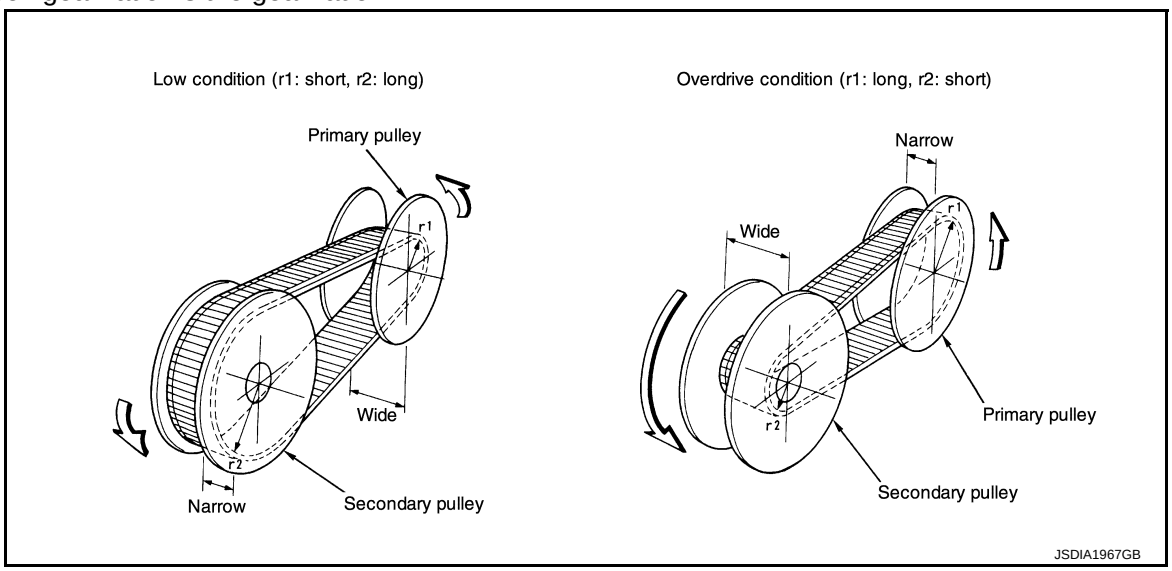
Pulley

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.



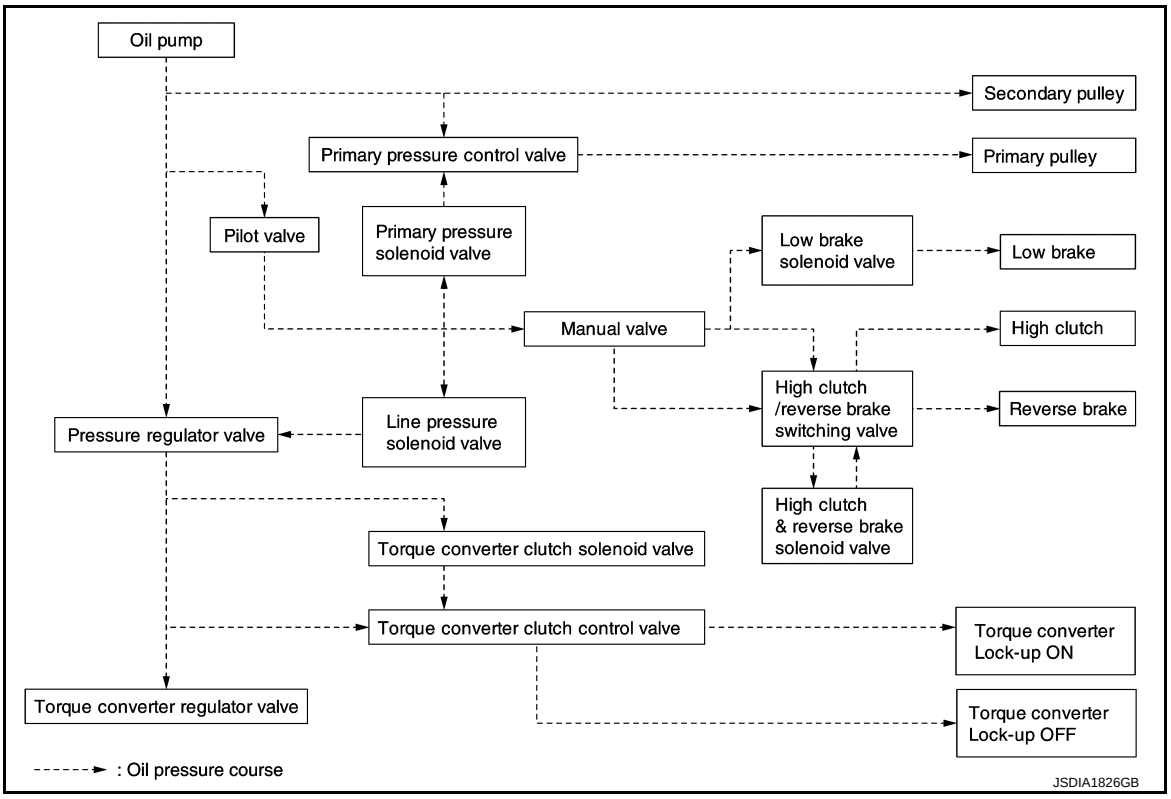
AUXILIARY GEARBOX MECHANISM

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

TRANSAXLE : Oil Pressure System

INFOID:0000000006601820

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:0000000006601821

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 change 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.

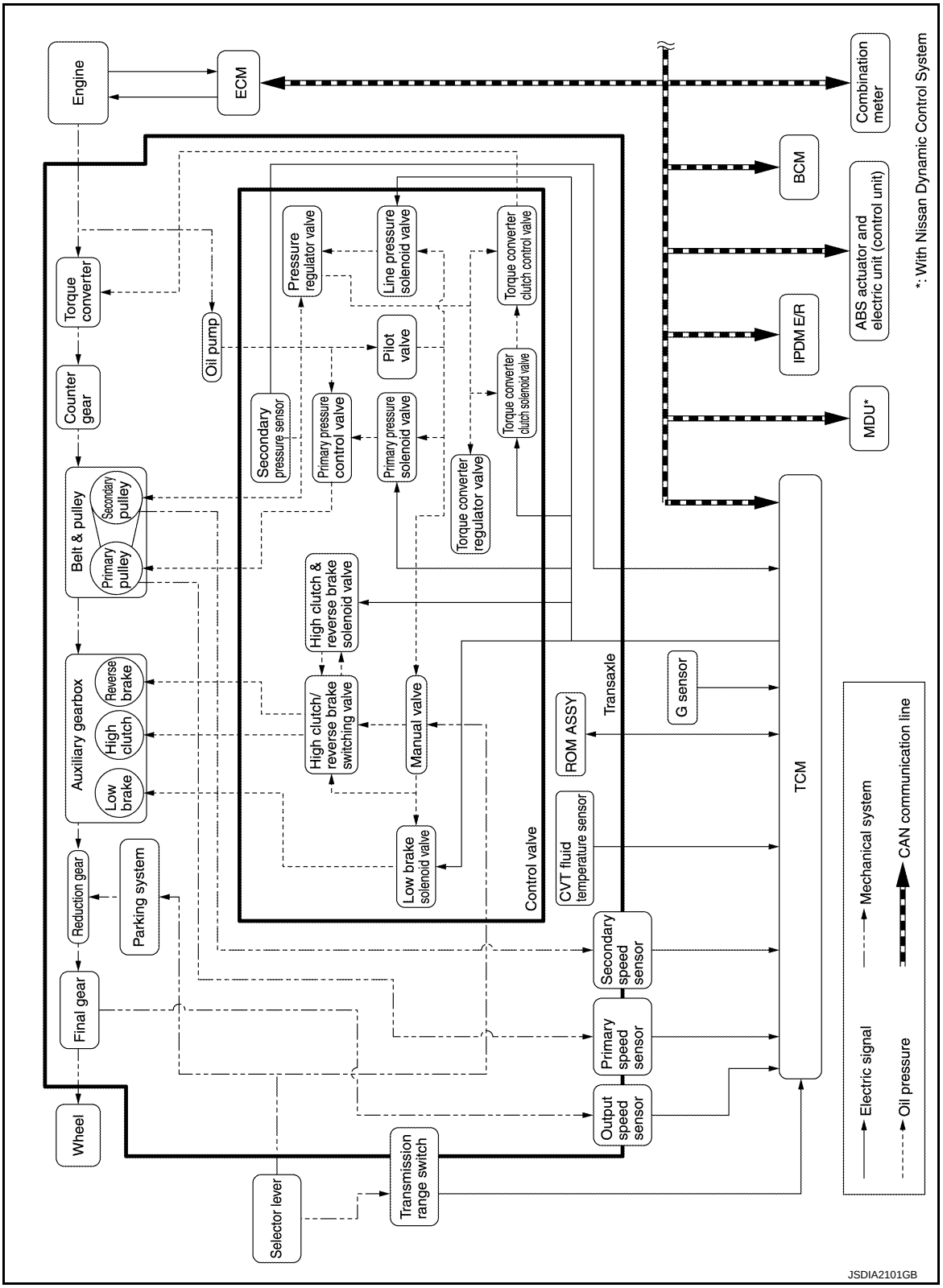
Part name	Function
Pilot valve	Adjusts line pressure and produces a constant pressure (pilot pressure) necessary for activating each solenoid valve.
Manual valve	Distributes the clutch and brake operation pressures (pilot pressure) corresponding to each shift position.
Torque converter clutch control 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-319, "CVT CONTROL SYSTEM : Primary Pressure Solenoid Valve"
Step ,ptor	TM-136, "CVT CONTROL SYSTEM : Step Motor"
Torque converter clutch solenoid valve	TM-135, "CVT CONTROL SYSTEM : Lock-up Select Solenoid Valve"
Line pressure solenoid valve	TM-135, "CVT CONTROL SYSTEM : Line Pressure Solenoid Valve"

SYSTEM

CVT CONTROL SYSTEM

CVT CONTROL SYSTEM : System Diagram

INFOID:0000000006601822



CVT CONTROL SYSTEM : System Description

INFOID:0000000006601823

The CVT senses vehicle operating conditions through various sensors. It always controls the optimum shift position and reduces shifting and lock-up shocks.

TCM FUNCTION

The function of the TCM is to:
- Receive input signals sent from various switches and sensors.
- Determine required line pressure, shifting point, and lock-up operation.
- Send required output signals to the step motor and the respective solenoids.

SENSORS (or SIGNALS)		TCM		ACTUATORS
Transmission range switch Accelerator pedal position signal Closed throttle position signal Engine speed signal CVT fluid temperature sensor Vehicle speed signal Manual mode switch signal Stop lamp switch signal Primary speed sensor input speed sensor Secondary speed sensor Secondary pressure sensor G sensor Turn indicator signal NORMAL mode signal* ECO mode signal* SPORT mode signal*	⇒	Shift control Line pressure control Primary pressure control Secondary pressure control Lock-up control Engine brake control Vehicle speed control Idle neutral control Nissan Dynamic Control System Fail-safe control Self-diagnosis CONSULT-III communication line Duet-EA control CAN system On board diagnosis	⇒	Step motor Torque converter clutch solenoid valve Lock-up select solenoid valve Line pressure solenoid valve Secondary pressure solenoid valve Manual modfe indicator Shift position indicator

*: With Nissan Dynamic Control System

INPUT/OUTPUT SIGNAL OF TCM

Control item		Fluid pressure control	Select control	Shift control	Idle neutral control	Lock-up control	CAN communication control	Fail-safe function*3
Input	Transmission range switch	X	X	X		X	X	X
	Accelerator pedal position signal *1	X	X	X		X	X	X
	Closed throttle position signal*1	X		X		X	X	
	Engine speed signal*1	X	X			X	X	X
	CVT fluid temperature sensor	X	X	X		X		X
	Manual mode switch signal*1	X		X		X	X	
	Stop lamp switch signal*1	X		X	X	X	X	X
	Primary speed sensor	X		X		X	X	X
	Secondary speed sensor	X	X	X		X	X	X
	Secondary pressure sensor	X		X				X
	G sensor				X			X
	turn signal				X			X
Output	Step motor			X				X
	TCC solenoid valve		X			X		X
	Lock-up select solenoid valve		X			X		X
	Line pressure solenoid valve	X	X	X				X
	Secondary pressure solenoid valve	X		X				X
	Maual mode indicator signal*2			X			X	

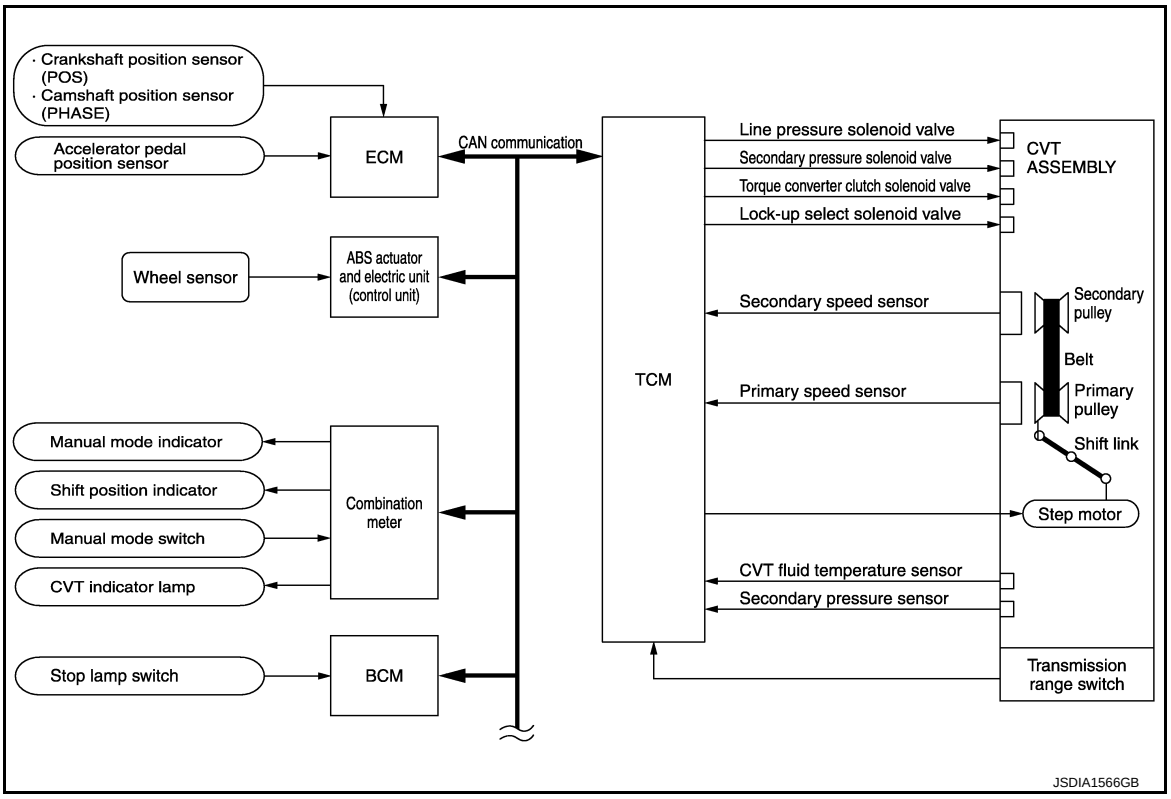
*1: Input via CAN communications.

*2: Output via CAN communications.

*3: If these input and output signals are different, the TCM triggers the fail-safe function.

CVT CONTROL SYSTEM : System Diagram

INFOID:0000000006706113



CVT CONTROL SYSTEM : Fail-safe

INFOID:0000000006765949

The TCM has an electrical fail-safe mode. In this mode TCM is operator even if there is an error in a main electronic control input/output signal circuit.

Description

When a malfunction is detected in each sensor, switch, solenoid or others, this function provides control to minimize reduction of drivability so that durability of transmission assembly can be acquired.

DTC	Condition	Vehicle behavior
P0703	—	• Start is slow • Acceleration is slow
P0705	—	• Position indicator on combination meter is not displayed • Selector shock is large • Start is slow • Acceleration at high load state is slow • Manual mode is not activated • Lock-up is not performed

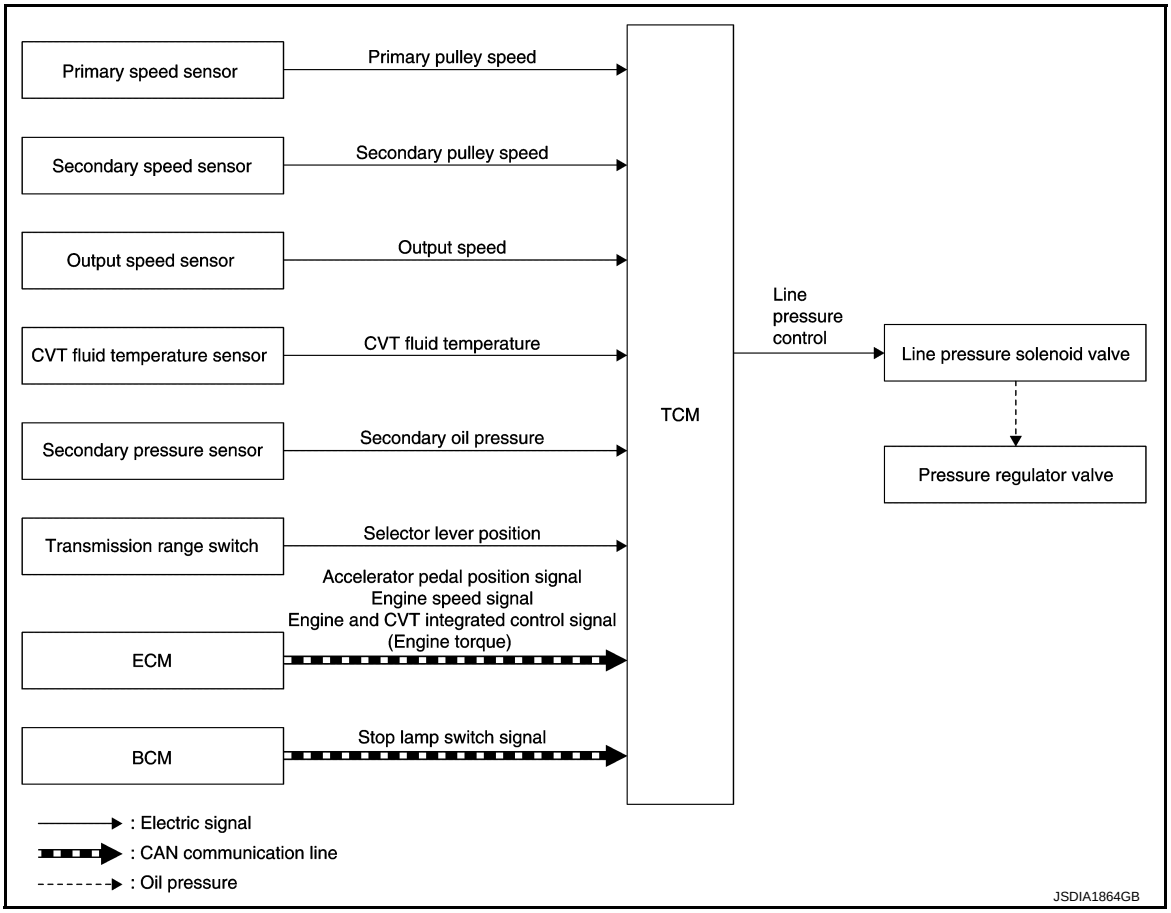
DTC	Condition		Vehicle behavior
P0710	Engine coolant temperature when engine starts is 10°C (50°F) or more	Open circuit is detected while ignition switch is OFF	• Selector shock is large • Low is fixed
		Other than the above	• Selector shock is large • Engine speed is high in middle and high speed range
	Engine coolant temperature when engine starts is 10°C (50°F) or less		• Start is slow • Acceleration is slow • Vehicle speed is not increased
	Engine coolant temperature when engine starts is –35°C (–31°F) or less		Vehicle speed is not increased
P0715	—		• Re-acceleration is slightly slow • Re-start is slow after vehicle is stop by strong deceleration • Manual mode is not activated • Lock-up is not performed
P0715	—		Idle neutral control is not performed
P0720	—		• Start is slow • Re-acceleration is slow • Re-start is slow after vehicle is stop by strong deceleration • Manual mode is not activated • Lock-up is not performed
P0725	—		Lock-up is not performed
P0740	—		• Selector shock is large • Lock-up is not performed
P0744	—		Lock-up is not performed
P0746	A malfunction is detected		• Start is slow • Acceleration is slow • Lock-up is not performed
	Function is excessively reduced after a malfunction is detected		• Start is difficult • Drive is difficult • Lock-up is not performed
P0778	—		Engine speed is high in middle and high speed range
P0826	—		Manual mode is not activated
P0840	—		• Start is slow • Acceleration at high load state is slow
P0841	—		• Start is slow • Acceleration is slow
P0868	—		• Start is slow • Acceleration is slow (Slow acceleration is subject to secondary pressure that is recognized by TCM)
P1585	—		Idle neutral control is not performed
P1701	—		• Start is slow • Acceleration at high load state is slow
P1705	—		• Acceleration is slow • Lock-up is not performed
P1722	—		Lock-up is not activated in coast state

DTC	Condition	Vehicle behavior
P1723	A malfunction is detected in primary pulley speed sensor side	• Acceleration is slow • Re-start is slow after vehicle is stop by strong deceleration • Manual mode is not activated • Lock-up is not performed
	A malfunction is detected in secondary pulley speed sensor	• Start is slow • Acceleration is slow • Re-start is slow after vehicle is stop by strong deceleration • Manual mode is not activated • Lock-up is not performed
P1726	—	Acceleration is slow
P1740	—	• Selector shock is large • Lock-up is not performed
P1777	A malfunction is detected in low side (when vehicle is stopped)	• Low is fixed • Lock-up is not performed
	A malfunction is detected in high side (during driving)	• Start is slow • Acceleration is low in low speed range • Lock-up is not performed
U1000	—	• Start is slow • Acceleration is slow • Vehicle speed is not increased
U1010	—	• Start is slow • Acceleration is slow • Vehicle speed is not increased

LINE PRESSURE CONTROL

LINE PRESSURE CONTROL : System Diagram

INFOID:0000000006601826



LINE PRESSURE CONTROL : System Description

INFOID:0000000006601827

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

NORMAL OIL PRESSURE CONTROL

Appropriate line pressure and 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.

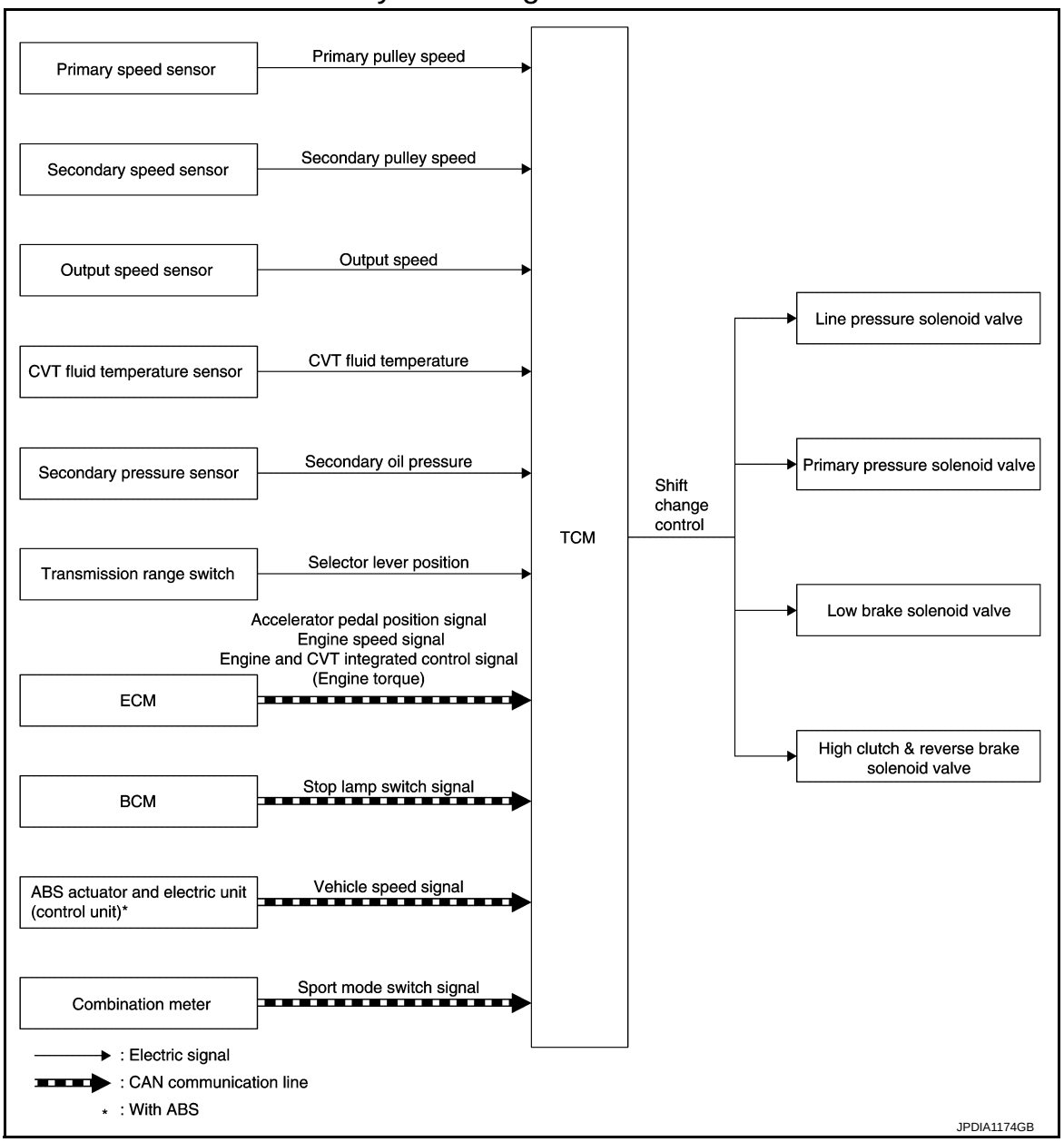
SECONDARY PRESSURE FEEDBACK CONTROL

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

SHIFT CHANGE CONTROL

SHIFT CHANGE CONTROL : System Diagram

INFOID:0000000006601828



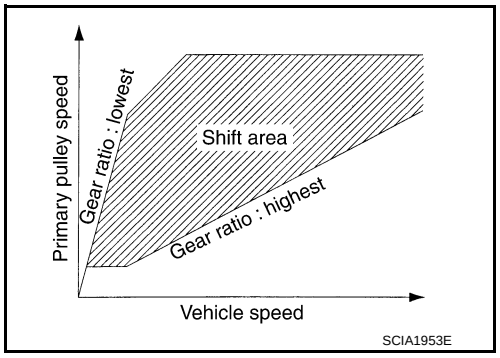
SHIFT CHANGE CONTROL : System Description

INFOID:0000000006601829

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.

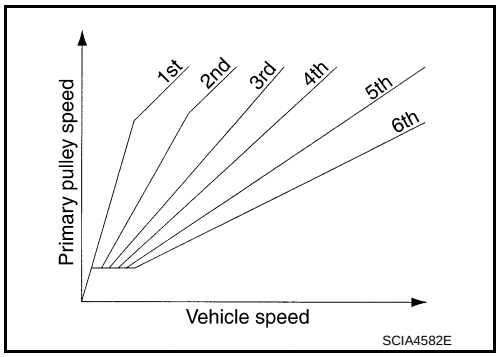
D POSITION

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



"M" POSITION

When the selector lever is put in the manual shift gate side, the fixed changing gear line is set. By moving the selector lever to + side or – side, the manual mode switch is changed over, and shift change like M/T becomes possible following the changing gear set line step by step..



MANUAL MODE INFOMATION

The TCM transmits the manual mode shift refusal signal to the combination meter if the TCM refuses the transmission from the driving status of vehicle when the selector lever or paddle shifter shifts to "UP (+ side)" or "DOWN (– side)" side. The combination meter blinks shift indicator on the combination meter and sounds the buzzer to indicate the driver that the shifting is not performed when receiving this signal. However, the TCM does not transmit the manual mode shift refusal signal in the conditions as per the following..

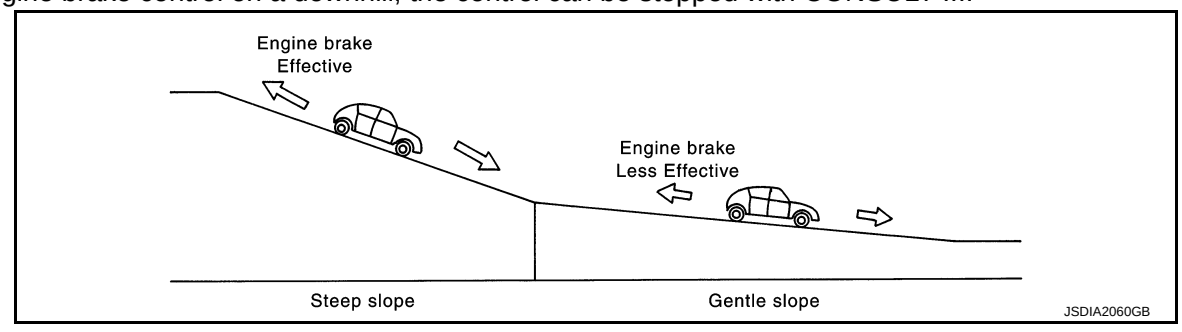
- When the selector lever or the paddle shifter shifts to "DOWN (– side)" side while driving in M1.
- When the selector lever or the paddle shifter shifts to "UP (+ side)" side while driving in M6.

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-III.



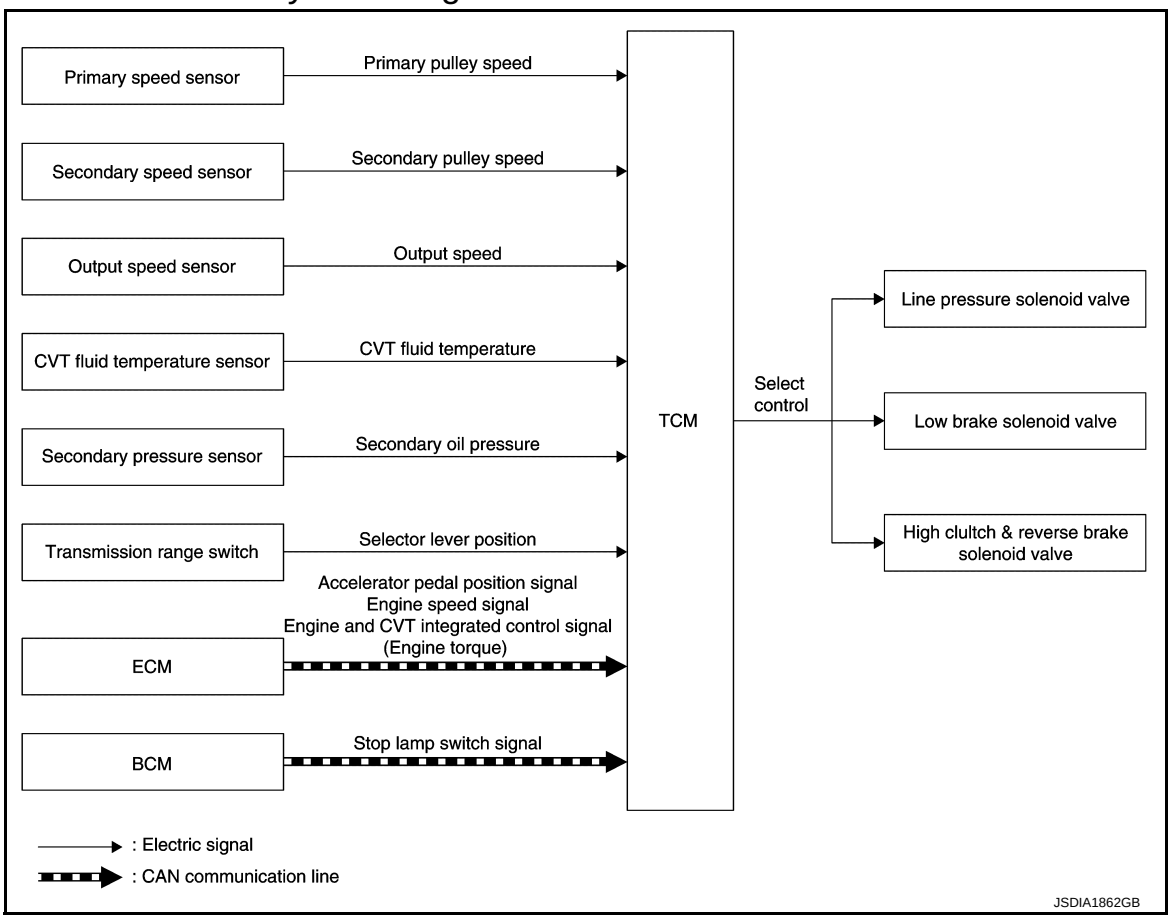
CONTROL IN ACCELERATION

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 diagram

INFOID:0000000006601830



SELECT CONTROL : System Description

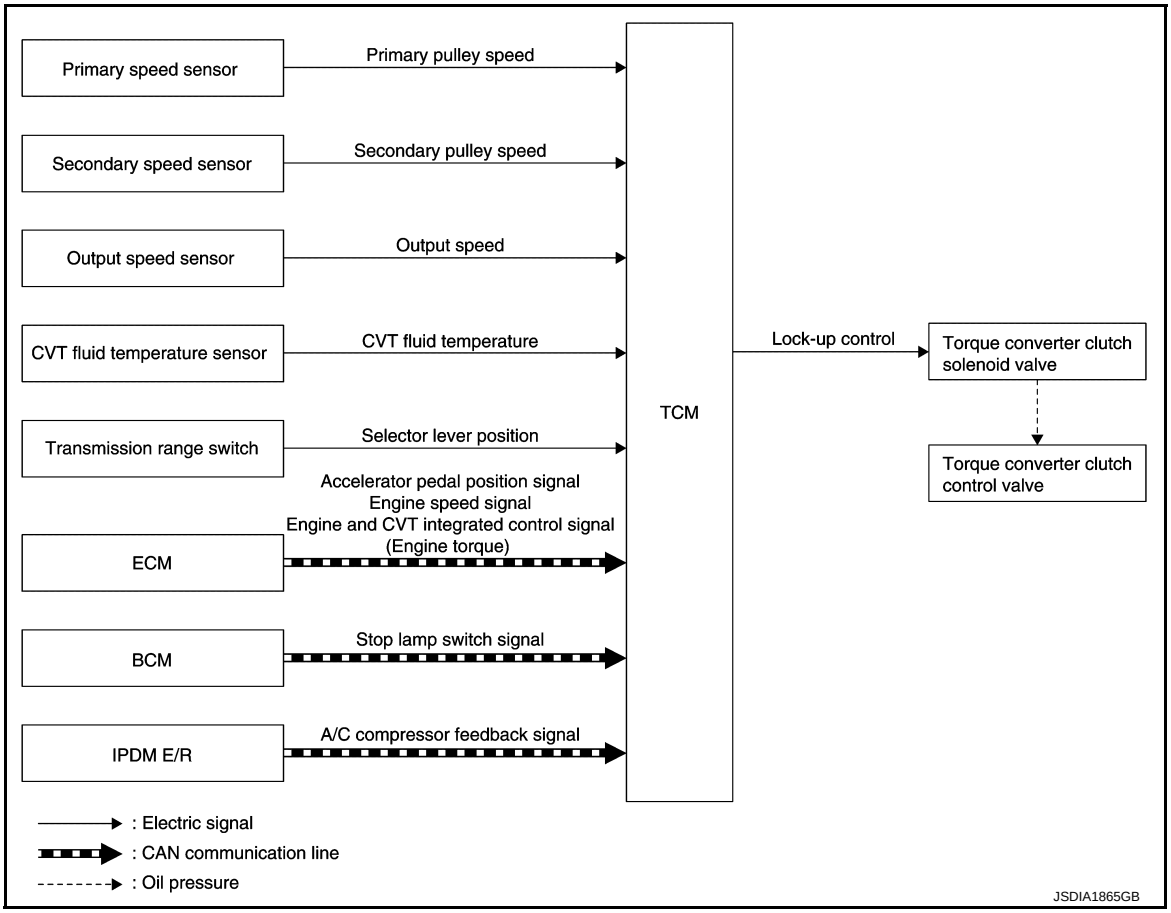
INFOID:0000000006601831

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 Diagram

INFOID:0000000006601832



LOCK-UP CONTROL : System Description

INFOID:0000000006601833

- 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.

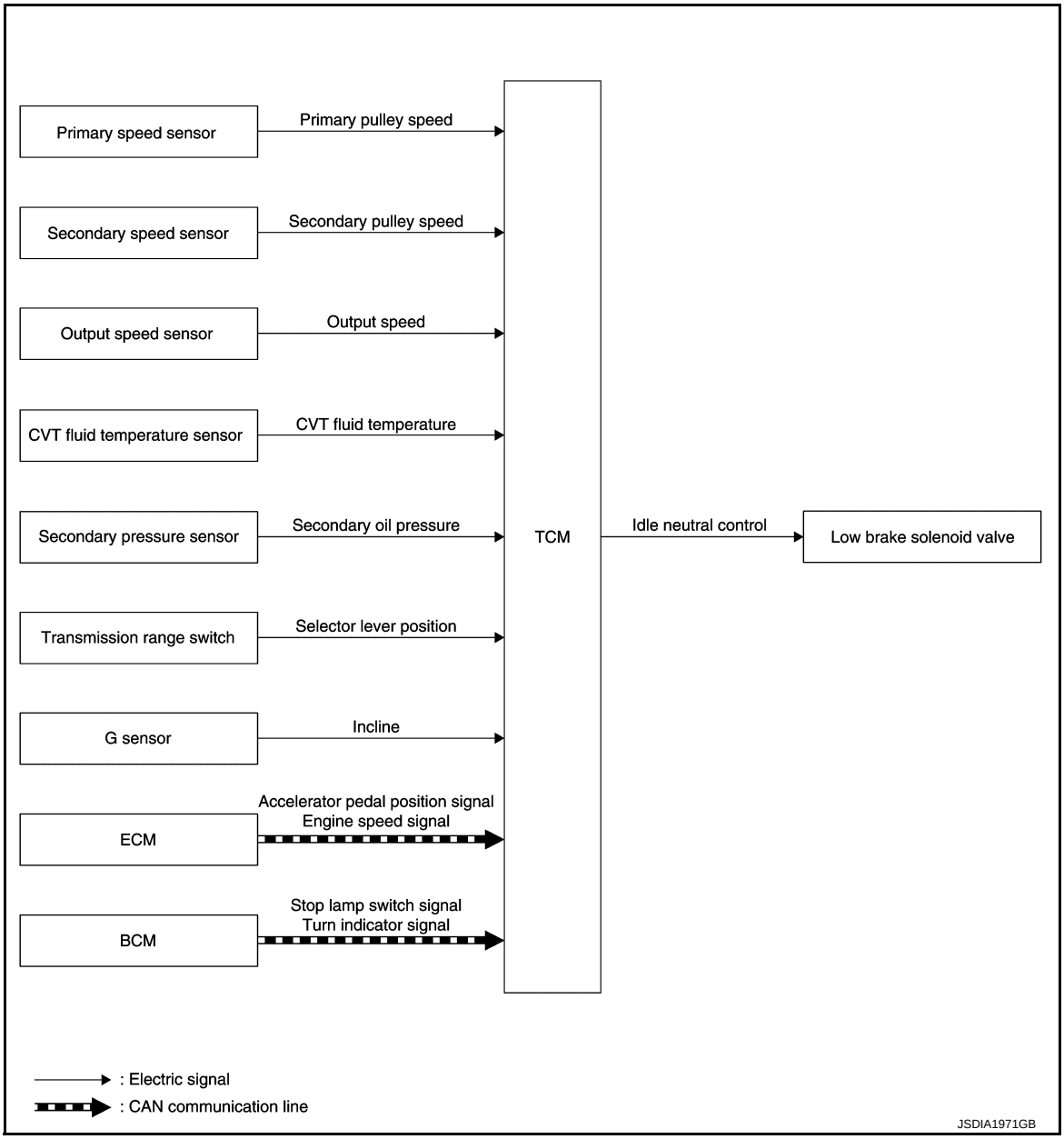
Lock-up release condition

- 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 Diagram

INFOID:0000000006601834

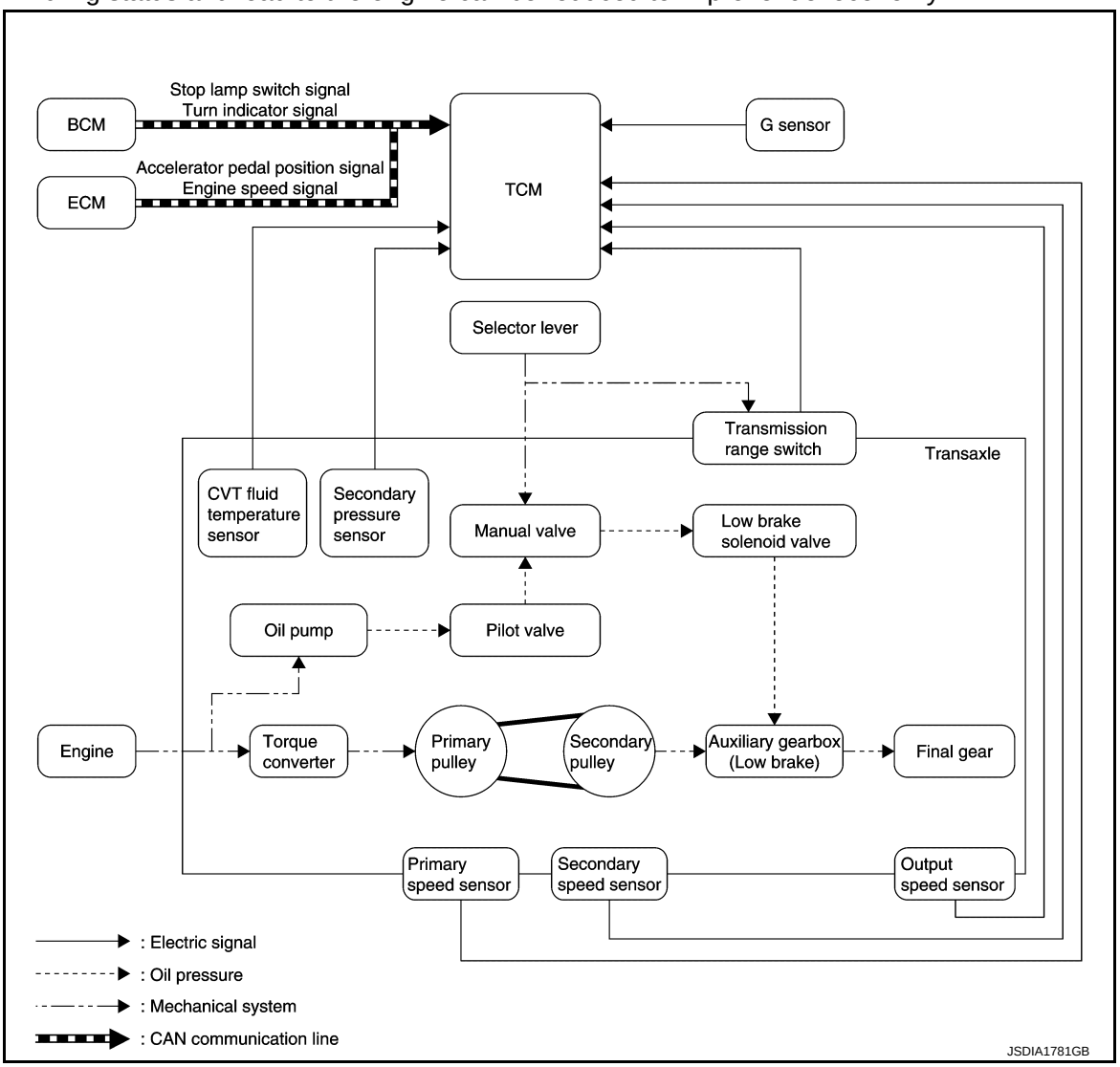


IDLE NEUTRAL CONTROL : System Description

INFOID:0000000006601835

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.

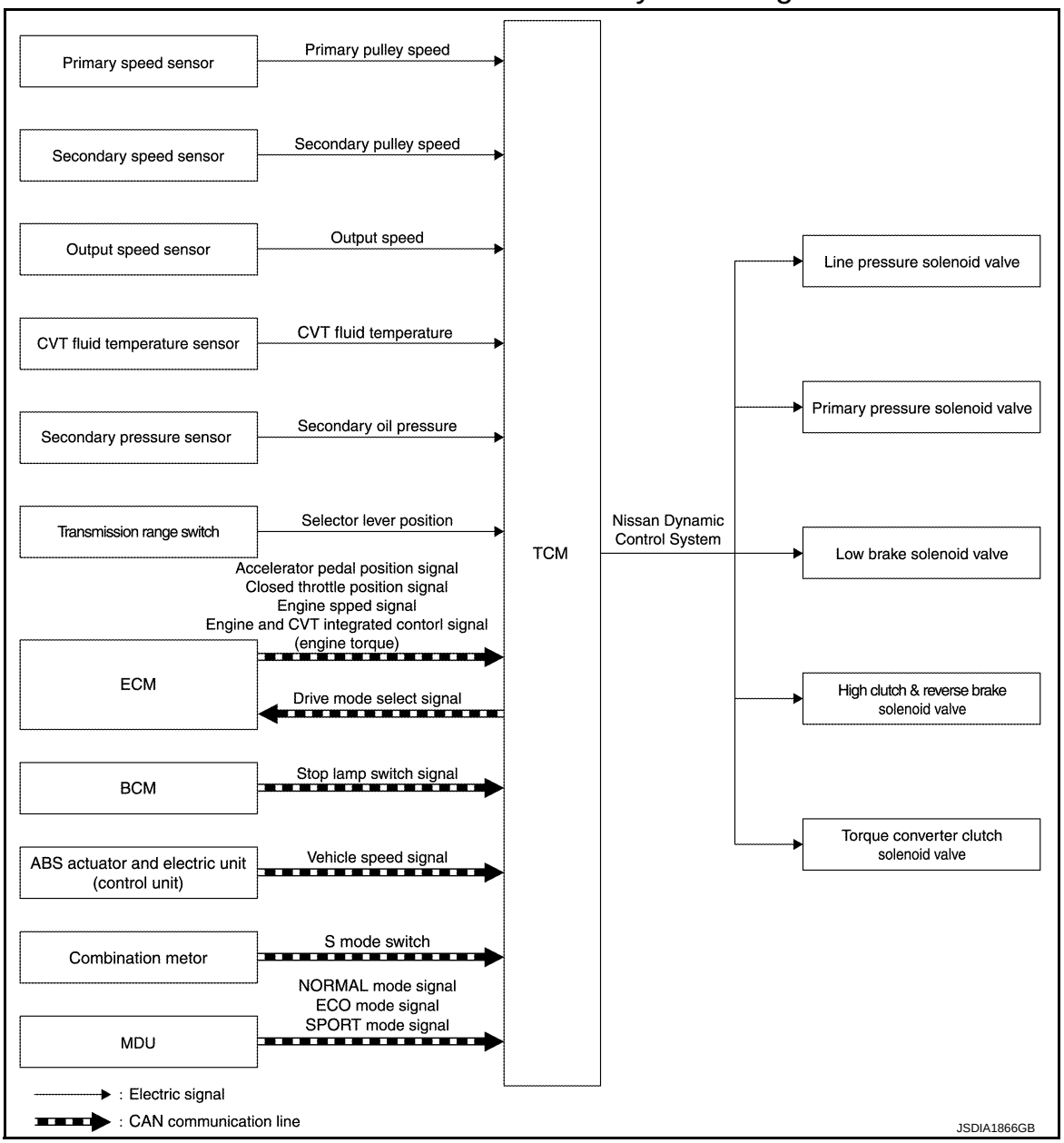
IDLE NEUTRAL CONTROL RESUME CONDITION

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.

LOCK-UP AND SELECT CONTROL SYSTEM

LOCK-UP AND SELECT CONTROL SYSTEM : System diagram

INFOID:0000000006601836



LOCK-UP AND SELECT CONTROL SYSTEM : System Description

INFOID:0000000006601837

- TCM receives the NORMAL mode signal, ECO mode signal or SPORT mode signal from the multi display unit through CAN communication.
- TCM sends the recognized control mode to ECM through CAN communication (drive mode select signal).
- With operation on the multi display unit, the mode is changed on the display, but the mode is actually not changed due to CAN communication malfunction.
- 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 S mode is ON.

CONTROL DETAILS OF EACH MODE

Control mode	Control
NORMAL mode	Driving mode that automatically selects the shift schedule considering the balance of fuel economy and driving performance based on the driving condition and driving trend.
SPORT mode	Driving mode that keeps high engine revolution and provides direct feel and acceleration performance suitable for driving on winding road.
ECO mode	Driving mode that selects the shift schedule with priority on fuel economy which gives low engine revolution.

FAIL-SAFE

If CAN communication malfunction occurs between TCM and the multi display unit, the mode when the malfunction occurs is maintained for approximately 30 seconds and the mode is changed to NORMAL mode when the accelerator pedal is released.

SHIFT LOCK SYSTEM

SHIFT LOCK SYSTEM : System Description

INFOID:0000000006601838

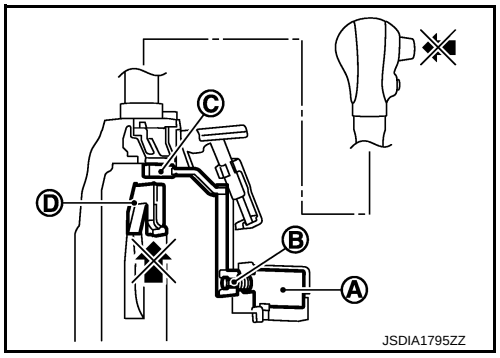
- The shift lock is the mechanism provided to prevent quick start of a vehicle by incorrect operation of a drive when the selector lever is in P position.
- Selector lever can be shifted from the P position to another position when the following conditions are satisfied.

- 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 (A) is OFF (not energized) and the solenoid rod (B) is extended with spring.
The connecting lock lever (C) is located at the position shown in the figure when the solenoid rod is extended. It prevents the movement of the detent rod (D). The selector lever cannot be shifted from the P position for this reason.



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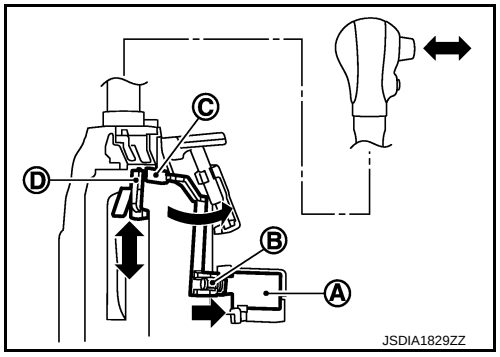
When brake pedal is depressed (selector lever operation allowed)

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



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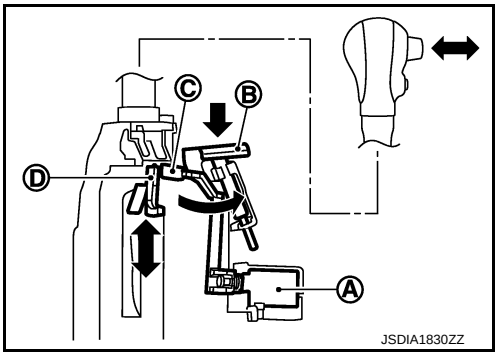
P POSITION HOLD MECHANISM (IGNITION SWITCH LOCK)

The shift lock solenoid (1) 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 (1) is malfunctioning. However, the lock lever (A) is forcibly rotated and the shift lock is released when the shift lock release button (A) is pressed from above. The selector operation from P position can be performed.



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

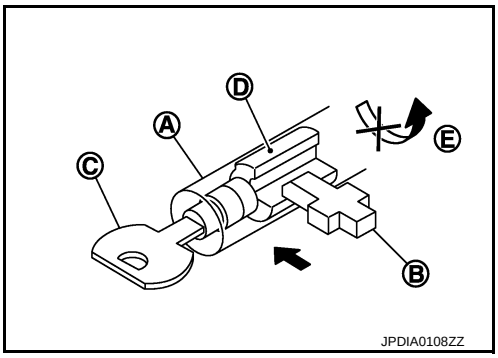
INFOID:0000000006601839

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.

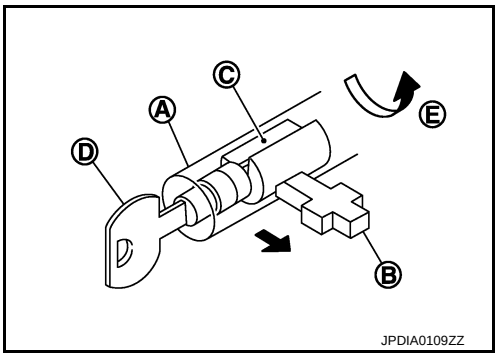
Key lock status

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



Key unlock status

The slider (B) in the key cylinder (A) 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 (C) can be rotated for this reason. The key (D) can be removed from the key cylinder because it can be turned to LOCK (E).



ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

INFOID:0000000006601573

DESCRIPTION

The CVT system has two self-diagnostic systems.
The first is the emission-related on board diagnostic system (OBD) performed by the TCM in combination with the ECM. The malfunction is indicated by the MIL (malfunction indicator lamp) and is stored as a DTC in the ECM memory, and the TCM memory.
The second is the TCM original self-diagnosis performed by the TCM. The malfunction is stored in the TCM memory. The detected items are overlapped with OBD self-diagnostic items. For detail, refer to TM-159, "CONSULT-III Function (TRANSMISSION)".

OBD FUNCTION

The ECM provides emission-related on board diagnostic (OBD) functions for the CVT system. One function is to receive a signal from the TCM used with OBD-related parts of the CVT system. The signal is sent to the ECM when a malfunction occurs in the corresponding OBD-related part. The other function is to indicate a diagnostic result by means of the MIL (malfunction indicator lamp) on the instrument panel. Sensors, switches and solenoid valves are used as sensing elements.
The MIL automatically illuminates in “One or Two Trip Detection Logic” when a malfunction is sensed in relation to CVT system parts.

ONE OR TWO TRIP DETECTION LOGIC OF OBD

One Trip Detection Logic

If a malfunction is sensed during the first test drive, the MIL will illuminate and the malfunction will be stored in the ECM memory as a DTC. The TCM is not provided with such a memory function.

Two Trip Detection Logic

When a malfunction is sensed during the first test drive, it is stored in the ECM memory as a 1st trip DTC (diagnostic trouble code) or 1st trip freeze frame data. At this point, the MIL will not illuminate. — 1st trip
If the same malfunction as that experienced during the first test drive is sensed during the second test drive, the MIL will illuminate. — 2nd trip
The “trip” in the “One or Two Trip Detection Logic” means a driving mode in which self-diagnosis is performed during vehicle operation.

OBD DIAGNOSTIC TROUBLE CODE (DTC)

How to Read DTC and 1st Trip DTC

DTC and 1st trip DTC can be read by the following methods.
(with CONSULT-III or GST) CONSULT-III or GST (Generic Scan Tool) Examples: P0705, P0720 etc.
These DTC are prescribed by ISO 15031-5.
(CONSULT-III also displays the malfunctioning component or system.)

- **1st trip DTC No. is the same as DTC No.**
- **Output of the diagnostic trouble code indicates that the indicated circuit has a malfunction. However, in case of the Mode II and GST, they do not indicate whether the malfunction is still occurring or occurred in the past and returned to normal.**
  CONSULT-III can identify them as shown below, therefore, CONSULT-III (if available) is recommended.

- DTC or 1st trip DTC of a malfunction is displayed in SELF-DIAGNOSTIC RESULTS mode for “ENGINE” with CONSULT-III. Time data indicates how many times the vehicle was driven after the last detection of a DTC.
- If the DTC is being detected currently, the time data will be “0”.
- If a 1st trip DTC is stored in the ECM, the time data will be “1t”.

Freeze Frame Data and 1st Trip Freeze Frame Data

- The ECM has a memory function, which stores the driving condition such as fuel system status, calculated load value, engine coolant temperature, short term fuel trim, long term fuel trim, engine speed and vehicle speed at the moment the ECM detects a malfunction.
  Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data, and the data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT-III or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-III screen, not on the GST. For details, refer to EC-83, "CONSULT-III Function".

Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. 1st trip freeze frame data is stored in the ECM memory along with the 1st trip DTC. There is no priority for 1st trip freeze frame data, and it is updated each time a different 1st trip DTC is detected. However, once freeze frame data (2nd trip detection/MIL on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

Priority	Items	
1	Freeze frame data	Misfire — DTC: P0300 - P0304 Fuel Injection System Function — DTC: P0171, P0172
2		Except the above items (Includes CVT related items)
3	1st trip freeze frame data	

Both 1st trip freeze frame data and freeze frame data (along with the DTC) are cleared when the ECM memory is erased.

How to Erase DTC

- The diagnostic trouble code can be erased by CONSULT-III, GST or ECM DIAGNOSTIC TEST MODE as described following.
- **If the battery cable is disconnected, the diagnostic trouble code will be lost within 24 hours.**
- **When you erase the DTC, using CONSULT-III or GST is easier and quicker than switching the mode selector on the ECM.**
- The following emission-related diagnostic information is cleared from the ECM memory when erasing DTC related to OBD. For details, refer to EC-108, "DTC Index".
- **Diagnostic trouble codes (DTC)**
- **1st trip diagnostic trouble codes (1st trip DTC)**
- **Freeze frame data**
- **1st trip freeze frame data**
- **System readiness test (SRT) codes**
- **Test values**

How to Erase DTC (With CONSULT-III)

The emission related diagnostic information in the TCM and ECM can be erased by selecting “ALL Erase” in the “Description” of “FINAL CHECK” mode with CONSULT-III.

How to Erase DTC (With GST)

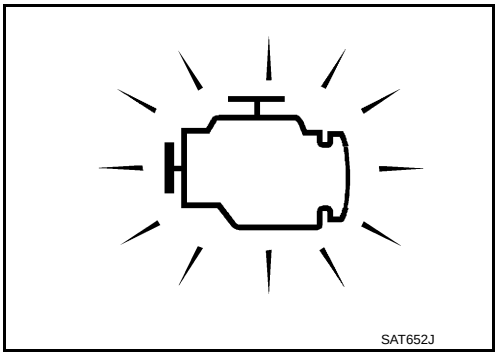
1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
2. Select Mode 4 with GST (Generic Scan Tool). For details, refer to EC-83, "CONSULT-III Function".

MALFUNCTION INDICATOR LAMP (MIL)

Description

The MIL is located on the instrument panel.

1. The MIL will light up when the ignition switch is turned ON without the engine running. This is a bulb check.
   - If the MIL does not light up, refer to EC-436, "Component Function Check".
2. When the engine is started, the MIL should go off.
   If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.



DIAGNOSIS SYSTEM (TCM)

CONSULT-III Function (TRANSMISSION)

INFOID:0000000006601574

CONSULT-III can display each diagnostic item using the diagnostic test modes shown below.

FUNCTION

Conditions	Function
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.
CAN Diagnosis Support Monitor	It monitors the status of CAN communication.
Function Test*	This mode can show results of self-diagnosis of ECU with either “OK” or “NG”. For engines, more practical tests regarding sensors/switches and/or actuators are available.
ECU Identification	Display the ECU identification number (part number etc.) of the selected system.
Special Function	Other results or histories, etc. that are recorded in ECU are displayed.

*: “Function Test” can be selected, but do not use it.

WORK SUPPORT MODE

Display Item List

Item name	Description
ENGINE BRAKE ADJ.	The engine brake level setting can be canceled.
CONFORM CVTF DETERIORTN	The CVT fluid deterioration level can be checked.

Engine Brake Adjustment

“ENGINE BRAKE LEVEL”

0: Initial set value (Engine brake level control is activated)

OFF: Engine brake level control is deactivated.

CAUTION:

Mode of “+1”“0”“–1”“–2”“OFF” can be selected by pressing the “UP”“DOWN” on CONSULT-III screen. However, do not select mode other than “0” and “OFF”. If the “+1” or “–1” or “–2” is selected, that might cause the irregular driveability.

Check CVT Fluid Deterioration Date

“CVTF DETERIORATION DATE”

210000 or more:

It is necessary to change CVT fluid.

Less than 210000:

It is not necessary to change CVT fluid.

CAUTION:

Touch “CLEAR” after changing CVT fluid, and then erase “CVTF DETERIORATION DATE”.

SELF-DIAGNOSTIC RESULT MODE

Refer to TM-171, "DTC Index".

DATA MONITOR MODE

Display Items List

X: Application ▼: Optional selection

Monitored item (Unit)	(Unit)	Monitor item selection		Remarks
		MAIN SIGNALS	ECU INPUT SIGNALS	
VSP SENSOR	(km/h or mph)	▼	X	Displays the vehicle speed calculated from the CVT output shaft speed.
ESTM VSP SIG	(km/h or mph)	▼	X	Displays the vehicle speed signal (ABS) received through CAN communication.
PRI SPEED SEN	(rpm)	▼	X	Displays the primary pulley speed calculated from the pulse signal of the primary speed sensor.
ENG SPEED SIG	(rpm)	▼	X	Displays the engine speed received through CAN communication.
SEC HYDR SEN	(V)	▼	X	—
ATF TEMP SEN	(V)	▼	X	Displays the signal voltage of the CVT fluid temperature sensor.
VIGN SEN	(V)	▼	X	Displays the battery voltage applied to TCM.
VEHICLE SPEED	(km/h or mph)	X	▼	Vehicle speed recognized by the TCM.
PRI SPEED	(rpm)	X	▼	Displays the primary pulley speed recognized by TCM.
SEC SPEED	(rpm)	▼	▼	Displays the secondary pulley speed recognized by TCM.
ENG SPEED	(rpm)	X	▼	Displays the engine speed recognized by TCM.
SLIP REV	(rpm)	X	▼	Displays the speed difference between the input shaft speed of CVT and the engine speed.
GEAR RATIO		X	▼	—
G SPEED	(G)	▼	▼	Displays the acceleration and deceleration speed of the vehicle calculated from vehicle speed change.
ACC PEDAL OPEN	(0.0/8)	X	X	Displays the estimated throttle position received through CAN communication.
TRQ RTO		▼	▼	—
SEC PRESS	(MPa)	X	▼	—
ATFTEMP COUNT		X	▼	Means CVT fluid temperature. Actual oil temperature (° numeric value is converted. Refer to TM-128
DSR REV	(rpm)	▼	▼	Displays the target primary pulley speed calculated from processing of gear shift control.
DGEAR RATIO		▼	▼	—
DSTM STEP	(step)	▼	▼	—
STM STEP	(step)	X	▼	—
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.
TGT SEC PRESS	(MPa)	▼	▼	—
ISOLT1	(A)	X	▼	Displays the command current from TCM to the torque converter clutch solenoid valve.
ISOLT2	(A)	X	▼	Displays the command current from TCM to the line pressure solenoid valve.

Monitored item (Unit)	(Unit)	Monitor item selection		Remarks
		MAIN SIGNALS	ECU INPUT SIGNALS	
ISOLT3	(A)	X	▼	Secondary pressure solenoid valve output current
SOLMON1	(A)	X	X	Torque converter clutch solenoid valve monitor current
SOLMON2	(A)	X	X	Line pressure solenoid valve monitor current
SOLMON3	(A)	X	X	Secondary pressure solenoid valve monitor current
BRAKE SW	(On/Off)	X	X	Displays the reception status of the stop lamp switch signal received through CAN communication.
FULL SW	(On/Off)	X	X	Not mounted but displayed.
IDLE SW	(On/Off)	X	X	Displays the reception status of the closed throttle position signal received through CAN communication.
SPORT MODE SW	(On/Off)	X	X	• Displays the reception status of the sport mode switch signal received through CAN communication. • It is displayed although not equipped.
STRDWNSW	(On/Off)	▼	X	• Displays the operation status of the paddle shifter (down switch). • It is displayed although not equipped.
STRUPSW	(On/Off)	▼	X	• Displays the operation status of the paddle shifter (up switch). • It is displayed although not equipped.
DOWNLVR	(On/Off)	▼	X	Displays the operation status of the selector lever (down switch).
UPLVR	(On/Off)	▼	X	Displays the operation status of the selector lever (up switch).
NONMMODE	(On/Off)	▼	X	Displays if the selector lever position is not at the manual shift gate.
MMODE	(On/Off)	▼	X	• 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.
INDNRNG	(On/Off)	▼	▼	Displays the transmission status of the shift position (N position) signal transmitted through CAN communication.
INDRRNG	(On/Off)	▼	▼	Displays the transmission status of the shift position (N position) signal transmitted through CAN communication.
INDPRNG	(On/Off)	▼	▼	Displays the transmission status of the shift position (P position) signal transmitted through CAN communication.
CVT LAMP	(On/Off)	▼	▼	—
SPORT MODE IND	(On/Off)	▼	▼	• Displays the transmission status of the S mode indicator signal transmitted through CAN communication. • It is displayed although not equipped.
MMODE IND	(On/Off)	▼	▼	Displays the transmission status of the manual mode signal transmitted through CAN communication.
SMCOIL D	(On/Off)	▼	▼	Step motor coil “D” energizing status
SMCOIL C	(On/Off)	▼	▼	Step motor coil “C” energizing status
SMCOIL B	(On/Off)	▼	▼	Step motor coil “B” energizing status
SMCOIL A	(On/Off)	▼	▼	Step motor coil “A” energizing status

Monitored item (Unit)	(Unit)	Monitor item selection		Remarks
		MAIN SIGNALS	ECU INPUT SIGNALS	
LUSEL SOL OUT	(On/Off)	▼	▼	—
LUSEL SOL MON	(On/Off)	▼	▼	—
VDC ON	(On/Off)	▼	X	Displays the reception status of the VDC operation signal received through CAN communication.
TCS ON	(On/Off)	▼	X	• Displays the reception status of the TCS operation signal received through CAN communication. • It is displayed although not equipped.
ABS ON	(On/Off)	▼	X	Displays the reception status of the ABS operation signal received through CAN communication.
ACC ON	(On/Off)	▼	X	Not mounted but displayed.
RANGE		X	▼	Displays the gear position recognized by TCM.
M GEAR POS		X	▼	Display the target gear of manual mode
D POSITION SW	(On/Off)	▼	X	Displays the operation status of the transmission range switch (D position).
N POSITION SW	(On/Off)	▼	X	Displays the operation status of the transmission range switch (N position).
L POSITION SW	(On/Off)	▼	X	Displays the operation status of the transmission range switch (L position).
P POSITION SW	(On/Off)	▼	X	Displays the operation status of the transmission range switch (P position).
R POSITION SW	(On/Off)	▼	X	Displays the operation status of the transmission range switch (R position).
ECO SW	(On/Off)	▼	▼	• Displays the reception status of the ECO mode switch signal received through CAN communication. • It is displayed although not equipped.
DRIVE MODE STATS	(On/Off)	▼	▼	• Displays the drive mode status recognized by TCM. • Only vehicle with Nissan Dynamic Control System are displayed.
SNOW MODE	(On/Off)	▼	▼	• Display the drive mode (SNOW switch status) of Nissan Dynamic Control System received through CAN communication. • Only vehicle with Nissan Dynamic Control System are displayed. • It is displayed although not equipped.
ECO MODE	(On/Off)	▼	▼	• Display the driving mode (ECO switch status) of Nissan Dynamic Control System received through CAN communication. • Only vehicle with Nissan Dynamic Control System are displayed.
NORMAL MODE	(On/Off)	▼	▼	• Display the driving mode (AUTO switch status) of Nissan Dynamic Control Systemm received through CAN communication. • Only vehicle with Nissan Dynamic Control System are displayed.
SPORT MODE	(On/Off)	▼	▼	• Display the driving mode (SPORT switch status) of Nissan Dynamic Control System received through CAN communication. • Only vehicle with Nissan Dynamic Control System are displayed.

Diagnostic Tool Function

INFOID:0000000006601575

OBD SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to EC-72, "Diagnosis Description".

ECU DIAGNOSIS INFORMATION

TCM

Reference Value

INFOID:0000000006601678

VALUES ON THE DIAGNOSIS TOOL

Item name	Condition	Display value (Approx.)
VSP SENSOR	During driving	Approximately matches the speedometer reading.
ESTM VSP SIG	During driving	Approximately matches the speedometer reading.
PRI SPEED SEN	During driving (lock-up ON)	Approximately matches the engine speed.
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
SEC HYDR SEN	“N” position idle	Approx. 1.0 V
ATF TEMP SEN	CVT fluid: Approx. 20°C (68°F)	Approx. 2.01 – 2.05 V
	CVT fluid: Approx. 50°C (122°F)	Approx. 1.45 – 1.50 V
	CVT fluid: Approx. 80°C (176°F)	Approx. 0.90 – 0.94 V
VIGN SEN	Ignition switch: ON	Battery voltage
VEHICLE SPEED	During driving	Approximately matches the speedometer reading.
PRI SPEED	During driving (lock-up ON)	Approximately matches the engine speed.
SEC SPEED	During driving	45 X Approximately matches the speedometer reading.
ENG SPEED	Engine running	Closely matches the tachometer reading.
SLIP REV	During driving	engine speed – input speed
GEAR RATIO	During driving	Approx. 2.34 – 0.39
G SPEED	Vehicle stopped	Approx. 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.
ACC PEDAL OPEN	Released accelerator pedal - Fully depressed accelerator pedal	0.0/8 – 8.0/8
TRQ RTO	While driving	The value changes along with acceleration/deceleration.
SEC PRESS	“N” position idle	Approx. 0.5 MPa
ATFTEMP COUNT*1	CVT fluid: Approx. 20°C (68°F)	47
	CVT fluid: Approx. 50°C (122°F)	104
	CVT fluid: Approx. 80°C (176°F)	161
DSR REV	During driving	The value changes to the positive side along with deceleration.
DGEAR RATIO	During driving	The value changes to the positive side along with deceleration.
DSTM STEP	During driving	Approx. 0 step – 177 step
STM STEP	During driving	Approx. 0 step – 177 step

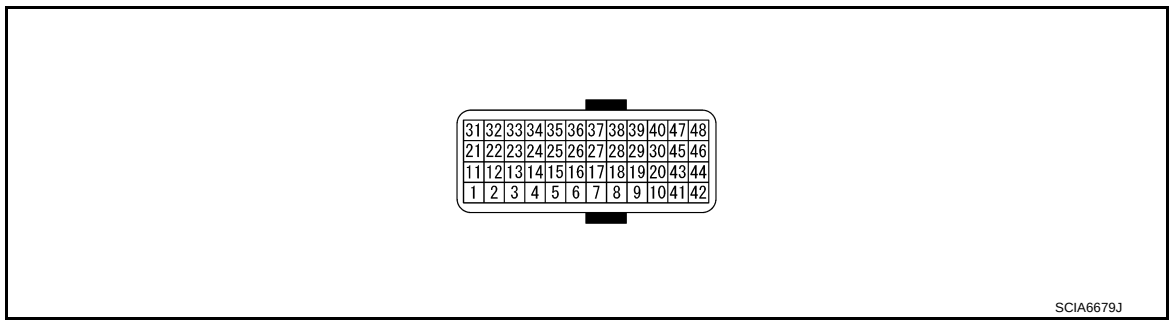
Item name	Condition	Display value (Approx.)
LU PRS	• Engine started • Vehicle is stopped.	Approx. –0.500 MPa
	• Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 20 km/h (12 MPH) or more	Approx. 0.450 MPa
LINE PRS	• After engine warm up • Selector lever: “N” position • At idle	Approx. 0.500 MPa
	• After engine warm up • Selector lever: “N” position • Depress the accelerator pedal fully	Approx. 4.400 – 4.900 MPa
TGT SEC PRESS	• After engine warm up • Selector lever: “N” position • At idle	Approx. 0.700 MPa
ISOLT1	Lock-up “OFF”	Approx. 0.0 A
	Lock-up “ON”	Approx. 0.7 A
ISOLT2	Release your foot from the accelerator pedal	Approx. 0.8 A
	Press the accelerator pedal all the way down	Approx. 0.0 A
ISOLT3	Secondary pressure low - Secondary pressure high	Approx. 0.8 – 0.0 A
SOLMON1	Lock-up “OFF”	Approx. 0.0 A
	Lock-up “ON”	Approx. 0.7 A
SOLMON2	“N” position idle	Approx. 0.8 A
	When stalled	Approx. 0.3 – 0.6 A
SOLMON3	“N” position idle	Approx. 0.6 – 0.7 A
	When stalled	Approx. 0.4 – 0.6 A
BRAKE SW	Depressed brake pedal	On
	Released brake pedal	Off
FULL SW	Fully depressed accelerator pedal	ON
	Released accelerator pedal	Off
IDLE SW	Released accelerator pedal	On
	Fully depressed accelerator pedal	Off
SPORT MODE SW	Always	Off
STRDWNSW	Always	Off
STRUPSW	Always	Off
DOWNLVR	Selector lever: - side	On
	Other than the above	Off
UPLVR	Selector lever: + side	On
	Other than the above	Off
NONMMODE	Manual shift gate position (neutral, +side, -side)	Off
	Other than the above	On
MMODE	Manual shift gate position (neutral)	On
	Other than the above	Off
INDLRNG	Always	Off
INDDRNG	Selector lever in “D” position	On
	When setting selector lever to other positions	Off
INDNRNG	Selector lever in “N“ position	On
	When setting selector lever to other positions	Off

Item name	Condition	Display value (Approx.)
INDRRNG	Selector lever in “R” position	On
	When setting selector lever to other positions	Off
INDPRNG	Selector lever in “P” position	On
	When setting selector lever to other positions	Off
CVT LAMP	Approx. 2 seconds after ignition switch ON	On
	Other conditions	Off
SPORT MODE IND	Always	Off
MMODE IND	In manual mode	On
	Other conditions	Off
SMCOIL D	During driving	Changes On ⇔ Off
SMCOIL C	During driving	Changes On ⇔ Off
SMCOIL B	During driving	Changes On ⇔ Off
SMCOIL A	During driving	Changes On ⇔ Off
LUSEL SOL OUT	Selector lever in “P”, “N” positions	On
	Wait at least for 5 seconds with the selector lever in “R”, “D” positions	Off
LUSEL SOL MON	Selector lever in “P”, “N” positions	On
	Wait at least for 5 seconds with the selector lever in “R”, “D” positions	Off
VDC ON	ESP is activated	On
	Other conditions	Off
TCS ON	Always	Off
ABS ON	ABS is activated	On
	Other conditions	Off
ACC ON	Always	Off
RANGE	Selector lever in “N” or “P” position	N·P
	Selector lever in “R” position	R
	Selector lever in “D” position	D
M GEAR POS	During driving	1, 2, 3, 4, 5, 6
P POSITION SW	Selector lever in “P” position	On
	Other than the above position	Off
R POSITION SW	Selector lever in “R” position	On
	Other than the above position	Off
N POSITION SW	Selector lever in “N“ position	On
	Other than the above position	Off
D POSITION SW	Selector lever in “D” position	On
	Other than the above position	Off
L POSITION SW	Always	Off
ECO SW	Always	Off
DRIVE MODE STATS*2	Nissan Dynamic Control System: NORMAL mode	NORMAL
	Nissan Dynamic Control System: ECO mode	ECO
	Nissan Dynamic Control System: SPORT mode	SPORT
SPORT MODE*2	Nissan Dynamic Control System: SPORT mode	On
	Other conditions	Off

Item name	Condition	Display value (Approx.)
NORMAL MODE*2	Nissan Dynamic Control System: NORMAL mode	On
	Other conditions	Off
ECO MODE*2	Nissan Dynamic Control System: ECO mode	On
	Other conditions	Off
SNOW MODE*2	Always	Off

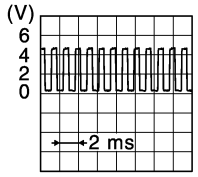
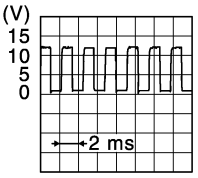
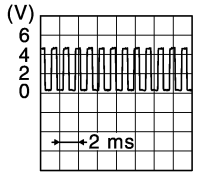
*1: Means CVT fluid temperature. Convert numerical values for actual fluid temperature °C (°F). Refer to TM-128, "ATFTEMP COUNT Conversion Table".

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/Output			
1 (G)	Ground	R RANGE SW	Input	Ignition switch ON	Selector lever in “R” position	10 – 16 V
					Other than the above position	0 V
2 (Y)	Ground	N RANGE SW	Input		Selector lever in “N” position	10 – 16 V
					Other than the above position	0 V
3 (W)	Ground	D RANGE SW	Input		Selector lever in “D” positions	10 – 16 V
					Other than the above position	0 V
4*1 (V)	—	—	—	—		—
5 (B)	Ground	Ground	Output	Always		0 V
7 (Y)	Ground	Sensor ground	Input	Always		0 V
8 (BR)	—	CLOCK (SEL2)	—	—		—
9 (G)	—	CHIP SELECT (SEL1)	—	—		—
10 (W)	—	DATA I/O (SEL3)	—	—		—
11 (L)	Ground	P RANGE SW	Input	Ignition switch ON	Selector lever in “P” position	10 – 16 V
					Other than the above position	0 V

Terminal No. (wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/Output			
13 (SB)	Ground	CVT fluid temperature sensor	Input	Ignition switch ON	When CVT fluid temperature is 20°C (68°F)	2.0 V
					When CVT fluid temperature is 80°C (176°F)	1.0 V
15 (P)	Ground	Secondary pressure sensor	Input	• Selector lever: “N” position • Idle speed		1.0 V
25 (Y)	Ground	Sensor ground	Input	Always		0 V
26 (LG)	Ground	Sensor power	Output	Ignition switch ON		5.0 V
				Ignition switch OFF		0 V
27 (GR)	Ground	Step motor D	Output	Within 2 seconds after ignition switch ON, the time measurement by using the pulse width measurement function (Hi level) of CONSULT-III.*2 **CAUTION:** **Connect the diagnosis data link cable to the vehicle diagnosis connector.**		10.0 msec
28 (V)	Ground	Step motor C	Output			30.0 msec
29 (BG)	Ground	Step motor B	Output			10.0 msec
30 (R)	Ground	Step motor A	Output			30.0 msec
31 (P)	—	CAN-L	Input/Output	—		—
32 (L)	—	CAN-H	Input/Output	—		—
33 (BG)	Ground	Primary speed sensor	Input	• Selector lever: “M[1]” position • While driving at 20 km/h (12 MPH)		800 Hz  JPDIA0819ZZ
34 (R)	Ground	Secondary speed sensor	Input	• Selector lever: “M[1]” position • While driving at 20 km/h (12 MPH)		500 Hz  JPDIA0901ZZ
35 (W)	Ground	Input speed sensor	Input	• Selector lever: “M[1]” position • While driving at 20 km/h (12 MPH)		800 Hz  JPDIA0819ZZ

Terminal No. (wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/Output			
37 (L)	Ground	Lock-up select solenoid valve	Output	Ignition switch ON	Selector lever in “P” or “N” positions	10 – 16 V
					Wait at least for 5 seconds with the selector lever in “R” or “D” positions.	0 V
38 (G)	Ground	Torque converter clutch solenoid valve	Output	When vehicle cruises in “D” position	When CVT performs lock-up	6.0 V
					When CVT does not perform lock-up	1.5 V
39 (W)	Ground	Secondary pressure solenoid valve	Output	“P” or “N” position idle	Release your foot from the accelerator pedal.	5.0 – 7.0 V
					Press the accelerator pedal all the way down.	3.0 – 4.0 V
40 (Y)	Ground	Line pressure solenoid valve	Output		Release your foot from the accelerator pedal.	5.0 – 7.0 V
					Press the accelerator pedal all the way down.	1.0 V
42 (B)	Ground	Ground	Output	Always		0 V
44 (G)	Ground	G sensor	Input	Ignition switch ON	When the vehicle stops on a flat road	2.5 V
46 (LG)	Ground	Power supply	Input	Ignition switch ON	—	10 – 16 V
				Ignition switch OFF	—	0 V
47 (BG)	Ground	Power supply (memory back-up)	Input	Always		10 – 16 V
48 (Y)	Ground	Power supply	Input	Ignition switch ON	—	10 – 16 V
				Ignition switch OFF	—	0 V

*1: This harness is not used.

*2: A circuit tester cannot be used to test this item.

Fail-safe

INFOID:0000000006601680

The TCM has an electrical fail-safe mode. In this mode TCM is operator even if there is an error in a main electronic control input/output signal circuit.

Description

When a malfunction is detected in each sensor, switch, solenoid or others, this function provides control to minimize reduction of drivability so that durability of transmission assembly can be acquired.

DTC	Condition		Vehicle behavior
P0703	—		• Start is slow • Acceleration is slow
P0705	—		• Position indicator on combination meter is not displayed • Selector shock is large • Start is slow • Acceleration at high load state is slow • Manual mode is not activated • Lock-up is not performed
P0710	Engine coolant temperature when engine starts is 10°C (50°F) or more	Open circuit is detected while ignition switch is OFF	• Selector shock is large • Low is fixed
		Other than the above	• Selector shock is large • Engine speed is high in middle and high speed range
	Engine coolant temperature when engine starts is 10°C (50°F) or less		• Start is slow • Acceleration is slow • Vehicle speed is not increased
	Engine coolant temperature when engine starts is –35°C (–31°F) or less		Vehicle speed is not increased
P0715	—		• Re-acceleration is slightly slow • Re-start is slow after vehicle is stop by strong deceleration • Manual mode is not activated • Lock-up is not performed
P0715	—		Idle neutral control is not performed
P0720	—		• Start is slow • Re-acceleration is slow • Re-start is slow after vehicle is stop by strong deceleration • Manual mode is not activated • Lock-up is not performed
P0725	—		Lock-up is not performed
P0740	—		• Selector shock is large • Lock-up is not performed
P0744	—		Lock-up is not performed
P0746	A malfunction is detected		• Start is slow • Acceleration is slow • Lock-up is not performed
	Function is excessively reduced after a malfunction is detected		• Start is difficult • Drive is difficult • Lock-up is not performed
P0778	—		Engine speed is high in middle and high speed range
P0826	—		Manual mode is not activated
P0840	—		• Start is slow • Acceleration at high load state is slow
P0841	—		• Start is slow • Acceleration is slow
P0868	—		• Start is slow • Acceleration is slow (Slow acceleration is subject to secondary pressure that is recognized by TCM)
P1585	—		Idle neutral control is not performed
P1701	—		• Start is slow • Acceleration at high load state is slow

DTC	Condition	Vehicle behavior
P1705	—	• Acceleration is slow • Lock-up is not performed
P1722	—	Lock-up is not activated in coast state
P1723	A malfunction is detected in primary pulley speed sensor side	• Acceleration is slow • Re-start is slow after vehicle is stop by strong de-celeration • Manual mode is not activated • Lock-up is not performed
	A malfunction is detected in secondary pulley speed sensor	• Start is slow • Acceleration is slow • Re-start is slow after vehicle is stop by strong de-celeration • Manual mode is not activated • Lock-up is not performed
P1726	—	Acceleration is slow
P1740	—	• Selector shock is large • Lock-up is not performed
P1777	A malfunction is detected in low side (when vehicle is stopped)	• Low is fixed • Lock-up is not performed
	A malfunction is detected in high side (during driving)	• Start is slow • Acceleration is low in low speed range • Lock-up is not performed
U1000	—	• Start is slow • Acceleration is slow • Vehicle speed is not increased
U1010	—	• Start is slow • Acceleration is slow • Vehicle speed is not increased

DTC Inspection Priority Chart

INFOID:0000000006601681

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

NOTE:
If DTC “U1000” is displayed with other DTCs, first perform the trouble diagnosis for DTC “U1000”. Refer to TM-195.

Priority	Detected items (DTC)
1	U1000
2	Except above

DTC Index

INFOID:0000000006601682

NOTE:
If DTC “U1000” is displayed with other DTCs, first perform the trouble diagnosis for DTC “U1000”. Refer to TM-195.

DTC		Items (CONSULT-III screen terms)	Reference
OBD	Except OBD		
CONSULT-III GST*	CONSULT-III only “TRANSMISSION”		
—	P0703	BRAKE SWITCH B	TM-197
P0705	P0705	T/M RANGE SENSOR A	TM-200
P0710	P0710	FLUID TEMP SENSOR A	TM-202
P0715	P0715	INPUT SPEED SENSOR A	TM-204

DTC		Items (CONSULT-III screen terms)	Reference
OBD	Except OBD		
CONSULT-III GST*	CONSULT-III only "TRANSMISSION"		
—	P0717	INPUT SPEED SENSOR A	TM-207
P0720	P0720	OUTPUT SPEED SENSOR	TM-209
—	P0725	ENGINE SPEED	TM-212
—	P0730	INCORRECT GR RATIO	TM-214
P0740	P0740	TORQUE CONVERTER	TM-215
P0744	P0744	TORQUE CONVERTER	TM-217
P0745	P0745	PC SOLENOID A	TM-219
P0746	P0746	PC SOLENOID A	TM-221
P0776	P0776	PC SOLENOID B	TM-223
P0778	P0778	PC SOLENOID B	TM-225
—	P0826	UP/DOWN SHIFT SWITCH	TM-227
P0840	P0840	FLUID PRESS SEN/SW A	TM-230
—	P0841	FLUID PRESS SEN/SW A	TM-232
—	P0868	FLUID PRESS LOW	TM-234
—	P1585	G SENSOR	TM-236
—	P1701	TCM	TM-239
—	P1705	TP SENSOR	TM-241
—	P1722	VEHICLE SPEED	TM-242
—	P1723	SPEED SENSOR	TM-244
—	P1726	THROTTLE CONTROL SIG	TM-246
P1740	P1740	SLCT SOLENOID	TM-247
—	P1745	LINE PRESS CONTROL	TM-249
P1777	P1777	STEP MOTOR	TM-250
P1778	P1778	STEP MOTOR	TM-252
U1000	U1000	CAN COMM CIRCUIT	TM-195
—	U1010	CONTROL UNIT (CAN)	TM-196

*: These numbers are prescribed by ISO 15031-5.

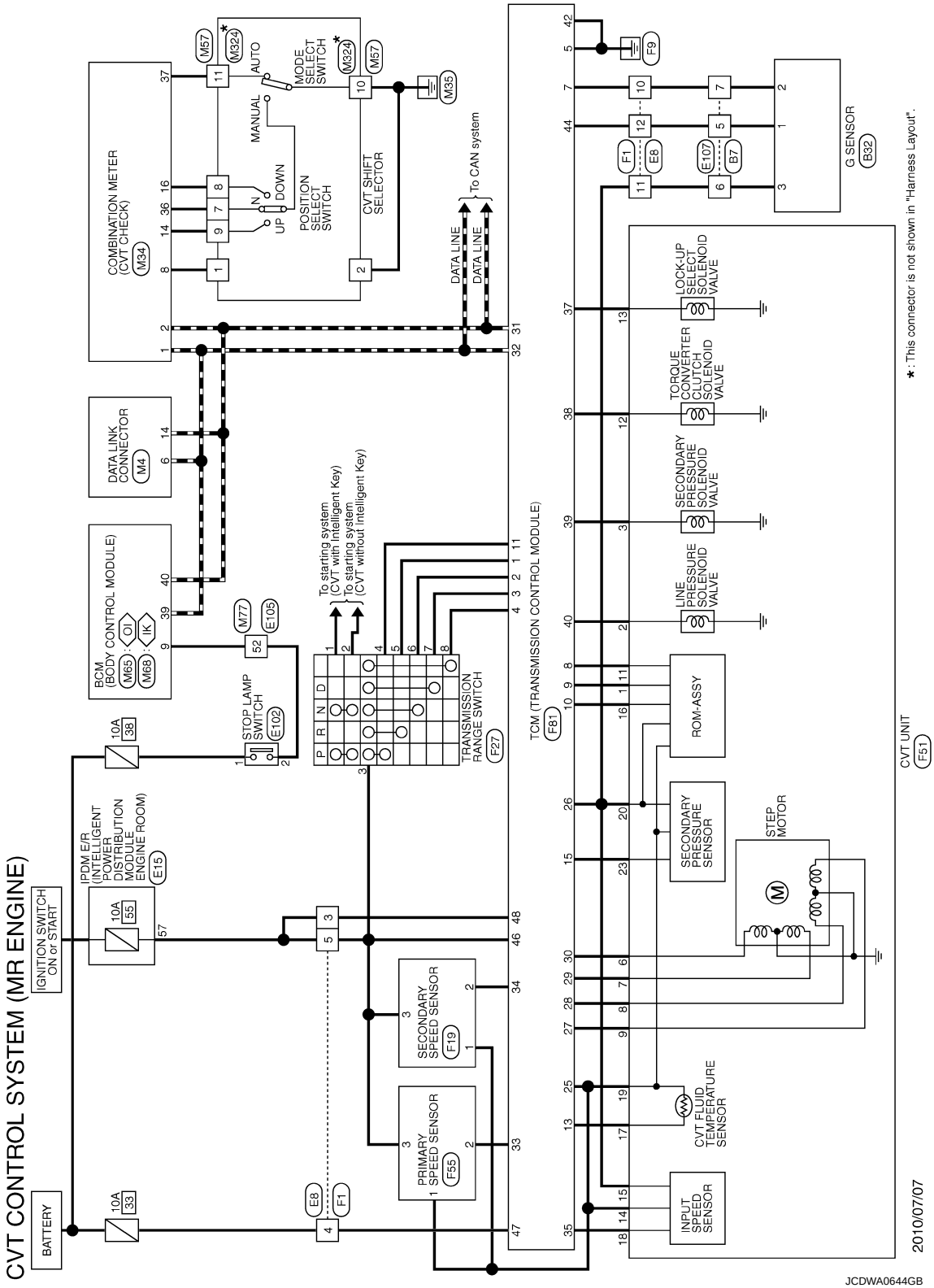
WIRING DIAGRAM

CVT CONTROL SYSTEM

Wiring diagram

INFOID:0000000006601852

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if notdescribed in wiring diagram), refer to GI-12, "Connector Information/Explanation of Option Abbreviation".

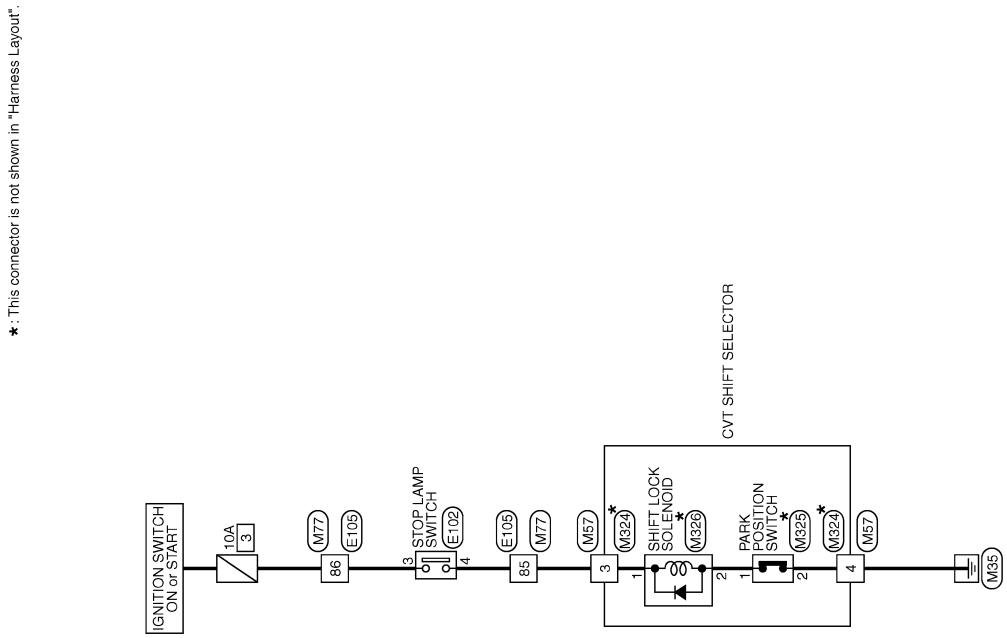


CVT SHIFT LOCK SYSTEM

Wiring diagram

INFOID:0000000006601853

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if notdescribed in wiring diagram), refer to GI-12, "Connector Information/Explanation of Option Abbreviation".



SHIFT LOCK SYSTEM

2010/07/07

JCDWA0645GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

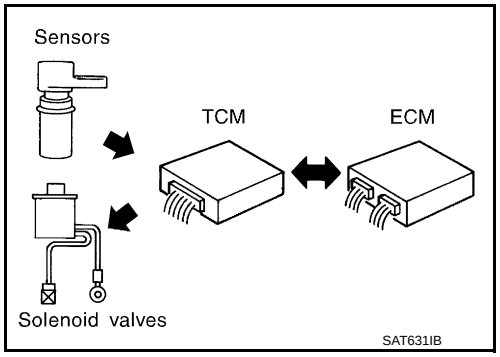
INFOID:0000000006601544

INTRODUCTION

The TCM receives a signal from the vehicle speed sensor, transmission range switch and provides shift control or lock-up control via CVT solenoid valves.

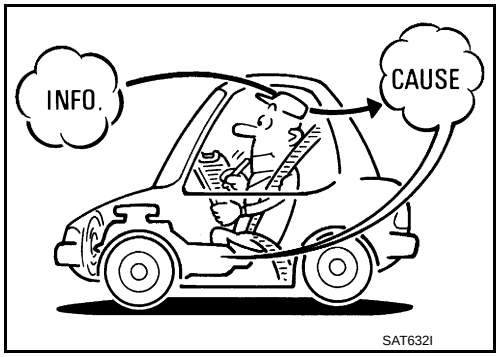
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the CVT system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

Input and output signals must always be correct and stable in the operation of the CVT system. The CVT system must be in good operating condition and be free of valve seizure, solenoid valve malfunction, etc.



It is much more difficult to diagnose an error that occurs intermittently rather than continuously. Most intermittent errors are caused by poor electric connections or improper wiring. In this case, careful checking of suspected circuits may help prevent the replacement of good parts.

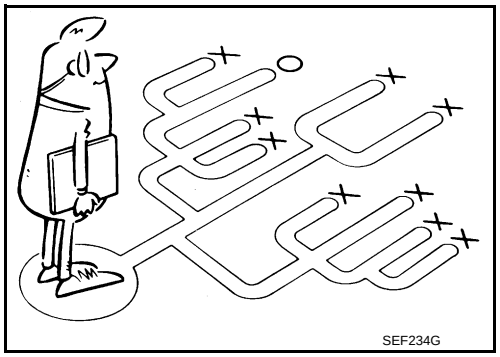
A visual check only may not find the cause of the errors. A road test with CONSULT-III (or GST) or a circuit tester connected should be performed. Follow the “DETAILED FLOW”.



Before undertaking actual checks, take a few minutes to talk with a customer who approaches with a driveability complaint. The customer can supply good information about such errors, especially intermittent ones. Find out what symptoms are present and under what conditions they occur. A “Diagnostic Work Sheet” as shown on the example (Refer to TM-176) should be used.

Start your diagnosis by looking for “conventional” errors first. This will help troubleshoot driveability errors on an electronically controlled engine vehicle.

Also check related Service bulletins.



DETAILED FLOW

1.COLLECT THE INFORMATION FROM THE CUSTOMER

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using diagnosis worksheet. Refer to TM-176, "Diagnostic Work Sheet".

>> GO TO 2.

2.CHECK SYMPTOM 1

Check the following items based on the information obtained from the customer.

- Fail-safe. Refer to TM-169, "Fail-safe".
- CVT fluid inspection. Refer to TM-184, "Inspection".
- Line pressure test. Refer to TM-188, "Inspection and Judgment".

• Stall test. Refer to TM-186, "Inspection and Judgment".

>> GO TO 3.

3.CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.

• Record DTC.
• Erase DTC. Refer to TM-157, "Diagnosis Description".

Is any DTC detected?

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

4.PERFORM DIAGNOSTIC PROCEDURE

Perform “Diagnostic Procedure” for the displayed DTC.

>> GO TO 5.

5.PERFORM DTC CONFIRMATION PROCEDURE

Perform “DTC CONFIRMATIOM PROCEDURE” for the displayed DTC.

Is DTC detected?

YES >> GO TO 4.
NO >> GO TO 6.

6.CHECK SYMPTOM 2

Confirm the symptom described by the customer.

Is any malfunction present?

YES >> GO TO 7.
NO >> **INSPECTION END**

7.RODE TEST

Perform “RODE TEST”. Refer to TM-190, "Description".

>> GO TO 8.

8.CHECK SYMPTOM 3

Confirm the symptom described by the customer.

Is any malfunction present?

YES >> GO TO 2.
NO >> **INSPECTION END**

Diagnostic Work Sheet

INFOID:0000000006601545

INFORMATION FROM CUSTOMER

KEY POINTS

• **WHAT**..... Vehicle & CVT model
• **WHEN**..... Date, Frequencies
• **WHERE**..... Road conditions
• **HOW**..... Operating conditions, Symptoms

Customer name MR/MS	Model & Year	VIN
Trans. Model	Engine	Mileage
Malfunction Date	Manuf. Date	In Service Date
Frequency	☐ Continuous ☐ Intermittent (times a day)	

Symptoms	☐ Vehicle does not move. (☐ Any position ☐ Particular position)	
	☐ No shift	
	☐ Lock-up malfunction	
	☐ Shift shock or slip (☐ N → D ☐ N → R ☐ Lock-up ☐ Any drive position)	
	☐ Noise or vibration	
	☐ No pattern select	
	☐ Others ( )	
Malfunction indicator (MI)	☐ Continuously lit	☐ Not lit

DIAGNOSTIC WORKSHEET

1	☐ Read the item on cautions concerning fail-safe and understand the customer's complaint.			TM-169
2	☐ CVT fluid inspection, stall test and line pressure test			
		☐ CVT fluid inspection		TM-184
			☐ Leak (Repair leak location.) ☐ State ☐ Amount	
		☐ Stall test		TM-186, TM-188
			☐ Torque converter one-way clutch ☐ Reverse brake ☐ Forward clutch ☐ Steel belt	☐ Engine ☐ Line pressure low ☐ Primary pulley ☐ Secondary pulley
		☐ Line pressure inspection - Suspected part:		
3	☐ Perform self-diagnosis.			TM-159
		Enter checks for detected items.		
4	☐ Perform road test.			TM-190
	4-1.	Check before engine is started		TM-190
	4-2.	Check at idle		TM-191
	4-3.	Cruise test		TM-192
	☐ After completing all rode test, check malfunction phenomena to repair or replace malfunctioning part.Refer to TM-259, "Symptom Table".			
5	☐ Drive vehicle to check that the malfunction phenomenon has been resolved.			
6	☐ Erase the results of the self-diagnosis from the TCM and the ECM.			TM-157, TM-159

ADDITIONAL SERVICE WHEN REPLACING TCM

Description

INFOID:0000000006601854

Always perform the following items when the TCM is replaced.

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.

G sensor calibration
- 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.

Idle neutral control
- TCM corrects an individual difference in clutch clearance of the transaxle assembly by performing the idle neutral control learning and enables accurate idle neutral control.
- Therefore, it is required to perform idle neutral control learning after replacement or 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 the following items.**

1. **ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE OR TRANSAXLE ASSEMBLY**
2. **CALIBRATION OF G SENSOR**
3. **IDLE NEUTRAL CONTROL LEARNING**

Procedure

INFOID:0000000006601855

1.CHECK WORK CONTENTS

Replacing only the TCM>>GO TO 2.
Replacing the TCM after the control valve or transaxle assembly is replaced>>GO TO 2.
Replacing the control vavle or transaxle assembly after the TCM is replaced>>GO TO 4.

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 4.
NO >> GO TO 3.

3.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.

4.PERFORM ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE OR TRANSAXLE ASSEMBLY

Refer to TM-180, "Procedure".

>> GO TO 5.

5.PERFORM G SENSOR CALIBRATION

Refer to TM-182, "Procedure".

>> GO TO 6.

6. PERFORM IDLE NEUTRAL CONTROL LEARNING

Refer to TM-183, "Description".

>> WORK END

ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

Description

INFOID:0000000006601856

Perform the following work after the transaxle assembly is replaced.

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.

G sensor calibration
- 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.

Idle neutral control
- TCM corrects an individual difference in clutch clearance of the transaxle assembly by performing the idle neutral control learning and enables accurate idle neutral control.
- Therefore, it is required to perform idle neutral control learning after replacement or 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 the following items.**

1. **ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE OR TRANSAXLE ASSEMBLY**
2. **CALIBRATION OF G SENSOR**
3. **IDLE NEUTRAL CONTROL LEARNING**

Procedure

INFOID:0000000006601857

CAUTION:
Immediately after TCM is replaced or after control valve or transaxle assembly is replaced (after TCM initialization is complete), self-diagnosis result of “P1701” may be displayed. In this case, erase self-diagnosis result using CONSULT-III. After erasing self-diagnosis result, perform DTC P1701 reproduction procedure and check that malfunction is not detected. Refer to TM-239, "DTC Logic".

1. PREPARATION BEFORE WORK

With CONSULT-III
1. Start the engine.
   CAUTION:
   Never drive the vehicle.
2. Select “Data monitor” in “TRANSMISSION”.
3. Select “ATFTEMP COUNT”.

Is “ATFTEMP COUNT” 47 [equivalent to 20°C (68°F)] or more?

YES >> GO TO 2.
NO >> 1. Warm up the transaxle assembly until “ATFTEMP COUNT” reaches “47” [equivalent to 20°C (68°F)] or more.
2. GO TO 2.

2. PERFORM TCM INITIALIZATION

With CONSULT-III
1. Turn ignition switch OFF.
2. Turn ignition switch ON.
   CAUTION:
   Never start the engine.
3. Select “Self Diagnostic Results” in “TRANSMISSION”.
4. Shift selector lever to “R” position.
5. Depress slightly the accelerator pedal (Pedal angle: 2.0/8) while depressing the brake pedal.
6. Select “Erase” with step 5.
7. Release brake pedal and accelerator pedal.
8. Turn ignition switch OFF while keeping the selector lever in “R” position.
9. Wait approximately 10 seconds.
10. Turn ignition switch ON while keeping the selector lever in “R” position.

11. Select “Special function” in “TRANSMISSION”.
12. Select “CALIB DATA”.
13. Check that “CALIB DATA” value is as shown as in the following table.

Item name	Display value
UNIT CLB ID 1	00
UNIT CLB ID 2	00
UNIT CLB ID 3	00
UNIT CLB ID 4	00
UNIT CLB ID 5	00
UNIT CLB ID 6	00

Is “CALIB DATA” value it?

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

3. CHECK AFTER WORK

1. Shift selector lever to “P” position.
2. Check that “P” is displayed on shift position indicator on combination meter.
   NOTE:
   It indicates approximately 1 or 2 seconds after shifting the selector lever to “P” position.

Does shift position indicator display “P”?

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

4. DETECTION OF MALFUNCTION 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
- Power supply and ground of TCM. (Refer to TM-239, "Diagnosis Procedure".)

Is the inspection result normal?

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

5. PERFORM G SENSOR CALIBRATION

Refer to TM-182, "Procedure".

>> GO TO 6.

6. PERFORM IDLE NEUTRAL CONTROL LEARNING

Refer to TM-183, "Description".

>> WORK END

CALIBRATION OF DECEL G SENSOR

Description

INFOID:0000000006601858

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:0000000006601859

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-9, "Road Wheel".

>> GO TO 2.

2.PERFORM CALIBRATION

With CONSULT-III
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.PERFORM THE SELF-DIAGNOSIS

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

Is “P1585” detected?

YES >> Go to TM-236, "DTC Logic".
NO >> Calibration end

IDLE NEUTRAL CONTROL LEARNING

Description

INFOID:0000000006713828

TCM corrects an individual difference in clutch clearance of the transaxle assembly by performing the idle neutral control learning and enables accurate idle neutral control.
Therefore, it is required to perform idle neutral control learning after the following work is performed.

- Replacement of TCM
- Replacement of control valve
- Replacement of transaxle assembly

Procedure

INFOID:0000000006713829

1. PREPARATION BEFORE WORK

With CONSULT-III

1. Start the engine.
   CAUTION:
   Never drive the vehicle.
2. Select “DATA MONITOR” in “TRANSMISSION”.
3. Select “ATFTEMP COUNT”.

Is “ATFTEMP COUNT” 47 [equivalent to 20°C (68°F)] or more?

YES >> GO TO 2.
NO >> 1. Warm up the transaxle assembly until “ATFTEMP COUNT” reaches “47” [equivalent to 20°C(68°F)] or more.
2. GO TO 2.

2. PERFORM IDLE NEUTRAL CONTROL LEARNING

CAUTION:
Perform this work with the flat road. (± 2.6 %or less)

1. Shift the selector lever to “D” position.
2. Drive the vehicle at the 8 km/h (5 MPH) or more.
3. Brake pedal is depressed and stop the vehicle.
4. Maintain the following conditions for 30 seconds or more.

Stop lamp switch	: ON
Accelerator pedal position sensor	: OFF
Engine speed	: 475 – 700 rpm
Electrical load	: Not applied*

*: Rear window defogger switch, air conditioner switch, lighting switch, etc. are OFF. Steering wheel is straight ahead. (Parking lamp ON is possible)

5. Brake pedal is released and drive the vehicle.
6. Perform steps 1 and 2 again. (one time)

>> INSPECTION END

CVT FLUID

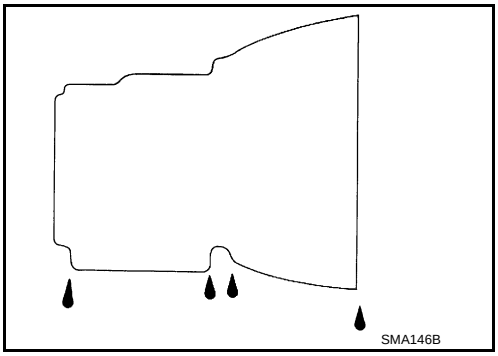
Inspection

INFOID:0000000006599518

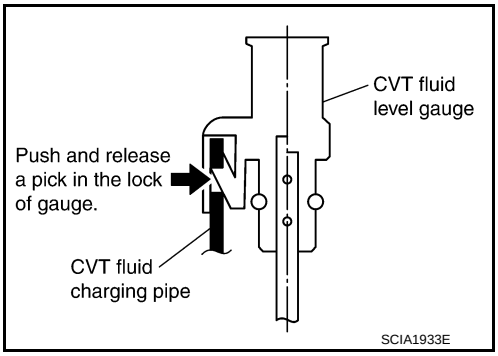
CHECKING CVT FLUID

The fluid level should be checked with the fluid warmed up to 50 to 80°C (122 to 176°F). The fluid level check procedure is as follows:

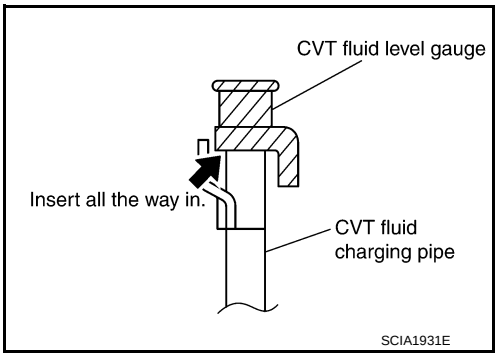
1. Check for fluid leakage.
2. With the engine warmed up, drive the vehicle in an urban area. When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to 80°C (122 to 176°F).
3. Park the vehicle on a level surface.
4. Apply parking brake firmly.
5. With engine at idle, while depressing brake pedal, move shift selector throughout the entire shift range.



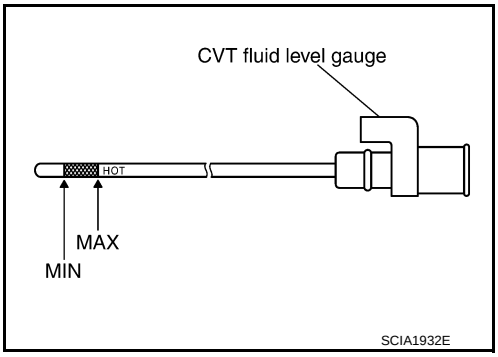
6. Pull out the CVT fluid level gauge from the CVT fluid charging pipe after pressing the tab on the CVT fluid level gauge to release the lock.



7. Wipe fluid off the CVT fluid level gauge. Insert the CVT fluid level gauge rotating 180° from the originally installed position, then securely push the CVT fluid level gauge until it meets the top end of the CVT fluid charging pipe.
   CAUTION:
   When wiping away the CVT fluid level gauge, always use lint-free paper, not a cloth rag.



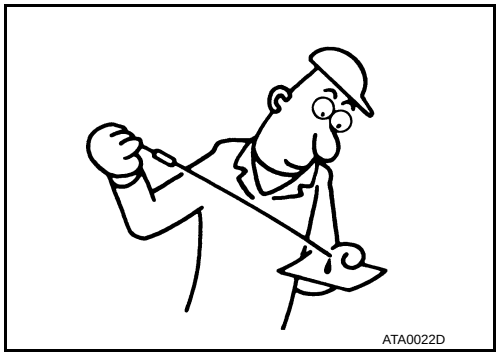
8. Place the selector lever in “P” or “N” and check that the fluid level is within the specified range.
   CAUTION:
   When reinstalling CVT fluid level gauge, insert it into the CVT fluid charging pipe and rotate it to the original installation position until securely locked.



CVT FLUID CONDITION

Check CVT fluid condition.

- If CVT fluid is very dark or smells burned, check operation of CVT. Flush cooling system after repair of CVT.
- If CVT fluid contains frictional material (clutches, brakes, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of CVT. Refer to TM-297, "Exploded View".



Fluid status	Conceivable cause	Required operation
Varnished (viscous varnish state)	CVT fluid become degraded due to high temperatures.	Replace the CVT fluid and check the CVT main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the CVT fluid and check for places where water is getting in.
Large amount of metal powder mixed in	Unusual wear of sliding parts within CVT	Replace the CVT fluid and check for improper operation of the CVT.

Changing

INFOID:0000000006599519

CAUTION:
Replace drain plug gasket with new ones at the final stage of the operation when installing.

1. Remove drain plug from oil pan.
2. Remove drain plug gasket from drain plug.
3. Install drain plug gasket to drain plug.
   CAUTION:
   Never reuse drain plug gasket.
4. Install drain plug to oil pan.

   Drain plug – tightening torque : Refer to TM-283, "Exploded View".
5. Fill CVT fluid from CVT fluid charging pipe to the specified level.

   CVT fluid
   Fluid capacity : Refer to TM-308, "General Specification".

   CAUTION:
   - **Use only Genuine NISSAN CVT Fluid NS-2. Never mix with other fluid.**
   - **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**
   - **When filling CVT fluid, take care not to scatter heat generating parts such as exhaust.**
   - **Sufficiently shake the container of CVT fluid before using.**
   - **Delete CVT fluid deterioration date with CONSULT-III after changing CVT fluid.**
6. With the engine warmed up, drive the vehicle in an urban area.
   NOTE:
   When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to 80°C (122 to 176°F).
7. Check CVT fluid level and condition.
8. Repeat steps 1 to 5 if CVT fluid has been contaminated.

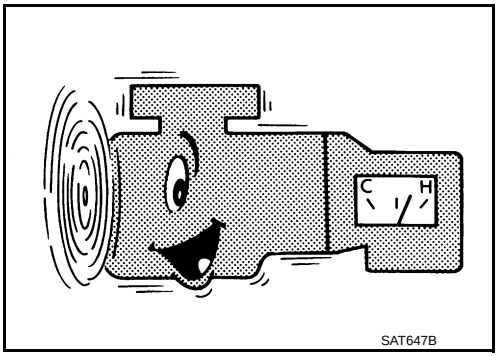
STALL TEST

Inspection and Judgment

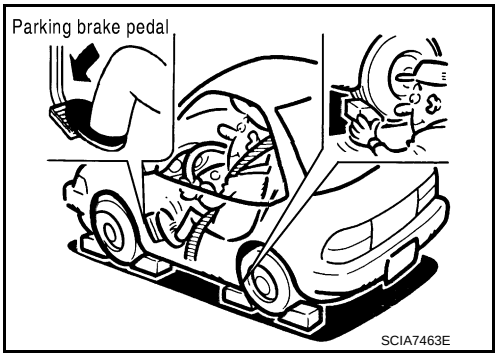
INFOID:0000000006601697

INSPECTION

1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
2. 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). Inspect the amount of CVT fluid. Replenish if necessary.

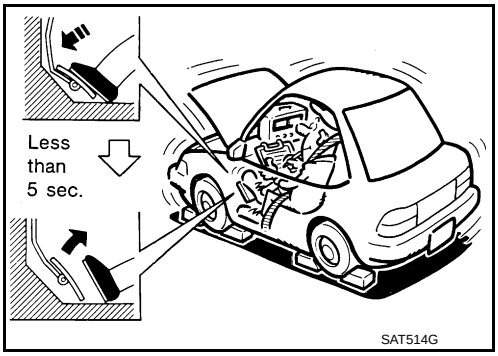


3. Securely engage the parking brake so that the tires do not turn.
4. Install a tachometer where it can be seen by driver during test.
   NOTE:
   It is good practice to mark the point of specified engine rpm on indicator.
5. Start engine, apply foot brake, and place selector lever in “D” position.



6. While holding down the foot brake, gradually press down the accelerator pedal.
7. Quickly read off the stall speed, and then quickly remove your foot from the accelerator pedal.
   CAUTION:
   Never hold down the accelerator pedal for more than 5 seconds during this test.

   Stall speed: **Refer to TM-308, "Stall Speed".**



8. Move the selector lever to the “N” position.
9. Cool down the CVT fluid.
   CAUTION:
   Run the engine at idle for at least 1 minute.
10. Repeat steps 6 through 9 with selector lever in “R” position.

JUDGMENT

	Selector lever position		Expected problem location
	"D"	"R"	
Stall rotation	H	O	• Forward clutch
	O	H	• Reverse brake
	L	L	• Engine and torque converter one-way clutch
	H	H	• Line pressure low • Primary pulley • Secondary pulley • Steel belt

O: Stall speed within standard value position.

H: Stall speed is higher than standard value.

L: Stall speed is lower than standard value.

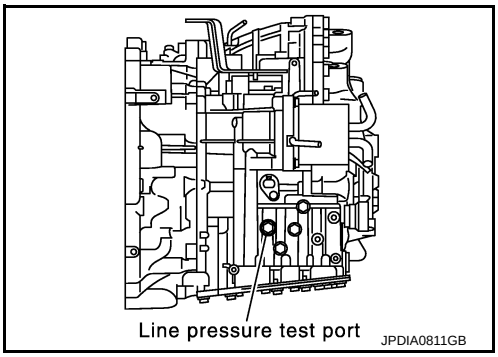
LINE PRESSURE TEST

Inspection and Judgment

INFOID:0000000006601698

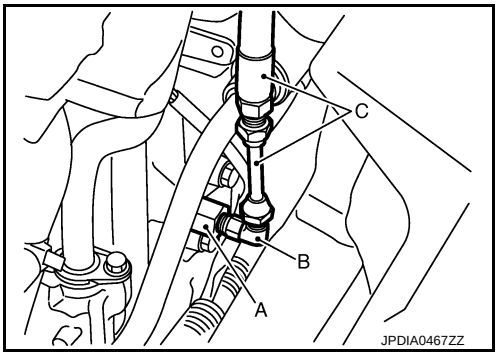
INSPECTION

Line Pressure Test Port

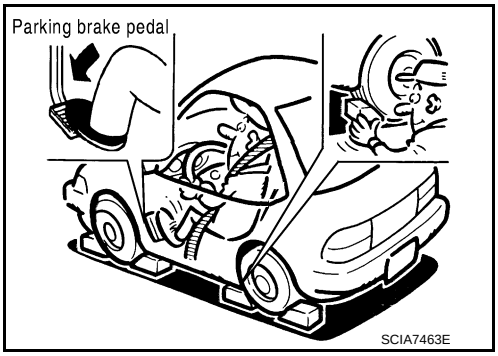


Line Pressure Test Procedure

1. Inspect the amount of engine oil and replenish if necessary.
2. Drive the car for about 10 minutes to warm it up so that the CVT fluid reaches in the range of 50 to 80°C (122 to 176°F), then inspect the amount of CVT fluid and replenish if necessary.
   NOTE:
   The CVT fluid temperature rises in the range of 50 to 80°C (122 to 176°F) during 10 minutes of driving.
3. After warming up CVT, remove the oil pressure detection plug and install the joint pipe adapter (SST: KV31103600) (A), adapter (SST: 25054000) (B), oil pressure gauge set (commercial service tool) (C).
   CAUTION:
   When using the oil pressure gauge, be sure to use the O-ring attached to the oil pressure detection plug.



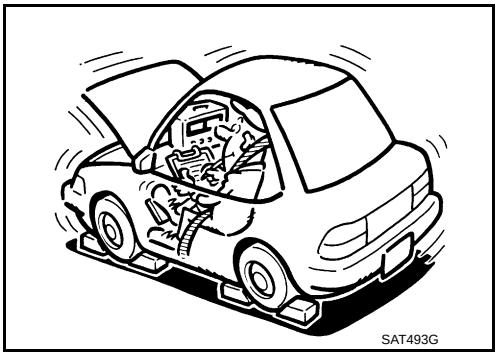
4. Securely engage the parking brake so that the tires do not turn.



5. Start the engine, and then measure the line pressure at both idle and the stall speed.
   CAUTION:
   - **Keep the brake pedal pressed all the way down during measurement.**
   - **When measuring the line pressure at the stall speed, refer to TM-186, "Inspection and Judgment".**
6. After the measurements are complete, install the oil pressure detection plug and tighten to the specified torque below.

   : 7.5 N·m (0.77 kg-m, 66 in-lb)

   CAUTION:
   - **Never reuse O-ring.**
   - **Apply CVT fluid to O-ring.**



Line Pressure

Unit: kPa (bar, kg/cm^2, psi)

Engine speed	Line pressure
	"R" and "D" positions
At idle	750 (7.50, 7.65, 108.8)
At stall	5,700 (57.00, 58.14, 826.5)*

*: Reference values

JUDGMENT

Judgment		Possible cause
Idle speed	Low for all positions ("P", "R", "N", "D")	Possible causes include malfunctions in the pressure supply system and low oil pump output. For example • Oil pump wear • 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 • Accelerator pedal position signal malfunction • 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 • Accelerator pedal position signal malfunction • 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.

ROAD TEST

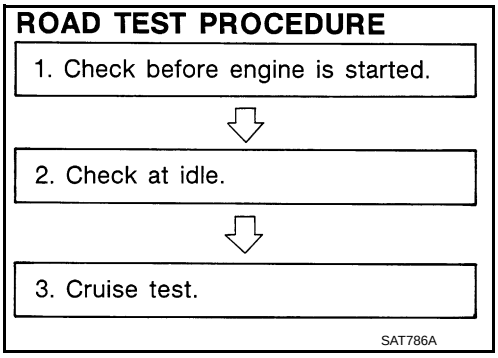
Description

INFOID:0000000006601699

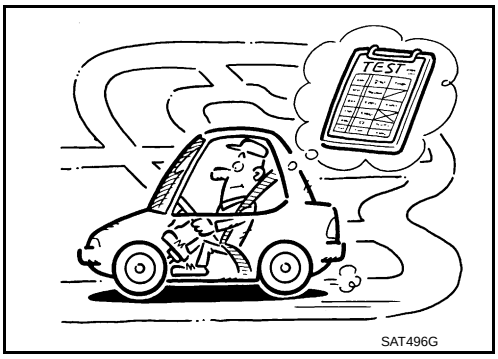
DESCRIPTION

- The purpose of the test is to determine overall performance of CVT and analyze causes of problems.
- The road test consists of the following three parts:

1. “Check Before Engine Is Started” TM-190.
2. “Check at Idle” TM-191.
3. “Cruise Test” TM-192.



- Before road test, familiarize yourself with all test procedures and items to check.
- Perform tests on all items until specified symptom is found. Troubleshoot items the malfunctioning items after road test.



CONSULT-III SETTING PROCEDURE

- Using CONSULT-III, perform a cruise test and record the result.
- Print the result and ensure that shifts and lock-ups take place as per Shift Schedule.

1. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
2. Touch “MAIN SIGNALS” to set recording condition.
3. See “Numerical Display”, “Barchart Display” or “Line Graph Display”.
4. Touch “START”.
5. When performing cruise test. Refer to TM-192, "Cruise Test".
6. After finishing cruise test part, touch “RECORD”.
7. Touch “STORE”.
8. Touch “BACK”.
9. Touch “DISPLAY”.
10. Touch “PRINT”.
11. Check the monitor data printed out.

Check before Engine Is Started

INFOID:0000000006601700

1.CHECK CVT INDICATOR LAMP

1. Park vehicle on flat surface.
2. Move selector lever to “P” position.
3. Turn ignition switch OFF. Wait at least 5 seconds.
4. Turn ignition switch ON. (Do not start engine.)

Is shift position indicator activated for about 2 seconds?

YES >> 1. Turn ignition switch OFF.
2. Perform self-diagnosis and note NG items.
Refer to TM-159, "CONSULT-III Function (TRANSMISSION)".
3. Go to TM-191, "Check at Idle".

NO >> Stop “Road Test”. Refer to TM-259, "Symptom Table".

Check at Idle

INFOID:0000000006601701

1.CHECK STARTING THE ENGINE

1. Park vehicle on flat surface.
2. Move selector lever to “P” or “N” position.
3. Turn ignition switch OFF.
4. Turn ignition switch to “START” position.

Is engine started?

YES >> GO TO 2.
NO >> Stop “Road Test”. Refer to TM-259, "Symptom Table".

2.CHECK STARTING THE ENGINE

1. Turn ignition switch ON.
2. Move selector lever to “D”, “M” or “R” position.
3. Turn ignition switch to “START” position.

Is engine started?

YES >> Stop “Road Test”. Refer to TM-259, "Symptom Table".
NO >> GO TO 3.

3.CHECK “P” POSITION FUNCTION

1. Move selector lever to “P” position.
2. Turn ignition switch OFF.
3. Release parking brake.
4. Push vehicle forward or backward.
5. Apply parking brake.

Does vehicle move forward or backward?

YES >> Refer to TM-259, "Symptom Table". Continue “Road Test”.
NO >> GO TO 4.

4.CHECK “N” POSITION FUNCTION

1. Start engine.
2. Move selector lever to “N” position.
3. Release parking brake.

Does vehicle move forward or backward?

YES >> Refer to TM-259, "Symptom Table". Continue “Road Test”.
NO >> GO TO 5.

5.CHECK SHIFT SHOCK

1. Apply foot brake.
2. Move selector lever to “R” position.

Is there large shock when changing from “N” to “R” position?

YES >> Refer to TM-259, "Symptom Table". Continue “Road Test”.
NO >> GO TO 6.

6.CHECK “R” POSITION FUNCTION

Release foot brake for several seconds.

Does vehicle creep backward when foot brake is released?

YES >> GO TO 7.
NO >> Refer toTM-259, "Symptom Table". Continue “Road Test”.

7.CHECK “D” POSITION FUNCTION

Move selector lever to “D” position and check if vehicle creeps forward.

Does vehicle creep forward in all positions?

YES >> Go to TM-192, "Cruise Test".
NO >> Stop “Road Test”. Refer to TM-259, "Symptom Table".

Cruise Test

INFOID:0000000006601702

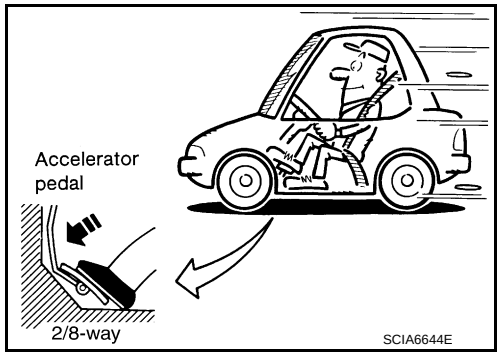
1. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 1

1. Drive vehicle for approximately 10 minutes to warm engine oil and CVT fluid up to operating temperature.

CVT fluid operating temperature: 50 – 80°C (122 – 176°F)

2. Park vehicle on flat surface.
3. Move selector lever to “P” position.
4. Start engine.
5. Move selector lever to “D” position.
6. Accelerate vehicle to 2/8-way throttle depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to TM-308, "Shift Characteristics".



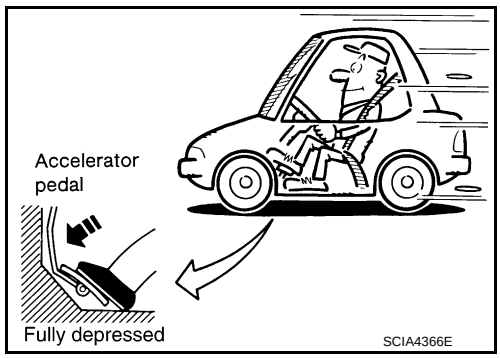
OK or NG

OK >> GO TO 2.
NG >> Refer to TM-259, "Symptom Table". Continue “Road Test”.

2. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 2

1. Park vehicle on flat surface.
2. Move selector lever to “D” position.
3. Accelerate vehicle to full depression depressing accelerator pedal constantly.

Read vehicle speed and engine speed.Refer to TM-308, "Shift Characteristics".



OK or NG

OK >> GO TO 3.
NG >> Refer to TM-259, "Symptom Table". Continue “Road Test”.

3. CHECK MANUAL MODE FUNCTION

Move to manual mode from “D” position.

Does it switch to manual mode?

YES >> GO TO 4.
NO >> Refer to TM-259, "Symptom Table". Continue “Road Test”.

4. CHECK SHIFT-UP FUNCTION

During manual mode driving, is upshift from M1 → M2 → M3 → M4 → M5 → M6 performed?

Read the gear position. Refer to TM-159, "CONSULT-III Function (TRANSMISSION)".

Is upshifting correctly performed?

YES >> GO TO 5.
NO >> Refer to TM-259, "Symptom Table". Continue “Road Test”.

5. CHECK SHIFT-DOWN FUNCTION

During manual mode driving, is downshift from M6 → M5 → M4 → M3 → M2 → M1 performed?

Read the gear position. Refer to TM-159, "CONSULT-III Function (TRANSMISSION)".

Is downshifting correctly performed?

YES >> GO TO 6.
NO >> Refer to TM-259, "Symptom Table". Continue “Road Test”.

6. CHECK ENGINE BRAKE FUNCTION

Check engine brake.

Does engine braking effectively reduce speed in M1 position?

YES >> 1. Stop the vehicle.
2. Perform self-diagnosis. Refer to TM-159, "CONSULT-III Function (TRANSMISSION)".

NO >> Refer to TM-259, "Symptom Table". Then continue trouble diagnosis.

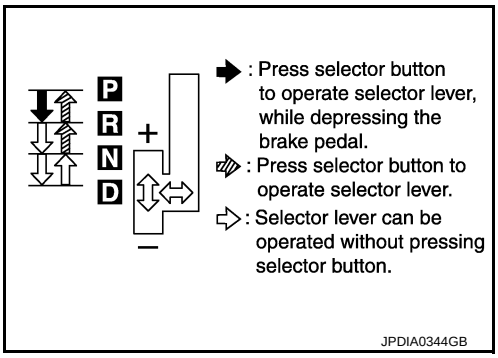
CVT POSITION

Inspection and Adjustment

INFOID:0000000006601703

INSPECTION

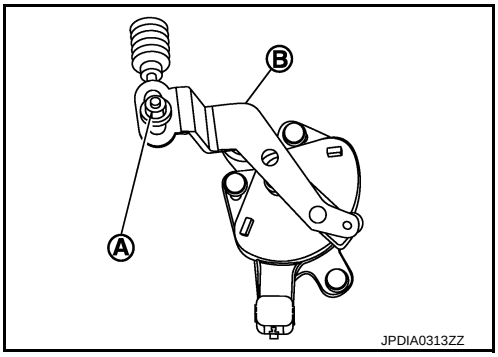
1. Place selector lever in “P” position, and turn ignition switch ON (engine stop).
2. Make sure that selector lever can be shifted to other than “P” position when brake pedal is depressed. Also make sure that selector lever can be shifted from “P” position only when brake pedal is depressed.
3. Move the selector lever and check for excessive effort, sticking, noise or rattle.
4. Confirm the selector lever stops at each position with the feel of engagement when it is moved through all the positions. Check that the actual position of the selector lever matches the position shown by the shift position indicator and the manual lever on the transaxle.
5. The method of operating the selector lever to individual positions correctly should be as shown.
6. When selector button is pressed in “P”, “R” or “N” position without applying forward/backward force to selector lever, check button operation for sticking.
7. Confirm the back-up lamps illuminate only when selector lever is placed in the “R” position. Confirm the back-up lamps do not illuminate when the selector lever is pushed toward the “R” position when in the “P” or “N” position.
8. Confirm the engine can only be started with the selector lever in the “P” and “N” positions.



9. Make sure transaxle is locked completely in “P” position.
10. When selector lever is set to manual shift gate, make sure that manual mode is displayed on combination meter.
    Shift selector lever to “+” and “–” sides, and check that set shift position changes.

ADJUSTMENT

1. Place selector lever in “P” position.
   CAUTION:
   Turn wheels more than 1/4 rotations and apply the park lock.
2. Loosen nut (A) and place manual lever (B) in “P” position.
   CAUTION:
   Never apply any force to the manual lever.
3. Tighten nut. Refer to TM-273, "Removal and Installation".
   CAUTION:
   Fix the manual lever when tightening.



DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000006601576

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 independent). In CAN communication, control units are connected with 2 communication lines (CAN-H and CAN-L) 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:0000000006601577

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
U1000	CAN Communication Line	When TCM is not transmitting or receiving CAN communication signal for 2 seconds or more.	Harness or connectors (CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Start engine and wait for at least 6 seconds.
3. Select “Self Diagnostic Results” in “TRANSMISSION”.

With GST
Follow the procedure “With CONSULT-III”.

Is “U1000” detected?

YES >> Go to TM-195, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601578

Go to LAN-17, "Trouble Diagnosis Flow Chart".

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000006601579

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 independent). In CAN communication, control units are connected with 2 communication lines (CAN-H and CAN-L) 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:0000000006601580

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
U1010	TCM Communication Malfunction	When detecting error during the initial diagnosis of CAN controller to TCM.	Harness or connectors (CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine and wait for at least 6 seconds.
3. Select “Self Diagnostic Results” in “TRANSMISSION”.

With GST

Follow the procedure “With CONSULT-III”.

Is “U1010” detected?

YES >> Go to TM-196, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601581

1.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the TCM. Refer to TM-280, "Removal and Installation".
NO >> Repair or replace damaged parts.

P0703 BRAKE SWITCH B

Description

INFOID:0000000006601582

BCM detects ON/OFF state of the stop lamp switch and transmits the data to the CVT control unit via CAN communication by converting the data to a signal.

DTC Logic

INFOID:0000000006601583

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0703	Brake Switch B Circuit	When the brake switch does not switch to ON or OFF.	• Harness or connectors - (Stop lamp switch, and BCM circuit are open or shorted.) - (CAN communication line is open or shorted.) • Stop lamp switch

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine.
3. Start vehicle for at least 3 consecutive seconds.
4. Select “Self Diagnostic Results” in “TRANSMISSION”.

Is “P0703” detected?

YES >> Go to TM-197, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601584

1.CHECK STOP LAMP SWITCH CIRCUIT

1. Check and adjust the installation position of stop lamp switch. Refer to BR-9, "Inspection and Adjustment" (LHD), BR-77, "Inspection and Adjustment" (RHD).
2. Turn ignition switch OFF.
3. Disconnect BCM connector.
4. Turn ignition switch ON.
5. Check voltage between BCM vehicle side harness connector terminal and ground.

Without intelligent key system

BCM vehicle side harness connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
M65	9		Depressed brake pedal	Battery voltage
			Released brake pedal	0 V

With intelligent key system

BCM vehicle side harness connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
M68	9		Depressed brake pedal	Battery voltage
			Released brake pedal	0 V

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 2.

2.CHECK HARNESS BETWEEN STOP LAMP SWITCH AND BCM (PART 1)

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector.
3. Check continuity between stop lamp switch vehicle side harness connector terminal and BCM vehicle side harness connector terminal.

Without intelligent key system

Stop lamp switch vehicle side harness connector		BCM vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E102	2	M65	9	Existed

With intelligent key system

Stop lamp switch vehicle side harness connector		BCM vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E102	2	M68	9	Existed

Is the inspection result normal?

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

3.CHECK HARNESS BETWEEN STOP LAMP SWITCH AND BCM (PART 2)

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

Without intelligent key system

BCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M65	9		Not existed

With intelligent key system

BCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M68	9		Not existed

Is the inspection result normal?

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

4.CHECK STOP LAMP SWITCH

Check stop lamp switch. Refer to TM-199, "Component Inspection".

Is the inspection result normal?

YES >> Check the following.
- Harness for short or open between battery and stop lamp switch
- 10A fuse (No. 38, located in fuse block)

NO >> Repair or replace stop lamp switch.

5.CHECK BCM

With CONSULT-III

1. Turn ignition switch OFF.
2. Connect BCM connector.
3. Turn ignition switch ON.
4. Select “BRAKE SW” in “Data Monitor” in “BCM” and verify the proper operation of ON/OFF. Refer to BCS-41, "Reference Value" (With intelligent key system), BCS-125, "Reference Value" (Without intelligent key system).

Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace BCM. Refer to BCS-93, "Removal and Installation" (With intelligent key system), BCS-125, "Reference Value" (Without intelligent key system).

6. DETECT MALFUNCTIONING ITEMS

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

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-280, "Removal and Installation".
NO >> Repair or replace damaged parts.

Component Inspection

INFOID:0000000006601585

1. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

Stop lamp switch			Condition	Continuity
Connector	Terminal			
E102	1	2	Depressed brake pedal	Existed
			Released brake pedal	Not existed

Check stop lamp switch after adjusting brake pedal — refer to BR-9, "Inspection and Adjustment" (LHD), BR-77, "Inspection and Adjustment" (RHD).

Is the inspection result normal?

YES >> Check the following. If NG, repair or replace damaged parts.
- Harness for short or open between battery and stop lamp switch.
- Harness for short or open between stop lamp switch and BCM.
- 10A fuse (No. 38, located in fuse block).

NO >> Repair or replace the stop lamp switch.

P0705 TRANSMISSION RANGE SWITCH A

DTC Logic

INFOID:0000000006601587

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0705	Transmission Range Sensor A Circuit (PRNDL Input)	TCM does not receive the correct voltage signal (based on the gear position) from the switch.	• Harness or connectors (Transmission range switches circuit is open or shorted.) • Transmission range switch

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.

VEHICLE SPEED	**: More than 10 km/h (6 MPH)**
ENG SPEED	**: More than 450 rpm**
ACC PEDAL OPEN	**: More than 1.0/8**

With GST

Follow the procedure "With CONSULT-III".

Is "P0705" detected?

YES >> Go to TM-200, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601588

1. CHECK HARNESS BETWEEN TCM AND TRANSMISSION RANGE SWITCH

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

TCM connector		Transmission range switch connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	1	F27	5	Existed
	2		6	
	3		7	
	11		4	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

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

2. DETECT MALFUNCTIONING ITEM

Check the following items.
- Harness for short or open between ignition switch and transmission range switch.
- 10A fuse (No. 55, located in the IPDM E/R).
- Ignition switch.

Is the inspection result normal?

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

3. CHECK TRANSMISSION RANGE SWITCH

Check transmission range switch. Refer to TM-201, "Component Inspection".

Is the inspection result normal?

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

4. CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

Component Inspection

INFOID:0000000006601589

1. CHECK TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch connector terminals.

Selector lever position	Transmission range switch connector			Continuity
	Connector	Terminal		
P	F27	1	2	Existed
		3	4	
R		3	5	
N		1	2	
		3	6	
D		3	7	

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> GO TO 2.

2. CHECK CVT POSITION

1. Disconnect control cable.
2. Check transmission range switch. (Refer to step 1 above.)

Is the inspection result normal?

YES >> Adjust CVT position. Refer to TM-194, "Inspection and Adjustment".
NO >> GO TO 3.

3. CHECK TRANSMISSION RANGE SWITCH

1. Remove transmission range switch. Refer to TM-278, "Removal and Installation".
2. Check transmission range switch. (Refer to step 1 above.)

Is the inspection result normal?

YES >> Adjust transmission range switch. Refer to TM-278, "Inspection and Adjustment".
NO >> Replace transmission range switch. Refer to TM-278, "Removal and Installation".

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

INFOID:0000000006601591

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0710	Transmission Fluid Temperature Sensor A Circuit	During running, the CVT fluid temperature sensor signal voltage is excessively high or low.	• Harness or connectors (Sensor circuit is open or shorted.) • CVT fluid temperature sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Start engine and maintain the following conditions for at least 10 minutes (Total).

VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ENG SPEED	**: 450 rpm more than**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: "D" position**

With GST

Follow the procedure "With CONSULT-III".

Is "P0710" detected?

YES >> Go to TM-202, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601592

1. CHECK CVT FLUID TEMPERATURE SENSOR CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect the TCM connector.
3. Check resistance between TCM connector terminals.

TCM connector			Temperature °C (°F)	Resistance (Approx.)
Connector	Terminal			
F81	13	25	20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ

Is the inspection result normal?

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

2. CHECK CVT FLUID TEMPERATURE SENSOR

Check CVT fluid temperature sensor. Refer to TM-203, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace the transaxle assembly. Refer to TM-301, "Removal and Installation".

3. CHECK HARNESS BETWEEN TCM AND CVT FLUID TEMPERATURE SENSOR

1. Disconnect the CVT unit harness connector.
2. Check continuity between TCM connector terminals and CVT unit harness connector terminals.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	13	F24	17	Existed
	25		19	

3. If OK, check harness for short to ground and short to power.
4. Reinstall any part removed.

Is the inspection result normal?

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

4. CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

Component Inspection

INFOID:0000000006601593

CVT FLUID TEMPERATURE SENSOR

1. CHECK CVT FLUID TEMPERATURE SENSOR

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

CVT unit harness connector			Temperature °C (°F)	Resistance (Approx.)
Connector	Terminal			
F51	17	19	20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-301, "Removal and Installation".

P0715 INPUT SPEED SENSOR A

DTC Logic

INFOID:0000000006707370

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0715	Input/Turbine Speed Sensor A Circuit	• primary speed sensor signal is not input due to an open circuit. • An unexpected signal is input when vehicle is being driven.	• Harness or connectors (Sensor circuit is open or shorted.) • Primary speed sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: "D" position**
ENG SPEED	**: 450 rpm or more**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

With GST

Follow the procedure "With CONSULT-III".

Is "P0715" detected?

YES >> Go to TM-204, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006707371

1. CHECK POWER AND SENSOR GROUND

1. Turn ignition switch OFF.
2. Disconnect the primary speed sensor harness connector.
3. Turn ignition switch ON.
4. Check voltage between primary speed sensor harness connector terminals.

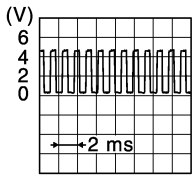
Primary speed sensor vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
F55	3		10 V – 16V

Is the inspection result normal?

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

2. CHECK TCM INPUT SIGNAL

1. Turn ignition switch OFF.
2. Connect the primary speed sensor harness connector.
3. Start engine.
4. Lift up the vehicle.
5. Check frequency of primary speed sensor.

TCM connector			Condition	Data (Approx.)
Connector	Terminal			
F55	2	1	• Selector lever: "M[1]" position • Vehicle speed: 20 km/h (12 MPH)	800 Hz  JPDIA0819ZZ

Is the inspection result normal?

YES >> GO TO 9.
NO >> GO TO 3.

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

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

TCM connector		Primary speed sensor vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	25	F55	1	Existed
	33		2	

Is the inspection result normal?

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

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

Check continuity between TCM connector terminal and ground.

TCM connector		Ground	Continuity
Connector	Terminal		
F81	25		Not existed
	33		

Is the inspection result normal?

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

5. CHECK CVT UNIT CIRCUIT

1. Disconnect CVT unit connector.
2. Check continuity between CVT unit connector terminals and ground.

CVT unit connector		Ground	Continuity
Connector	Terminal		
F51	14		Not existed
	19		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

6. CHECK HARNESS BETWEEN PRIMARY SPEED SENSOR (POWER) AND IPDM E/R (PART 1)

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between primary speed sensor vehicle side harness connector terminal and IPDM E/R vehicle side harness connector terminal.

Primary speed sensor vehicle side harness connector		IPDM E/R vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F55	3	E15	57	Existed

Is the inspection result normal?

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

7. CHECK HARNESS BETWEEN PRIMARY SPEED SENSOR (POWER) AND IPDM E/R (PART 1)

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

Primary speed sensor vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F55	3		Not existed

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace damaged parts.

8. DETECT MALFUNCTIONING ITEMS

Check the following. Refer to PG-15, "Wiring Diagram - IGNITION POWER SUPPLY -".

- IPDM E/R
- 10A fuse (No.55, located in the IPDM E/R)
- Harness for short or open between IPDM E/R and ignition switch
- Ignition switch

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident"
NO >> Repair or replace damaged parts.

9. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace primary speed sensor. Refer to TM-290, "Removal and Installation".
NO >> Repair or replace damaged parts.

P0717 INPUT SPEED SENSOR A

DTC Logic

INFOID:0000000006601595

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0717	Input/Turbine Speed Sensor A Circuit No Signal	• Input speed sensor value is less than 150 rpm while primary pulley speed is more than 1,000 rpm. • Input speed is less than 300 rpm just after that input speed sensor value is more than 1,000 rpm.	• Harness or connectors (Sensor circuit is open or shorted.) • Input speed sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start the vehicle.
3. Select "DATA MONITOR".
4. Start engine and maintain the following conditions for at least 5 consecutive seconds.

PRI SPEED : 1,000 rpm or more

With GST

Follow the procedure "With CONSULT-III".

Is "P0717" detected?

YES >> Go to TM-207, "Diagnosis Procedure".

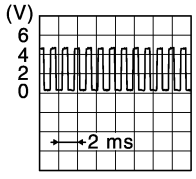
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601596

1. CHECK TCM INPUT SIGNAL

1. Turn ignition switch OFF.
2. Start the engine.
3. Lift up the vehicle.
4. Check frequency of input speed sensor.

TCM connector			Condition	Data (Approx.)
Connector	Terminal			
F81	35	25	• Selector lever: "M[1]" position • Vehicle speed: 20 km/h (12 MPH)	800 Hz  JPDIA0819ZZ

Is the inspection result normal?

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

2. CHECK HARNESS BETWEEN TCM AND CVT UNIT (STEP 1)

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

TCM connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	25	F51	14	Existed
	26		15	
	35		18	

Is the inspection result normal?

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

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT (STEP 2)

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

TCM connector			Continuity
Connector	Terminal		
F81	25	Ground	Existed
	26		
	35		

Is the inspection result normal?

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

4. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-301, "Removal and Installation".
NO >> Repair or replace damaged parts..

P0720 OUTPUT SPEED SENSOR

DTC Logic

INFOID:0000000006601598

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0720	Output Speed Sensor Circuit	• Signal from output speed sensor not input due to open or short circuit. • Unexpected signal input during running.	• Harness or connectors (Sensor circuit is open or shorted.) • Output speed sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Start engine and maintain the following conditions for at least 12 consecutive seconds.

ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: "D" position**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

4. If DTC is detected,

With GST

Follow the procedure "With CONSULT-III".

Is "P0720" detected?

YES >> Go to TM-209, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601599

1. CHECK POWER AND SENSOR GROUND

1. Turn ignition switch OFF.
2. Disconnect the secondary speed sensor harness connector.
3. Turn ignition switch ON.
4. Check voltage between secondary speed sensor harness connector terminals.

Secondary speed sensor vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
F19	3		10 V – 16V

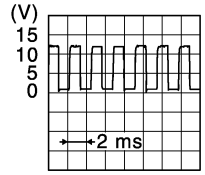
Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 5.

2. CHECK TCM INPUT SIGNAL

1. Turn ignition switch OFF.

2. Connect the secondary speed sensor harness connector.
3. Start engine.
4. Lift up the vehicle.
5. Check frequency of secondary speed sensor.

TCM connector			Condition	Data (Approx.)
Connector	Terminal			
F81	34	25	• Selector lever: "M1" position • Vehicle speed: 20 km/h (12 MPH)	500 Hz  JPDIA0901ZZ

Is the inspection result normal?

YES >> GO TO 8.
NO >> GO TO 3.

3. CHECK HARNESS BETWEEN TCM AND SECONDARY SPEED SENSOR (PART 1)

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

TCM connector		Secondary speed sensor vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	25	F19	1	Existed
	34		2	

Is the inspection result normal?

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

4. CHECK HARNESS BETWEEN TCM AND SECONDARY SPEED SENSOR (PART 2)

Check continuity between TCM connector terminal and ground.

TCM connector		Ground	Continuity
Connector	Terminal		
F81	25		Not existed
	34		

Is the inspection result normal?

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

5. CHECK CVT UNIT CIRCUIT

1. Disconnect CVT unit connector.
2. Check continuity between CVT unit connector terminals and ground.

CVT unit connector		Ground	Continuity
Connector	Terminal		
F51	14		Not existed
	19		

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

6. CHECK HARNESS BETWEEN SECONDARY SPEED SENSOR (POWER) AND IPDM E/R (PART 1)

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between secondary speed sensor vehicle side harness connector terminal and IPDM E/R vehicle side harness connector terminal.

Secondary speed sensor vehicle side harness connector		IPDM E/R vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F19	3	E15	57	Existed

Is the inspection result normal?

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

7. CHECK HARNESS BETWEEN SECONDARY SPEED SENSOR (POWER) AND IPDM E/R (PART 1)

Check continuity between secondary speed sensor vehicle side harness connector terminal and ground.

Secondary speed sensor vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F19	3		Not existed

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace damaged parts.

8. DETECT MALFUNCTIONING ITEMS

Check the following. Refer to PG-15, "Wiring Diagram - IGNITION POWER SUPPLY -".

- IPDM E/R
- 10A fuse (No.55, located in the IPDM E/R)
- Harness for short or open between IPDM E/R and ignition switch
- Ignition switch

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident"
NO >> Repair or replace damaged parts.

9. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace secondary speed sensor. Refer to TM-291, "Removal and Installation".
NO >> Repair or replace damaged parts.

P0725 ENGINE SPEED

Description

INFOID:0000000006601600

The engine speed signal is transmitted from ECM to TCM by CAN communication line.

DTC Logic

INFOID:0000000006601601

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0725	Engine Speed Input Circuit	• TCM does not receive the CAN communication signal from the ECM. • Engine speed is too low while driving.	• Harness or connectors (The ECM to the TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:
Always drive vehicle at a safe speed.
NOTE:
If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Start engine and maintain the following conditions for at least 10 consecutive seconds.

PRI SPEED SEN : More than 1000 rpm

Is "P0725" detected?

YES >> Go to TM-212, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601602

1. CHECK DTC WITH ECM

With CONSULT-III
1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" in "ENGINE".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check the DTC detected item. Refer to EC-83, "CONSULT-III Function".

2. CHECK DTC WITH TCM

With CONSULT-III
Select "SELF-DIAG RESULTS" in "TRANSMISSION".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the DTC detected item. Refer to TM-159, "CONSULT-III Function (TRANSMISSION)".

3. CHECK INPUT SIGNALS

With CONSULT-III
1. Start engine.
2. Select "DATA MONITOR" in "TRANSMISSION".

3. While monitoring “ENG SPEED SIG”, check for engine speed change corresponding to “ACC PEDAL OPEN”.

Item name	Condition	Display value
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
ACC PEDAL OPEN	Released accelerator pedal – Fully depressed accelerator pedal	0.0/8 – 8.0/8

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check ignition signal circuit. Refer to EC-414, "Component Function Check".

4. CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

P0730 INCORRECT GEAR RATIO

Description

INFOID:0000000006601603

TCM selects the gear ratio using the engine load (throttle position), the primary pulley revolution speed, and the secondary pulley revolution speed as input signal. Then it changes the operating pressure of the primary pulley and the secondary pulley and changes the groove width of the pulley.

DTC Logic

INFOID:0000000006601604

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0730	Incorrect Gear Ratio	Unexpected gear ratio detected.	Transaxle assembly

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR” in “TRANSMISSION”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

4. Start engine and maintain the following conditions for at least 30 consecutive seconds.

TEST START FROM 0 km/h (0 MPH)	
CONSTANT ACCELERATION	**: Keep 30 seconds or more**
VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
ENG SPEED	**: 450 rpm or more**

Is “P0730” detected?

YES >> Go to TM-214, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601605

1. CHECK DTC

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS”.

Are any DTC displayed?

YES - 1 (DTC except for “P0730” is displayed)>>Check the DTC detected item. Refer to TM-159, "CONSULT-III Function (TRANSMISSION)".
YES - 2 (DTC for “P0730” is displayed)>>Replace the transaxle assembly. Refer to TM-301, "Removal and Installation".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

P0740 TORQUE CONVERTER

DTC Logic

INFOID:0000000006601607

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0740	Torque Converter Clutch Circuit/Open	Normal voltage not applied to solenoid due to open or short circuit.	• Harness or connectors (Solenoid circuit is open or shorted.) • Torque converter clutch solenoid valve

DTC CONFIRMATION PROCEDURE

NOTE:
If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Wait at least 10 consecutive seconds.
3. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST
Follow the procedure "With CONSULT-III".

Is "P0740" detected?

YES >> Go to TM-215, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601608

1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F81	38		3.0 – 9.0 Ω

Is the inspection result normal?

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

2. CHECK HARNESS BETWEEN TCM AND TORQUE CONVERTER CLUTCH SOLENOID VALVE

1. Disconnect CVT unit harness connector.
2. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	38	F51	12	Existed

3. If OK, check harness for short to ground and short to power.
4. If OK, check continuity between ground and transaxle assembly.
5. Reinstall any part removed.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to TM-216, "Component Inspection".

Is the inspection result normal?

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

4.CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

Component Inspection

INFOID:0000000006601609

TORQUE CONVERTER CLUTCH SOLENOID VALVE

1.TORQUE CONVERTER CLUTCH SOLENOID VALVE

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

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F51	12		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-301, "Removal and Installation".

P0744 TORQUE CONVERTER

Description

INFOID:0000000006601610

This malfunction is detected when the torque converter clutch does not lock-up as instructed by the TCM. This is not only caused by electrical malfunction (circuits open or shorted), but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic

INFOID:0000000006601611

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0744	Torque Converter Clutch Circuit Intermittent	• CVT cannot perform lock-up even if electrical circuit is good. • TCM detects as irregular by comparing difference value with slip rotation. • There is big difference engine speed and primary speed when TCM lock-up signal is on.	• Hydraulic control circuit • Torque converter clutch solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Start engine and maintain the following condition for at least 30 seconds.

ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: "D" position**
VEHICLE SPEED	**: Constant speed of more than 40 km/h (25 MPH)**

4. If DTC is detected

With GST

Follow the procedure "With CONSULT-III".

Is "P0744" detected?

YES >> Go to TM-217, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601612

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-188, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace damaged parts. Refer to TM-188, "Inspection and Judgment".

2. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to TM-216, "Component Inspection".

Is the inspection result normal?

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

3. CHECK LOCK-UP SELECT SOLENOID VALVE

Check lock-up select solenoid valve. Refer to TM-248, "Component Inspection".

Is the inspection result normal?

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

4. CHECK SECONDARY SPEED SENSOR SYSTEM

Check secondary speed sensor system. Refer to TM-209, "DTC Logic".

Is the inspection result normal?

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

5. CHECK PRIMARY SPEED SENSOR SYSTEM

Check primary speed sensor system. Refer to TM-207, "DTC Logic".

Is the inspection result normal?

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

6. CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

P0745 PRESSURE CONTROL SOLENOID A

DTC Logic

INFOID:0000000006601614

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0745	Pressure Control Solenoid A	• Normal voltage not applied to solenoid due to open or short circuit. • TCM detects as irregular by comparing target value with monitor value.	• Harness or connectors (Solenoid circuit is open or shorted.) • Line pressure solenoid valve

DTC CONFIRMATION PROCEDURE

NOTE:
If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Start engine and wait at least 5 seconds.
3. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST
Follow the procedure "With CONSULT-III".

Is "P0745" detected?

YES >> Go to TM-219, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601615

1.CHECK LINE PRESSURE SOLENOID VALVE CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F81	40		3.0 – 9.0 Ω

Is the inspection result normal?

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

2.CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to TM-220, "Component Inspection"

Is the inspection result normal?

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

3. CHECK HARNESS BETWEEN TCM AND LINE PRESSURE SOLENOID VALVE

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

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	40	F51	2	Existed

4. If OK, check harness for short to ground and short to power.
5. If OK, check continuity between ground and CVT assembly.
6. Reinstall any part removed.

Is the inspection result normal?

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

4.CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

Component Inspection

INFOID:0000000006601616

LINE PRESSURE SOLENOID VALVE

1.LINE PRESSURE SOLENOID VALVE

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

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F51	2		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-301, "Removal and Installation".

P0746 PRESSURE CONTROL SOLENOID A

Description

INFOID:0000000006601617

The line pressure solenoid valve regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000006601618

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0746	Pressure Control Solenoid A Performance/Stuck Off	Unexpected gear ratio was detected in the LOW side due to excessively low line pressure.	• Line pressure control system • secondary speed sensor • primary speed sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION"
3. Start engine and maintain the following conditions for at least 10 consecutive seconds. Test start from 0 km/h (0 MPH).

ATF TEMP SEN	**: 1.0 – 2.0 V**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: "D" position**
VEHICLE SPEED	**: 10 km/h (6 MPH) More than**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

With GST

Follow the procedure "With CONSULT-III".

Is "P0746" detected?

YES >> Go to TM-221, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601619

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-188, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace damaged parts. Refer to TM-188, "Inspection and Judgment".

2. CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to TM-220, "Component Inspection".

Is the inspection result normal?

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

3. CHECK SECONDARY SPEED SENSOR SYSTEM

Check secondary speed sensor system. Refer to TM-209, "DTC Logic".

Is the inspection result normal?

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

4. CHECK PRIMARY SPEED SENSOR SYSTEM

Check primary speed sensor system. Refer to TM-207, "DTC Logic".

Is the inspection result normal?

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

5. CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

P0776 PRESSURE CONTROL SOLENOID B

Description

INFOID:0000000006601620

The secondary pressure solenoid valve regulates the secondary pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000006601621

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0776	Pressure Control Solenoid B Performance/Stuck Off	Secondary pressure is too high or too low compared with the commanded value while driving.	• Harness or connectors (Solenoid circuit is open or shorted.) • Secondary pressure solenoid valve system • Line pressure control system • Secondary pressure sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Start engine and maintain the following conditions for at least 30 consecutive seconds.

ATF TEMP SEN	**: 1.0 – 2.0 V**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: "D" position**
VEHICLE SPEED	**: 10 km/h (6 MPH) More than**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

With GST

Follow the procedure "With CONSULT-III".

Is "P0776" detected?

YES >> Go to TM-223, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601622

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-188, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace damaged parts. Refer to TM-188, "Inspection and Judgment".

2. CHECK SECONDARY PRESSURE SOLENOID VALVE

Check secondary pressure solenoid valve. Refer to TM-226, "Component Inspection".

Is the inspection result normal?

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

3. CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to TM-220, "Component Inspection".

Is the inspection result normal?

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

4. CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check secondary pressure sensor system. Refer to TM-230, "DTC Logic".

Is the inspection result normal?

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

5. CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

P0778 PRESSURE CONTROL SOLENOID B

DTC Logic

INFOID:0000000006601624

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0778	Pressure Control Solenoid B Electrical	• Normal voltage not applied to solenoid due to cut line, short, or the like. • TCM detects as irregular by comparing target value with monitor value.	• Harness or connectors (Sensor circuit is open or shorted.) • Secondary pressure solenoid valve

DTC CONFIRMATION PROCEDURE

NOTE:
If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Start engine.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.
4. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST
Follow the procedure "With CONSULT-III".

Is "P0778" detected?

YES >> Go to TM-225, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601625

1.CHECK SECONDARY PRESSURE SOLENOID VALVE CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F81	39		3.0 – 9.0 Ω

Is the inspection result normal?

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

2.CHECK SECONDARY PRESSURE SOLENOID VALVE

Check secondary pressure solenoid valve. Refer to TM-226, "Component Inspection".

Is the inspection result normal?

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

3.CHECK HARNESS BETWEEN TCM AND SECONDARY PRESSURE SOLENOID VALVE

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

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	39	F51	3	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

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

4.CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

Component Inspection

INFOID:0000000006601626

SECONDARY PRESSURE SOLENOID VALVE

1.SECONDARY PRESSURE SOLENOID VALVE

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

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F51	3		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-301, "Removal and Installation".

P0826 UP AND DOWN SHIFT SW

DTC Logic

INFOID:0000000006601628

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0826	Up and Down Shift Switch Circuit	When an impossible pattern of switch signals is detected, a malfunction is detected.	• Harness or connectors - (These switches circuit is open or shorted.) - (TCM, and combination meter circuit are open or shorted.) - (CAN communication line is open or shorted.) • Manual mode select switch • Manual mode position select switch

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Start engine.
4. Drive vehicle for at least 2 consecutive seconds.

MMODE : ON

Is "P0826" detected?

YES >> Go to TM-227, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601629

1. CHECK MANUAL MODE SWITCH CIRCUIT

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Check the ON/OFF operations of each monitor item.

Item name	Condition	Display value
MMODE	Manual shift gate position (neutral)	On
	Other than the above	Off
NONMMODE	Manual shift gate position	Off
	Other than the above	On
UPLVR	Selector lever: UP (+ side)	On
	Other than the above	Off
DOWNLVR	Selector lever: DOWN (– side)	On
	Other than the above	Off

Without CONSULT-III

Drive the vehicle in the manual mode and shift lever to the “UP (+ side)” or “(– side)” side (1st ⇔ 6th gear).Check that the meter indicator coincides with the actual gear position.

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 2.

2.CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to TM-228, "Component Inspection".

Is the inspection result normal?

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

3.CHECK HARNESS BETWEEN CVT SHIFT SELECTOR HARNESS CONNECTOR AND COMBINATION METER HARNESS CONNECTOR

1. Turn ignition switch OFF.
2. Disconnect CVT shift selector harness connector and combination meter harness connector.
3. Check continuity between CVT shift selector harness connector terminals and combination meter harness connector terminals.

CVT shift selector harness connector		Combination meter harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M57	7	M34	40	Existed
	8		38	
	9		39	
	11		37	

4. If OK, check harness for short to ground and short to power.

Is the inspection result normal?

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

4.CHECK GROUND CIRCUIT

1. Check continuity between CVT shift selector harness connector terminals and ground.

CVT shift selector harness connector		Ground	Continuity
Connector	Terminal		
M57	10		Existed

2. If OK, check harness for short to ground and short to power.
3. Reinstall any part removed.

Is the inspection result normal?

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

5.CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

Component Inspection

INFOID:0000000006601630

MANUAL MODE SWITCH

1.MANUAL MODE SWITCH

Check continuity between CVT shift selector connector terminals.

CVT shift selector connector			Condition	Continuity
Connector	Terminal			
M324	10	11	Manual shift gate position	Not existed
			Other than the above	Existed
	7	10	Manual shift gate position (neutral)	Existed
			Other than the above	Not existed
	9	10	Selector lever: UP (+ side)	Existed
			Other than the above	Not existed
	8	10	Selector lever: DOWN (– side)	Existed
			Other than the above	Not existed

Is the inspection result normal?

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

P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

DTC Logic

INFOID:0000000006601632

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0840	Transmission Fluid Pressure Sensor/Switch A Circuit	Signal voltage of the secondary pressure sensor is too high or too low while driving.	• Harness or connectors (Switch circuit is open or shorted.) • Secondary pressure sensor

DTC CONFIRMATION PROCEDURE

NOTE:
If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Make sure that output voltage of line temperature sensor is within the range below.

ATF TEMP SEN : 1.0 – 2.0 V

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

4. Start engine and wait for at least 5 consecutive seconds.

With GST
Follow the procedure "With CONSULT-III".

Is "P0840" detected?

YES >> Go to TM-230, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601633

1.CHECK INPUT SIGNAL

1. Start engine.
2. Check voltage between TCM connector terminal and ground.

TCM connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
F51	15		"N" position idle	1.0 V

Is the inspection result normal?

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

2.CHECK HARNESS BETWEEN TCM AND SECONDARY PRESSURE SENSOR

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

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	15	F51	23	Existed

4. If OK, check harness for short to ground and short to power.

5. Reinstall any part removed.

Is the inspection result normal?

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

3. CHECK SENSOR POWER AND SENSOR GROUND

1. Connect TCM connector.
2. Turn ignition switch ON.
3. Check voltage between CVT unit harness connector terminals.

CVT unit harness connector			Voltage (Approx.)
Connector	Terminal		
F51	19	20	5.0 V

4. Reinstall any part removed.

Is the inspection result normal?

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

4. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)

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

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	25	F51	19	Existed
	26		20	

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

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

5. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and then start engine perform self-diagnosis check. Refer to TM-230, "DTC Logic".

Is “P0840” detected again?

YES >> Replace the transaxle assembly. Refer to TM-301, "Removal and Installation".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

6. CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

Description

INFOID:0000000006601634

Using the engine load (throttle position), the primary pulley revolution speed, and the secondary pulley revolution speed as input signal, TCM changes the operating pressure of the primary pulley and the secondary pulley and changes the groove width of the pulley to control the gear ratio.

DTC Logic

INFOID:0000000006601635

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0841	Transmission Fluid Pressure Sensor/Switch A Circuit Range/ Performance	Secondary pressure became higher than line pressure.	• Harness or connectors (Sensor circuit is open or shorted.) • Secondary pressure sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

Perform the following procedure to confirm the malfunction is eliminated after the repair.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Start engine and maintain the following conditions for at least 12 consecutive seconds.

VEHICLE SPEED	**: 40 km/h (25 MPH) More than**
RANGE	**: "D" position**

Is "P0841" detected?

YES >> Go to TM-232, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601636

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-188, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace damaged parts. Refer to TM-188, "Inspection and Judgment".

2.CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check secondary pressure sensor system. Refer to TM-230, "DTC Logic".

Is the inspection result normal?

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

3.CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to TM-220, "Component Inspection".

Is the inspection result normal?

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

4.CHECK SECONDARY PRESSURE SOLENOID VALVE

Check secondary pressure solenoid valve. Refer to TM-226, "Component Inspection".

Is the inspection result normal?

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

5.CHECK STEP MOTOR

Check step motor. Refer to TM-251, "Component Inspection".

Is the inspection result normal?

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

6.CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

P0868 TRANSMISSION FLUID PRESSURE

Description

INFOID:0000000006601637

The secondary pressure solenoid valve regulates the secondary pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000006601638

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0868	Transmission Fluid Pressure Low	Secondary fluid pressure is too low compared with the commanded value while driving.	• Harness or connectors (Solenoid circuit is open or shorted.) • Line pressure control system • Secondary pressure solenoid valve system • Secondary pressure sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**
If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)	

4. Start engine and maintain the following conditions for at least 10 consecutive seconds.

VEHICLE SPEED (accelerate slowly)	**: 0 → 50 km/h (31 MPH)**
ACC PEDAL OPEN	**: 0.5/8 – 1.0/8**
RANGE	**: "D" position**

Is "P0868" detected?

YES >> Go to TM-234, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601639

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-188, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace damaged parts. Refer to TM-188, "Inspection and Judgment".

2. CHECK SECONDARY PRESSURE SOLENOID VALVE

Check secondary pressure solenoid valve. Refer to TM-225, "DTC Logic".

Is the inspection result normal?

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

3. CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to TM-219, "DTC Logic".

Is the inspection result normal?

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

4. CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check secondary pressure sensor system. Refer to TM-230, "DTC Logic".

Is the inspection result normal?

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

5. CHECK TCM

Check input/output signal. Refer to TM-164, "Reference Value"

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

P1585 G SENSOR

Description

INFOID:0000000006707372

- G sensor is installed to floor under instrument lower cover.
- G sensor detects longitudinal G and inclination that affects the vehicle and outputs to ECM using analog voltage. ECM converts the analog voltage value to digital signal and transmits the signal to TCM via CAN communication.
- TCM detects longitudinal G and inclination of the vehicle using information of CAN communication.

DTC Logic

INFOID:0000000006707373

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1585	G Sensor Circuit	• G sensor voltage value that TCM receives is more than 3.13 V • G sensor voltage value that TCM receives is less than 0.67 V • G sensor voltage value that TCM receives is deviated from acceleration and deceleration speed	• Harness or connectors (G sensor circuit is open or shorted.) • G sensor characteristic malfunction (intermediate sticking) • G sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PRECONDITIONING

Immediately after performing any “DTC CONFIRMATION PROCEDURE”, always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT-III

1. Start the engine.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Select “VEHICLE SPEED”.
4. Using the “D” position, increase vehicle speed in constant acceleration within 5 seconds.
5. Select “Self Diagnostic Results” in “TRANSMISSION”.

Is “P1585” detected?

YES >> Go to TM-236, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006707374

1.CHECK G SENSOR SIGNAL

With CONSULT-III

1. Park vehicle on level surface.
2. Turn ignition switch ON.
3. Select “Data Monitor” in “TRANSMISSION”.
4. Select “G SEN SLOPE”.
5. Check display of “G SEN SLOPE”.

Monitor item	Condition	Values to be displayed (reference)
G SEN SLOPE	Ignition switch: ON (Level road)	0%
	Ignition switch: ON (Uphill slope)	Positive value (maximum 40.45%)
	Ignition switch: ON (Downhill slope)	Negative value (minimum–40.45%)

Is the inspection result normal?

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

2.CHECK G SENSOR POWER SOURCE

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

G sensor vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
B32	3		5.0 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 7.

3.CHECK HARNESS BETWEEN TCM AND G SENSOR (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connectors.
3. Check continuity between TCM vehicle side harness connector terminals and G sensor vehicle side harness connector terminals.

TCM vehicle side harness connector		G sensor vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	7	B32	1	Existed
	44		2	

Is the inspection result normal?

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

4.CHECK HARNESS BETWEEN TCM AND G SENSOR (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F81	7		Not existed
	44		

Is the inspection result normal?

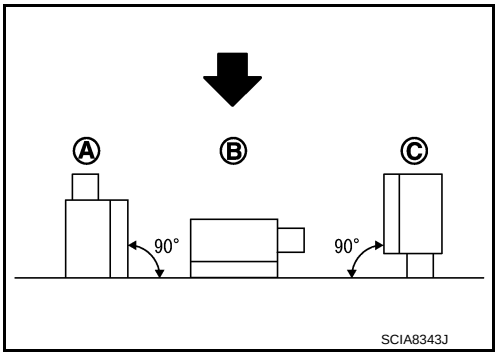
YES >> GO TO 5.
NO >> Repair or replace damaged parts.

5.CHECK G SENSOR

1. Remove G sensor. Refer to TM-282, "Removal and Installation".
2. Reconnect all the connectors.
3. Turn ignition switch ON.

4. Check voltage between TCM connector terminal and ground.

⬅ : Direction of gravitational force



TCM connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
F81	44		Vertical (–1G) (A)	1.17 V
			Horizontal (B)	2.5 V
			Vertical (1G) (C)	3.83 V

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace G sensor. Refer to TM-282, "Removal and Installation".

6. PERFORM CALIBRATION

1. Install G sensor. Refer to TM-282, "Removal and Installation".
2. Select “Self Diagnostic Results” in “TRANSMISSION”.
3. Select “Erase”.
4. Perform “G SENSOR REMOVAL/INSTALLATION AND REPLACEMENT”. Refer to TM-182, "Description".

Is calibration complete normally?

YES >> INSPECTION END
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

7. CHECK HARNESS BETWEEN TCM AND G SENSOR (SENSOR POWER CIRCUIT) (PART 1)

1. Turn ignition switch OFF.
2. Disconnect TCM connectors.
3. Check continuity between TCM vehicle side harness connector terminal and G sensor vehicle side harness connector terminal.

TCM vehicle side harness connector		G sensor vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	26	B32	3	Existed

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace damaged parts.

8. CHECK HARNESS BETWEEN TCM AND G SENSOR (SENSOR POWER CIRCUIT) (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F81	26		Not existed

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace damaged parts.

Special Repair Requirement

INFOID:0000000006707375

1. PERFORM G SENSOR CALIBRATION

Perform “G SENSOR REMOVAL/INSTALLATION AND REPLACEMENT”.

>> Refer to TM-182, "Description".

P1701 TCM

Description

INFOID:0000000006601640

When the power supply to the TCM is cut OFF, for example because the battery is removed, and the self-diagnosis memory function stops, malfunction is detected.

NOTE:

Since “P1701” will be indicated when replacing TCM, perform diagnosis after erasing “SELF-DIAG RESULTS”

DTC Logic

INFOID:0000000006601641

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1701	Power Supply Circuit	• When the power supply to the TCM is cut OFF, for example because the battery is removed, and the self-diagnosis memory function stops. • This is not a malfunction message (Whenever shutting OFF a power supply to the TCM, this message appears on the screen).	• Harness or connectors (Battery or ignition switch and TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Wait for at least 2 consecutive seconds.
3. Select “Self Diagnostic Results” in “TRANSMISSION”.

Is “P1701” detected?

YES >> Go to TM-239, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601642

1.CHECK TCM POWER SOURCE

Check voltage between TCM connector terminals and ground.

Name	TCM connector		Ground	Condition	Voltage (Approx.)
	Connector	Terminal			
Power supply	F81	46		Ignition switch ON	10 V – 16 V
				Ignition switch OFF	0 V
		48		Ignition switch ON	10 V – 16 V
				Ignition switch OFF	0 V
Power supply (memory back-up)		47		Always	10 V – 16 V

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

2.DETECT MALFUNCTIONING ITEM

Check the following.
- Harness for short or open between battery and TCM connector terminal 47
- Harness for short or open between ignition switch and TCM connector terminal 46, 48
- 10A fuse (No. 55, located in the IPDM E/R)
- 10A fuse (No. 33, located in the J/B)
- Ignition switch. Refer to PG-15, "Wiring Diagram - IGNITION POWER SUPPLY -".

Is the inspection result normal?

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

3.CHECK TCM GROUND CIRCUIT

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

TCM connector		Ground	Continuity
Connector	Terminal		
F81	5		Existed
	42		

Is the inspection result normal?

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

4.CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

P1705 TP SENSOR

Description

INFOID:0000000006601643

Electric throttle control actuator consists of throttle control motor, accelerator pedal position sensor, throttle position sensor etc. The actuator sends a signal to the ECM, and ECM sends the signal to TCM with CAN communication.

DTC Logic

INFOID:0000000006601644

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1705	Accelerator Pedal Position Sensor Signal Circuit	TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.	• Harness or connectors (CAN communication line is open or shorted.) • ECM

DTC CONFIRMATION PROCEDURE

NOTE:
If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Depress accelerator pedal fully and release it, then wait for 5 seconds.
3. Select "Self Diagnostic Results" in "TRANSMISSION".

Is "P1705" detected?

YES >> Go to TM-241, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601645

1. CHECK INPUT SIGNAL

With CONSULT-III
1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Read out the value of "ACC PEDAL OPEN".

Item name	Condition	Display value (Approx.)
ACC PEDAL OPEN	Released accelerator pedal - Fully depressed accelerator pedal	0.0/8 – 8.0/8

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> GO TO 2.

2. CHECK DTC WITH ECM

With CONSULT-III
1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" in "ENGINE".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Check the DTC Detected Item.

P1722 VEHICLE SPEED

Description

INFOID:0000000006601646

The vehicle speed signal is transmitted from ABS actuator and electric unit (control unit) to TCM by CAN communication line.

DTC Logic

INFOID:0000000006601647

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1722	Vehicle Speed Signal Circuit	• CAN communication with the ABS actuator and the electric unit (control unit) is malfunctioning. • There is a great difference between the vehicle speed signal from the ABS actuator and the electric unit (control unit), and the vehicle speed sensor signal.	• Harness or connectors (Sensor circuit is open or shorted.) • ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

ACC PEDAL OPEN	**: 1.0/8 or less**
VEHICLE SPEED	**: 30 km/h (19 MPH) or more**

Is "P1722" detected?

YES >> Go to GI-42, "Intermittent Incident".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601648

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

Perform "SELF-DIAG RESULTS".

Is the inspection result normal?

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

2.CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select "DATA MONITOR".
3. Drive vehicle and read out the value of "VEHICLE SPEED" and "ESTM VSP SIG".

Item name	Condition	Display value
ESTM VSP SIG	During driving	Approximately matches the speedometer reading.
VEHICLE SPEED		

4. Check if there is a great difference between the two values.

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> GO TO 3.

3.CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace TCM. Refer to TM-280, "Removal and Installation".

P1723 SPEED SENSOR

Description

INFOID:0000000006601649

The secondary speed sensor detects the revolution of parking gear and generates a pulse signal. The pulse signal is sent to the TCM, which converts it into vehicle speed.
The prymary speed sensor detects the primary pulley revolution speed and sends a signal to the TCM.

DTC Logic

INFOID:0000000006601650

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1723	Speed Sensor Circuit	A rotation sensor error is detected because the gear does not change in accordance with the position of the stepping motor. **CAUTION:** **One of the "P0720", the "P0715" or the "P0725" is displayed with the DTC at the same time.**	• Harness or connectors (Sensor circuit is open or shorted.) • Engine speed signal system • Secondary speed sensor • Primary speed sensor

DTC CONFIRMATION PROCEDURE

CAUTION:
Always drive vehicle at a safe speed.
NOTE:
If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: "D" position**
ENG SPEED	**: 450 rpm or more**
Driving location	**: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.**

Is "P1723" detected?

YES >> Go to TM-244, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601651

1.CHECK STEP MOTOR FUNCTION

Perform the self-diagnosis check

Is a malfunction in the step motor function indicated in the results?

YES >> Repair or replace damaged parts. (Check the step motor function. Refer to TM-252, "DTC Logic".)
NO >> GO TO 2.

2.CHECK SECONDARY SPEED SENSOR SYSTEM

Check secondary speed sensor system. Refer to TM-209, "DTC Logic".

Is the inspection result normal?

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

3.CHECK PRIMARY SPEED SENSOR SYSTEM

Check primary speed sensor system. Refer to TM-207, "DTC Logic".

Is the inspection result normal?

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

4.CHECK ENGINE SPEED SIGNAL SYSTEM

Check engine speed signal system. Refer to TM-212, "DTC Logic".

Is the inspection result normal?

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

5.CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace TCM.

P1726 THROTTLE CONTROL SIGNAL

Description

INFOID:0000000006601652

Electric throttle control actuator consists of throttle control motor, accelerator pedal position sensor, throttle position sensor etc. The actuator sends a signal to the ECM, and ECM sends the signal to TCM with CAN communication.

DTC Logic

INFOID:0000000006601653

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1726	Throttle Control Signal Circuit	The electronically controlled throttle for ECM is malfunctioning.	Harness or connectors (Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Select "Self Diagnostic Results" in "TRANSMISSION".

Is "P1726" detected?

YES >> Go to TM-246, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601654

1.CHECK DTC WITH ECM

With CONSULT-III
1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" in "ENGINE".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check the DTC Detected Item.

2.CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace TCM.

P1740 SELECT SOLENOID

DTC Logic

INFOID:0000000006601656

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1740	Lock-up Select Solenoid Valve Circuit	• Normal voltage not applied to solenoid due to cut line, short, or the like. • TCM detects as irregular by comparing target value with monitor value.	• Harness or connectors (Solenoid circuit is open or shorted.) • Lock-up select solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

RANGE : "D" position and "N" positions

(At each time, wait for 5 seconds.)

With GST

Follow the procedure "With CONSULT-III".

Is "P1740" detected?

YES >> Go to TM-247, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601657

1. CHECK LOCK-UP SELECT SOLENOID VALVE CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F81	37		17.0 – 38.0 Ω

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

2. CHECK LOCK-UP SELECT SOLENOID VALVE

Check lock-up select solenoid valve.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK HARNESS BETWEEN TCM AND LOCK-UP SELECT SOLENOID VALVE

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

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	37	F51	13	Existed

4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

Is the inspection result normal?

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

4.CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace TCM.

Component Inspection

INFOID:0000000006601658

LOCK-UP SELECT SOLENOID VALVE

1.LOCK-UP SELECT SOLENOID VALVE

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

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F51	13		17.0 – 38.0 Ω

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-301, "Removal and Installation".

P1745 LINE PRESSURE CONTROL

Description

INFOID:0000000006601659

The line pressure solenoid valve regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

INFOID:0000000006601660

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1745	Line Pressure Control Circuit	TCM detects the unexpected line pressure.	TCM

DTC CONFIRMATION PROCEDURE

NOTE:
If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON
2. Select "DATA MONITOR" in "TRANSMISSION".
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN : 1.0 – 2.0 V

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

Is "P1745" detected?

YES >> Go to TM-249, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601661

1.CHECK DTC

With CONSULT-III
1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" in "TRANSMISSION".
3. Erase self-diagnostic results.
4. Turn ignition switch OFF, and wait for 10 seconds or more.
5. Start engine.
6. Confirm self-diagnostic results again.

Is the "P1745" displayed?

YES >> Replace TCM. Refer to TM-280, "Removal and Installation".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

P1777 STEP MOTOR

DTC Logic

INFOID:0000000006601663

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1777	Step Motor Circuit	Each coil of the step motor is not energized properly due to an open or a short.	• Harness or connectors (Step motor circuit is open or shorted.) • Step motor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Drive vehicle for at least 5 consecutive seconds.
3. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P1777" detected?

YES >> Go to TM-250, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601664

1.CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select "DATA MONITOR".
3. Start vehicle and read out the value of "STM STEP", "SMCOIL A", "SMCOIL B", "SMCOIL C", and "SMCOIL D".

Item name	Condition	Display value (Approx.)
STM STEP	During driving	0 step – 177 step
SMCOIL A		Changes ON⇔OFF.
SMCOIL B		
SMCOIL C		
SMCOIL D		

Is the inspection result normal?

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

2.CHECK HARNESS BETWEEN TCM AND STEP MOTOR

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

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F81	27	F51	9	Existed
	28		8	
	29		7	
	30		6	

4. If OK, check harness for short to ground and short to power.
5. If OK, check continuity between body ground and transaxle assembly.
6. Reinstall any part removed.

Is the inspection result normal?

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

3.CHECK STEP MOTOR

Check step motor. Refer to TM-251, "Component Inspection".

Is the inspection result normal?

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

4.CHECK TCM

Check TCM input/output signals. Refer to TM-164, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the TCM. Refer to TM-280, "Removal and Installation".

Component Inspection

INFOID:0000000006601665

STEP MOTOR

1.STEP MOTOR

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

CVT unit harness connector			Resistance (Approx.)
Connector	Terminal		
F51	6	7	30.0 Ω
	8	9	

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F51	6		15.0 Ω
	7		
	8		
	9		

Is the inspection result normal?

YES >> **INSPECTION END**
NO >> Replace the transaxle assembly. Refer to TM-301, "Removal and Installation".

P1778 STEP MOTOR

Description

INFOID:0000000006601666

- The step motor's 4 aspects of ON/OFF change according to the signal from TCM. As a result, the flow of line pressure to primary pulley is changed and pulley ratio is controlled.
- This diagnosis item is detected when electrical system is OK, but mechanical system is NG.
- This diagnosis item is detected when the state of the changing the speed mechanism in unit does not operate normally.

DTC Logic

INFOID:0000000006601667

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1778	Step Motor Circuit Intermittent	There is a great difference between the number of steps for the stepping motor and for the actual gear ratio.	Step motor

DTC CONFIRMATION PROCEDURE

CAUTION:

- **Always drive vehicle at a safe speed.**
- **Before starting “DTC CONFIRMATION PROCEDURE”, confirm “Hi” or “Mid” or “Low” fixation by “PRI SPEED” and “VEHICLE SPEED” on “DATA MONITOR MODE”.**
- **If hi-geared fixation occurred, go to TM-252, "Diagnosis Procedure".**

NOTE:

If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.

After the repair, perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “TRANSMISSION”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	**: 1.0 – 2.0 V**

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

4. Start engine and maintain the following conditions for at least 30 consecutive seconds.

TEST START FROM 0 km/h (0 MPH)	
CONSTANT ACCELERATION	**: Keep 30 seconds or more**
VEHICLE SPEED	**: 10 km/h (6 MPH) or more**
ACC PEDAL OPEN	**: More than 1.0/8**
RANGE	**: “D” position**
ENG SPEED	**: 450 rpm or more**

With GST.

Follow the procedure “With CONSULT-III”.

Is “P1778” detected?

YES >> Go to TM-252, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006601668

1. CHECK STEP MOTOR

With CONSULT-III

It is monitoring whether “GEAR RATIO: 2.34 – 0.39” changes similarly to “STM STEP: 0 – 177” by “DATA MONITOR” mode.

Without CONSULT-III

Inspect the engine speed (rise and descend), vehicle speed, throttle position, and check shift change. Refer to TM-308, "Shift Characteristics".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the transaxle assembly. Refer to TM-301, "Removal and Installation".

SHIFT POSITION INDICATOR CIRCUIT

Description

INFOID:0000000006601669

- TCM sends position indicator signals to combination meter by CAN communication line.
- Manual mode switch position is indicated on shift position indicator.

Component Function Check

INFOID:0000000006601670

1.CHECK SHIFT POSITION INDICATOR

CAUTION:
Always drive vehicle at a safe speed.

1. Start engine.
2. Check if correct selector lever position (“P”, “N”, “R” or “D”) is displayed as selector lever is moved into each position.
3. Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever is shifted to the “UP (+ side)” or “DOWN (– side)” side (1st ⇔ 6th gear).

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to TM-254, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006601671

1.CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Check if correct selector lever position (“P”, “N”, “R” or “D”) is displayed as selector lever is moved into each position.
3. Select “RENGE” on “DATA MONITOR” and read out the value.
4. Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever is shifted to the “UP (+ side)” or “DOWN (– side)” side (1st ⇔ 6th gear).

Is the inspection result normal?

YES >> INSPECTION END
NO - 1 >> The actual gear position does not change, or shifting into the manual mode is not possible (no gear shifting in the manual mode possible). Or the shift position indicator is not indicated.
- Check manual mode switch. Refer to TM-228, "Component Inspection".
- Check CVT main system (Fail-safe function actuated).
  - Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”. Refer to TM-159, "CONSULT-III Function (TRANSMISSION)".

NO - 2 >> The actual gear position changes, but the shift position indicator is not indicated.
- Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”. Refer to TM-159, "CONSULT-III Function (TRANSMISSION)".

NO - 3 >> The actual gear position and the indication on the shift position indicator do not coincide.
- Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”. Refer to TM-159, "CONSULT-III Function (TRANSMISSION)".

NO - 4 >> Only a specific position or positions is/are not indicated on the shift position indicator.
- Check the combination meter. Refer to MWI-23, "CONSULT-III Function".

SHIFT LOCK SYSTEM

Component Function Check

INFOID:0000000006601674

1.CHECK SHIFT LOCK OPERATION (PART 1)

1. Turn ignition switch ON.
2. Shift the selector lever to “P” position.
3. Attempt to shift the selector lever to any other than position with the brake pedal released.

Can the selector lever be shifted to any other position?

YES >> Go to TM-255, "Diagnosis Procedure".
NO >> GO TO 2.

2.CHECK SHIFT LOCK OPERATION (PART 2)

Attempt to shift the selector lever to any other than position with the brake pedal depressed.

Can the selector lever be shifted to any other position?

YES >> INSPECTION END
NO >> Go to TM-255, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006601675

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.

Stop lamp switch harness connector		Ground	Voltage
Connector	Terminal		
E102	3	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 9.

2.CHECK STOP LAMP SWITCH (PART 1)

Check stop lamp switch. Refer to TM-258, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 10.

3.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 harness connector		CVT shift selector harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E102	4	M57	5	Existed

Is the inspection result normal?

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

4.CHECK CIRCUIT BETWEEN STOP LAMP SWITCH AND CVT SHIFT SELECTOR (PART 1)

Check the continuity between the stop lamp switch harness connector terminal and ground.

Stop lamp switch harness connector		Ground	Continuity
Connector	Terminal		
E102	4	Ground	Not existed

Is the inspection result normal?

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

5.CHCK GROUND CIRCUIT

Check the continuity between the CVT shift selector harness connector terminal and ground.

CVT shift selector harness connector		Ground	Continuity
Connector	Terminal		
M57	4	Ground	Existed

Is the inspection result normal?

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

6.CHECK PART POSITION SWITCH

1. Disconnect park position switch connector.
2. Check park position switch. Refer to TM-257, "Component Inspection (Park Position Switch)".

Is the inspection result normal?

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

7.CHECK SHIFT LOCK SOLENOID

1. Disconnect shift lock solenoid connector.
2. Check shift lock solenoid. Refer to TM-257, "Component Inspection (Shift Lock Solenoid)".

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace the malfunctioning parts.

8.CHECK CVT SHIFT SELECTOR HARNESS

Check CVT shift selector harness. Refer to TM-257, "Component Inspection (CVT Shift Selector Harness)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning 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-15, "Wiring Diagram - IGNITION POWER SUPPLY -".
- Ignition switch
- 10A fuse [No.3, fuse block (J/B)]. Refer to PG-22, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

10.CHECK INSTALLATION POSITION OF STOP LAMP SWITCH

Adjust stop lamp switch position. Refer to BR-9, "Inspection and Adjustment" (LHD) or BR-77, "Inspection and Adjustment" (RHD).

>> GO TO 11.

11. CHECK STOP LAMP SWITCH (PART 2)

Check stop lamp switch. Refer to TM-258, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace the malfunctioning parts.

Component Inspection (Shift Lock Solenoid)

INFOID:0000000006601677

1. CHECK SHIFT LOCK SOLENOID

Apply voltage to terminals of shift lock solenoid connector and check that shift lock solenoid is activated.

CAUTION:
- **Connect the fuse between the terminals when applying the voltage.**
- **Never cause shorting between terminals.**

Shift lock solenoid connector		Condition	Status
Terminal			
+ (fuse)	–		
1	2	Apply battery voltage between terminals 1 and 2.	Shift lock solenoid operates

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace the shift lock unit. Refer to TM-271, "Disassembly and Assembly".

Component Inspection (Park Position Switch)

INFOID:0000000006752450

1. CHECK PARK POSITION SWITCH

Check the continuity between park position switch connector terminals.

CAUTION:
- **Connect the fuse between the terminals when applying the voltage.**
- **Never cause shorting between terminals.**

Park position switch connector		Condition	Continuity
Terminal			
1	2	Shift the selector lever to “P” position.	Existed
		Other than above	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace the park position switch. Refer to TM-271, "Disassembly and Assembly".

Component Inspection (CVT Shift Selector Harness)

INFOID:0000000006752451

1. CHECK CVT SHIFT SELECTOR HARNESS (PART 1)

Check the continuity between the CVT shift selector harness connector terminal and the shift lock solenoid harness connector terminal.

CVT shift selector harness connector		Shift lock solenoid harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M324	5	M326	1	Existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the CVT shift selector harness. Refer to TM-271, "Disassembly and Assembly".

2.CHECK CVT SHIFT SELECTOR HARNESS (PART 2)

Check the continuity between the shift lock solenoid harness connector terminal and the park position switch harness connector terminal.

Shift lock solenoid harness connector		Park position switch harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M326	2	M325	1	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace the CVT shift selector harness. Refer to TM-271, "Disassembly and Assembly".

3.CHECK CVT SHIFT SELECTOR HARNESS (PART 3)

Check the continuity between the park switch harness connector terminal and the CVT shift selector harness connector terminal.

Park switch harness connector		CVT shift selector harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M325	2	M324	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the CVT shift selector harness. Refer to TM-271, "Disassembly and Assembly".

4.CHECK CVT SHIFT SELECTOR HARNESS (PART 4)

Check harness cladding CVT shift selector harness for damage.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace the CVT shift selector harness. Refer to TM-271, "Disassembly and Assembly".

Component Inspection (Stop Lamp Switch)

INFOID:0000000006601676

1.CHECK STOP LAMP SWITCH

Check the continuity between the stop lamp switch connector terminals.

Stop lamp switch connector		Condition	Continuity
Terminal			
3	4	Depressed brake pedal	Existed
		Released brake pedal	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace stop lamp switch. Refer to BR-21, "Removal and Installation" (LHD) or BR-89, "Removal and Installation" (RHD).

SYMPTOM DIAGNOSIS

SYSTEM SYMPTOM

Symptom Table

INFOID:0000000006601683

The diagnostics item numbers show the sequence for inspection. Inspect in order from item 1.

No.	Item	Symptom	Condition	Diagnostic Item	Reference
1	Shift Shock	Large shock. (“N”→ “D” position)	ON vehicle	1. Engine idle speed	EC-443
				2. Engine speed signal	TM-212
				3. Accelerator pedal position sensor	TM-241
				4. CVT position	TM-194
				5. CVT fluid temperature sensor	TM-202
				6. CAN communication line	TM-195
				7. CVT fluid level and state	TM-184
				8. Line pressure test	TM-188
				9. Torque converter clutch solenoid valve	TM-215
				10. Lock-up select solenoid valve	TM-247
				11. Transmission range switch	TM-200
				12. Control valve	TM-284
			OFF vehicle	13. Forward clutch	TM-301
2	Shift Shock	Large shock. (“N”→ “R” position)	ON vehicle	1. Engine idle speed	EC-443
				2. Engine speed signal	TM-212
				3. Accelerator pedal position sensor	TM-241
				4. CVT position	TM-194
				5. CVT fluid temperature sensor	TM-202
				6. CAN communication line	TM-195
				7. CVT fluid level and state	TM-184
				8. Line pressure test	TM-188
				9. Torque converter clutch solenoid valve	TM-215
				10. Lock-up select solenoid valve	TM-247
				11. Transmission range switch	TM-200
				12. Control valve	TM-284
			OFF vehicle	13. Reverse brake	TM-301
3	Shift Shock	Shock is too large for lock-up.	ON vehicle	1. CVT position	TM-194
				2. Engine speed signal	TM-212
				3. CAN communication line	TM-195
				4. CVT fluid level and state	TM-184
				5. Control valve	TM-284
			OFF vehicle	6. Torque converter	TM-306

No.	Item	Symptom	Condition	Diagnostic Item	Reference
4	Slips/Will Not Engage	Vehicle cannot be started from “D” position.	ON vehicle	1. CVT fluid level and state	TM-184
				2. CVT position	TM-194
				3. CAN communication line	TM-195
				4. Line pressure test	TM-188
				5. Stall test	TM-186
				6. Step motor	TM-250
				7. Primary speed sensor	TM-204
				8. Secondary speed sensor	TM-209
				9. Accelerator pedal position sensor	TM-241
				10. CVT fluid temperature sensor	TM-202
				11. Secondary pressure sensor	TM-230
				12. Power supply	TM-239
				13. Control valve	TM-284
			OFF vehicle	14. Oil pump assembly	TM-301
				15. Forward clutch	
				16. Parking components	
5		Vehicle cannot be started from “R” position.	ON vehicle	1. CVT fluid level and state	TM-184
				2. CVT position	TM-194
				3. CAN communication line	TM-195
				4. Line pressure test	TM-188
				5. Stall test	TM-186
				6. Step motor	TM-250
				7. Primary speed sensor	TM-204
				8. Secondary speed sensor	TM-209
				9. Accelerator pedal position sensor	TM-241
				10. CVT fluid temperature sensor	TM-202
				11. Secondary pressure sensor	TM-230
				12. Power supply	TM-239
				13. Control valve	TM-284
			OFF vehicle	14. Oil pump assembly	TM-301
				15. Reverse brake	
				16. Parking components	

No.	Item	Symptom	Condition	Diagnostic Item	Reference
6	Slips/Will Not Engage	Does not lock-up.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Line pressure test	TM-188
				3. Engine speed signal	TM-212
				4. Primary speed sensor	TM-204
				5. Torque converter clutch solenoid valve	TM-215
				6. CAN communication line	TM-195
				7. Stall test	TM-186
				8. Step motor	TM-250
				9. Transmission range switch	TM-200
				10. Lock-up select solenoid valve	TM-247
				11. CVT fluid temperature sensor	TM-202
				12. Secondary speed sensor	TM-209
				13. Secondary pressure sensor	TM-230
				14. Control valve	TM-284
			OFF vehicle	15. Torque converter	TM-306
				16. Oil pump assembly	TM-301
7		Does not hold lock-up condition.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Line pressure test	TM-188
				3. Engine speed signal	TM-212
				4. Primary speed sensor	TM-204
				5. Torque converter clutch solenoid valve	TM-215
				6. CAN communication line	TM-195
				7. Stall test	TM-186
				8. Step motor	TM-250
				9. Transmission range switch	TM-200
				10. Lock-up select solenoid valve	TM-247
				11. CVT fluid temperature sensor	TM-202
				12. Secondary speed sensor	TM-209
				13. Secondary pressure sensor	TM-230
				14. Control valve	TM-284
			OFF vehicle	15. Torque converter	TM-306
				16. Oil pump assembly	TM-301

No.	Item	Symptom	Condition	Diagnostic Item	Reference
8	Slips/Will Not Engage	Lock-up is not released.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Line pressure test	TM-188
				3. Engine speed signal	TM-212
				4. Primary speed sensor	TM-204
				5. Torque converter clutch solenoid valve	TM-215
				6. CAN communication line	TM-195
				7. Stall test	TM-186
				8. Control valve	TM-284
			OFF vehicle	9. Torque converter	TM-306
				10. Oil pump assembly	TM-301
9		With selector lever in “D” position, acceleration is extremely poor.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Line pressure test	TM-188
				3. Stall test	TM-186
				4. Accelerator pedal position sensor	TM-241
				5. CAN communication line	TM-195
				6. Transmission range switch	TM-200
				7. CVT position	TM-194
				8. Step motor	TM-250
				9. Primary speed sensor	TM-204
				10. Secondary speed sensor	TM-209
				11. Accelerator pedal position sensor	TM-241
				12. Secondary pressure sensor	TM-230
				13. CVT fluid temperature sensor	TM-202
				14. Power supply	TM-239
				15. Control valve	TM-284
			OFF vehicle	16. Torque converter	TM-306
				17. Oil pump assembly	TM-301
				18. Forward clutch	

No.	Item	Symptom	Condition	Diagnostic Item	Reference
10	Slips/Will Not Engage	With selector lever in “R” position, acceleration is extremely poor.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Line pressure test	TM-188
				3. Stall test	TM-186
				4. Accelerator pedal position sensor	TM-241
				5. CAN communication line	TM-195
				6. Transmission range switch	TM-200
				7. CVT position	TM-194
				8. Step motor	TM-250
				9. Primary speed sensor	TM-204
				10. Secondary speed sensor	TM-209
				11. Accelerator pedal position sensor	TM-241
				12. Secondary pressure sensor	TM-230
				13. CVT fluid temperature sensor	TM-202
				14. Power supply	TM-239
				15. Control valve	TM-284
			OFF vehicle	16. Torque converter	TM-306
				17. Oil pump assembly	TM-301
				18. Reverse brake	
11		Slips at lock-up.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Line pressure test	TM-188
				3. Engine speed signal	TM-212
				4. Primary speed sensor	TM-204
				5. Torque converter clutch solenoid valve	TM-215
				6. CAN communication line	TM-195
				7. Stall test	TM-186
				8. Step motor	TM-250
				9. Transmission range switch	TM-200
				10. Lock-up select solenoid valve	TM-247
				11. CVT fluid temperature sensor	TM-202
				12. Secondary speed sensor	TM-209
				13. Secondary pressure sensor	TM-230
				14. Control valve	TM-284
			OFF vehicle	15. Torque converter	TM-306
				16. Oil pump assembly	TM-301

No.	Item	Symptom	Condition	Diagnostic Item	Reference
12	Other	No creep at all.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Line pressure test	TM-188
				3. Accelerator pedal position sensor	TM-241
				4. Transmission range switch	TM-200
				5. CAN communication line	TM-195
				6. Stall test	TM-186
				7. CVT position	TM-194
				8. Step motor	TM-250
				9. Primary speed sensor	TM-204
				10. Secondary speed sensor	TM-209
				11. Accelerator pedal position sensor	TM-241
				12. CVT fluid temperature sensor	TM-202
				13. Secondary pressure sensor	TM-230
				14. Power supply	TM-239
				15. Control valve	TM-284
			OFF vehicle	16. Torque converter	TM-306
				17. Oil pump assembly	TM-301
				18. Gear system	
				19. Forward clutch	
				20. Reverse brake	
13		Vehicle cannot run in all positions.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Line pressure test	TM-188
				3. Transmission range switch	TM-200
				4. Stall test	TM-186
				5. CVT position	TM-194
				6. Step motor	TM-250
				7. Primary speed sensor	TM-204
				8. Secondary speed sensor	TM-209
				9. Accelerator pedal position sensor	TM-241
				10. CVT fluid temperature sensor	TM-202
				11. Secondary pressure sensor	TM-230
				12. Power supply	TM-239
				13. Control valve	TM-284
			OFF vehicle	14. Torque converter	TM-306
				15. Oil pump assembly	TM-301
				16. Gear system	
				17. Forward clutch	
				18. Reverse brake	
				19. Parking components	

No.	Item	Symptom	Condition	Diagnostic Item	Reference
14	Other	With selector lever in “D” position, driving is not possible.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Line pressure test	TM-188
				3. Transmission range switch	TM-200
				4. Stall test	TM-186
				5. CVT position	TM-194
				6. Step motor	TM-250
				7. Primary speed sensor	TM-204
				8. Secondary speed sensor	TM-209
				9. Accelerator pedal position sensor	TM-241
				10. CVT fluid temperature sensor	TM-202
				11. Secondary pressure sensor	TM-230
				12. Power supply	TM-239
				13. Control valve	TM-284
			OFF vehicle	14. Torque converter	TM-306
				15. Oil pump assembly	TM-301
				16. Gear system	
				17. Forward clutch	
				18. Parking components	
15		With selector lever in “R” position, driving is not possible.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Line pressure test	TM-188
				3. Transmission range switch	TM-200
				4. Stall test	TM-186
				5. CVT position	TM-194
				6. Step motor	TM-250
				7. Primary speed sensor	TM-204
				8. Secondary speed sensor	TM-209
				9. Accelerator pedal position sensor	TM-241
				10. CVT fluid temperature sensor	TM-202
				11. Secondary pressure sensor	TM-230
				12. Power supply	TM-239
				13. Control valve	TM-284
			OFF vehicle	14. Torque converter	TM-306
				15 Oil pump assembly	TM-301
				16. Gear system	
				17. Reverse brake	
				18. Parking components	

No.	Item	Symptom	Condition	Diagnostic Item	Reference
16	Other	Judder occurs during lock-up.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Engine speed signal	TM-212
				3. Primary speed sensor	TM-204
				4. Secondary speed sensor	TM-209
				5. Accelerator pedal position sensor	TM-241
				6. CAN communication line	TM-195
				7. Torque converter clutch solenoid valve	TM-215
				8. Control valve	TM-284
			OFF vehicle	9. Torque converter	TM-306
17		Strange noise in “D” position.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Engine speed signal	TM-212
				3. CAN communication line	TM-195
				4. Control valve	TM-284
			OFF vehicle	5. Torque converter	TM-306
				6. Oil pump assembly	TM-301
				7. Gear system	
				8. Forward clutch	
				9. Bearing	
18		Strange noise in “R” position.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Engine speed signal	TM-212
				3. CAN communication line	TM-195
				4. Control valve	TM-284
			OFF vehicle	5. Torque converter	TM-306
				6. Oil pump assembly	TM-301
				7. Gear system	
				8. Reverse brake	
19		Strange noise in “N” position.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Engine speed signal	TM-212
				3. CAN communication line	TM-195
				4. Control valve	TM-284
			OFF vehicle	5. Torque converter	TM-306
				6. Oil pump assembly	TM-301
				7. Gear system	

No.	Item	Symptom	Condition	Diagnostic Item	Reference
20	Other	Vehicle does not decelerate by engine brake.	ON vehicle	1. CVT fluid level and state	TM-184
				2. CVT position	TM-194
				3. CAN communication line	TM-195
				4. Step motor	TM-250
				5. Primary speed sensor	TM-204
				6. Secondary speed sensor	TM-209
				7. Line pressure test	TM-188
				8. Engine speed signal	TM-212
				9. Accelerator pedal position sensor	TM-241
				10. Control valve	TM-301
21		Maximum speed low.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Line pressure test	TM-188
				3. Accelerator pedal position sensor	TM-241
				4. CAN communication line	TM-195
				5. Stall test	TM-186
				6. Step motor	TM-250
				7. Primary speed sensor	TM-204
				8. Secondary speed sensor	TM-209
				9. Secondary pressure sensor	TM-230
				10. CVT fluid temperature sensor	TM-202
				11. Control valve	TM-284
			OFF vehicle	12. Torque converter	TM-306
				13. Oil pump assembly	TM-301
				14. Gear system	
				15. Forward clutch	
22		With selector lever in “P” position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled.	ON vehicle	1. Transmission range switch	TM-200
				2. CVT position	TM-194
			OFF vehicle	3. Parking components	TM-301
23		Vehicle runs with CVT in “P” position.	ON vehicle	1. Transmission range switch	TM-200
				2. CVT fluid level and state	TM-184
				3. CVT position	TM-194
				4. Control valve	TM-284
			OFF vehicle	5. Parking components	TM-301
				6. Gear system	

No.	Item	Symptom	Condition	Diagnostic Item	Reference
24	Other	Vehicle runs with CVT in “N” position.	ON vehicle	1. Transmission range switch	TM-200
				2. CVT fluid level and state	TM-184
				3. CVT position	TM-194
				4. Control valve	TM-284
			OFF vehicle	5. Gear system	TM-301
				6. Forward clutch	
				7. Reverse brake	
25		Engine stall.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Engine speed signal	TM-212
				3. Primary speed sensor	TM-204
				4. Torque converter clutch solenoid valve	TM-215
				5. CAN communication line	TM-195
				6. Stall test	TM-186
				7. Secondary pressure sensor	TM-230
				8. Control valve	TM-284
			OFF vehicle	9. Torque converter	TM-306
26		Engine stalls when selector lever shifted “N”→“D”or “R”.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Engine speed signal	TM-212
				3. Primary speed sensor	TM-204
				4. Torque converter clutch solenoid valve	TM-215
				5. CAN communication line	TM-195
				6. Stall test	TM-186
				7. Control valve	TM-284
			OFF vehicle	8. Torque converter	TM-306
27		Engine speed does not return to idle.	ON vehicle	1. CVT fluid level and state	TM-184
				2. Accelerator pedal position sensor	TM-241
				3. Secondary speed sensor	TM-209
				4. CAN communication line	TM-195
				5. Control valve	TM-301

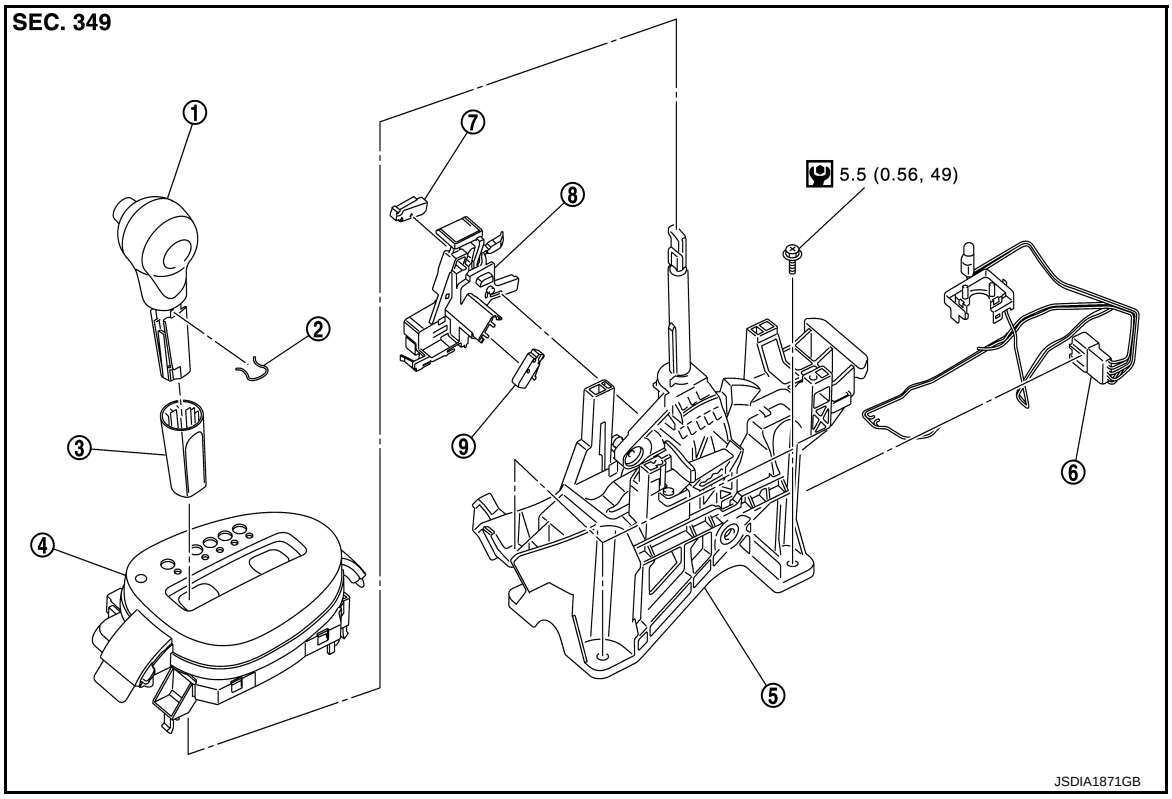
No.	Item	Symptom	Condition	Diagnostic Item	Reference
28	Other	CVT does not shift	ON vehicle	1. CVT fluid level and state	TM-184
				2. CVT position	TM-194
				3. Line pressure test	TM-188
				4. Engine speed signal	TM-212
				5. Accelerator pedal position sensor	TM-241
				6. CAN communication line	TM-195
				7. Primary speed sensor	TM-204
				8. Secondary speed sensor	TM-209
				9. Step motor	TM-250
				10. Control valve	TM-284
			OFF vehicle	11. Oil pump assembly	TM-301
29		Engine does not start in “N” or “P” position.	ON vehicle	1. Ignition switch and starter	PG-15, STR-14
				2. CVT position	TM-194
				3. Transmission range switch	TM-200
30		Engine starts in positions other than “N” or “P”.	ON vehicle	1. Ignition switch and starter	PG-15, STR-14
				2. CVT position	TM-194
				3. Transmission range switch	TM-200
31		When brake pedal is depressed with ignition switch ON, selector lever cannot be shifted from “P” position to other position.	ON vehicle	1. Stop lamp switch	TM-255
				2. Shift lock solenoid	
				3. CVT shift selector	
32		When brake pedal is not depressed with ignition switch ON, selector lever can be shifted from “P” position to other position.	ON vehicle	1. Stop lamp switch	TM-255
				2. Shift lock solenoid	
				3. CVT shift selector	
33		Cannot be changed to manual mode.	ON vehicle	1. Manual mode switch	TM-227
				2. CAN communication line	TM-195
				3. Combination meters	MWI-7
34		CVT indicator lamp does not come on.	ON vehicle	1. CAN communication line	TM-195
				2. Combination meters	MWI-7
				3. TCM power supply and ground	TM-239

REMOVAL AND INSTALLATION

CVT SHIFT SELECTOR

Exploded View

INFOID:0000000006601958



1.	Selector lever knob	2.	Lock pin	3.	Knob cover
4	Position indication panel	5.	CVT shift selector assembly	6.	CVT shift lock unit
7.	Key interlock rod*	8.	Indicator lamp		

:N·m (kg-m, it-lb)

*: Without push engine starter

Removal and Installation

INFOID:0000000006601959

REMOVAL

CAUTION:

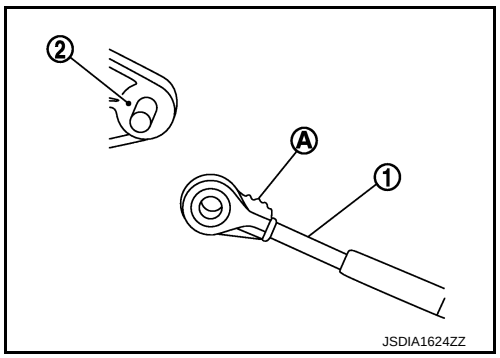
Always apply the parking brake before performing removal and installation.

1. Disconnect battery cable from negative terminal. Refer to PG-124, "Removal and Installation".
2. Shift the selector lever to “N” position.
3. Remove the center console. Refer to IP-23, "Removal and Installation".
4. Disconnect the CVT shift selector connector.
5. Shift the selector lever to “P” position.
6. Remove the key interlock cable from the CVT shift selector assembly. Refer to TM-276, "Removal and Installation" (Without push stater system).
7. Remove the control cable from the CVT shift selector assembly. Refer to TM-273, "Removal and Installation".
8. Remove the CVT shift selector assembly.

INSTALLATION

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

- When connecting the control cable (1) to the CVT shift selector assembly (2), face the grooved surface of the rib (A) up and insert the control cable until it stops.

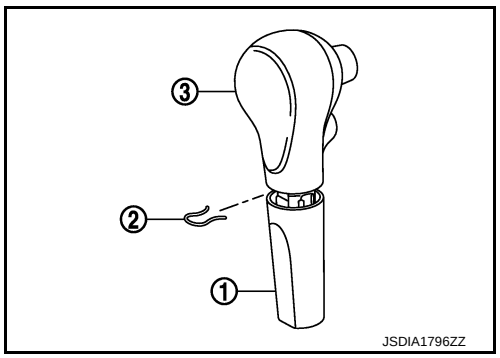


Disassembly and Assembly

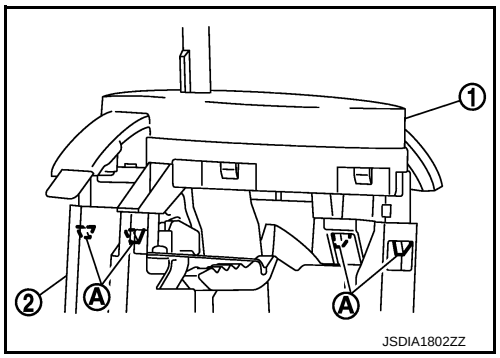
INFOID:0000000006601960

DISASSEMBLY

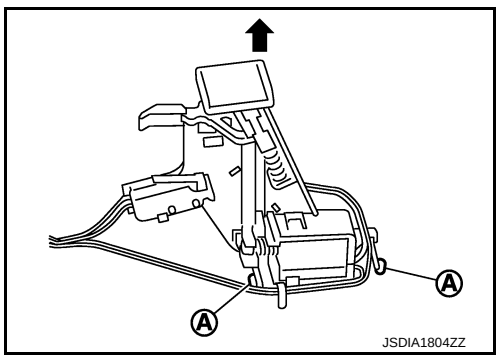
1. Slide the selector lever knob cover (1) down.
   CAUTION:
   Never damage the knob cover.
2. Pull out the lock pin (2).
3. Pull the selector lever knob (3) and knob cover upwards to remove them.
4. Remove the position lamp.



5. Disengage the hooks (A) (4 locations), and lift up the position indication panel (1) to separate it from the CVT shift selector assembly (2).
   CAUTION:
   Never damage the CVT shift selector assembly.



6. Shift the selector lever to “N” position.
7. Remove the shift lock unit from the CVT shift selector assembly.



INSTALLATION

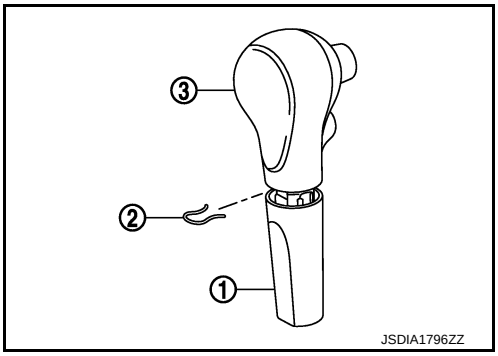
Note the following, and install in the reverse order of removal.

- Follow the procedure below and place the selector knob onto the CVT shift selector.

1. Install the lock pin (2) onto the selector lever knob (3).
2. Install the knob cover (1) onto the selector lever knob.
3. Press the selector lever knob onto the selector lever until it clicks.

CAUTION:

- **When pressing the selector lever knob onto the selector lever, never press the selector lever knob button.**
- **Never strike the selector lever knob to press it into place.**



- Follow the procedure below and press the shift lock unit onto the CVT shift selector.

1. Connect the connectors.
2. Install the shift lock unit.

Inspection

INFOID:0000000006601961

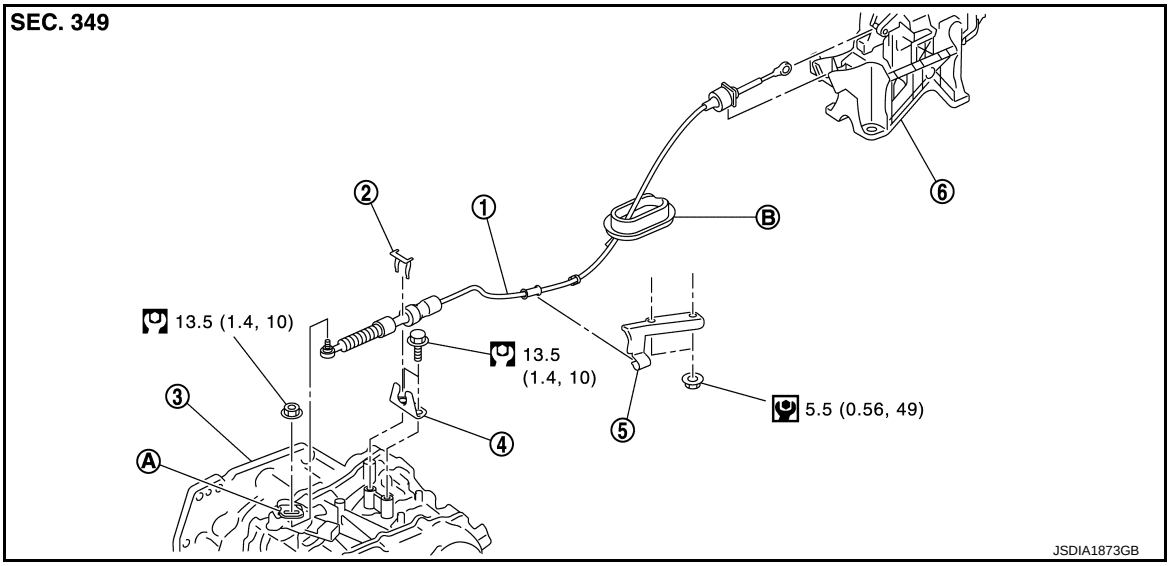
INSPECTION AFTER INSTALLATION

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-194, "Inspection and Adjustment".

CONTROL CABLE

Exploded View

INFOID:0000000006601962



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

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

Removal and Installation

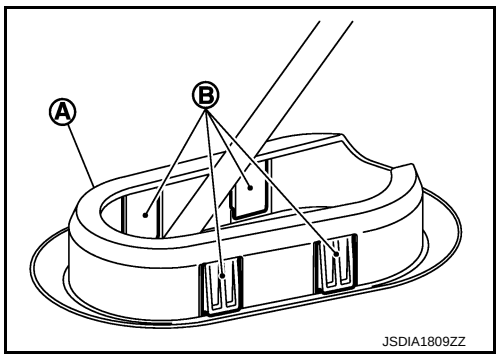
INFOID:0000000006601963

INSTALLATION

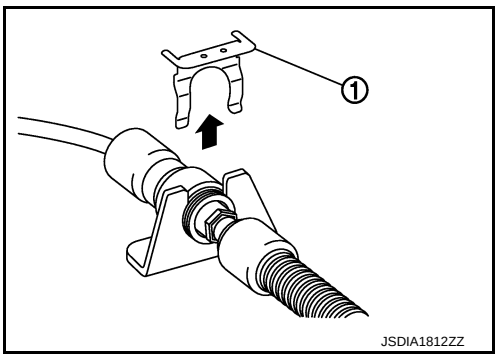
CAUTION:

Always apply the parking brake before performing removal and installation.

1. Remove the battery. Refer to PG-124, "Removal and Installation".
2. Remove the control cable from the CVT shift selector assembly. Refer to TM-270, "Removal and Installation".
3. Disengage the pawls (B) of the grommet (A), and pull downwards to remove.
4. Remove the control cable installation nut from the manual lever.

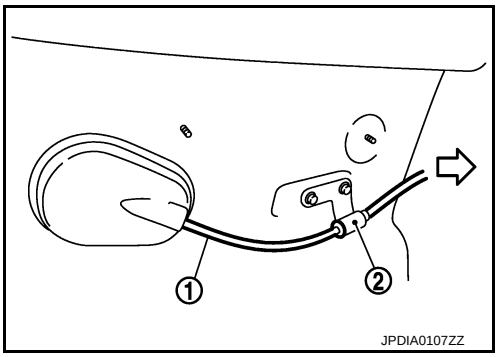


5. Remove the lock plate (1).



6. Remove center muffler from the mounting rubber and lower the center muffler downward. Refer to EX-6, "Removal and Installation".
7. Lift up the heat plate.
8. Remove the control cable (1) from the bracket (2).

⇦ :Vehicle front



9. Remove the control cable from the vehicle.
10. Remove bracket.

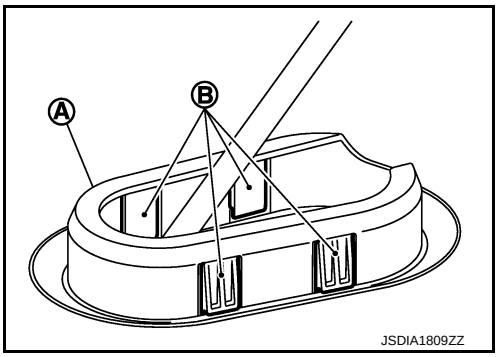
INSTALLATION

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

- From below the vehicle, press the grommet (A) into place until the pawls (B) make a click sound.

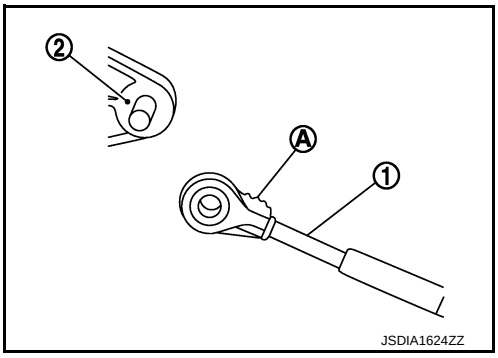
CAUTION:

- **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.**

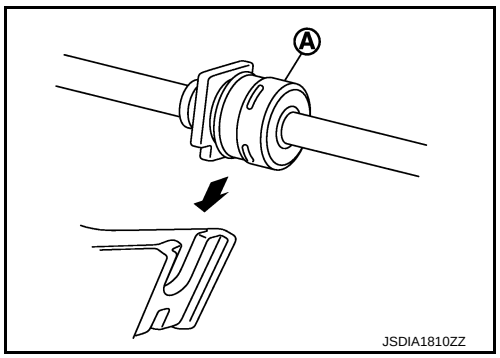


- Pay attention to the following when connecting the control cable to the CVT shift selector.

1. When connecting the control cable (1) to the CVT 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 CVT shift selector.
CAUTION:
- **Place the socket onto the CVT shift lever, then fasten it in place from above.**
- **Check that the pulling on the socket does not disconnect it.**



Inspection

INFOID:0000000006601964

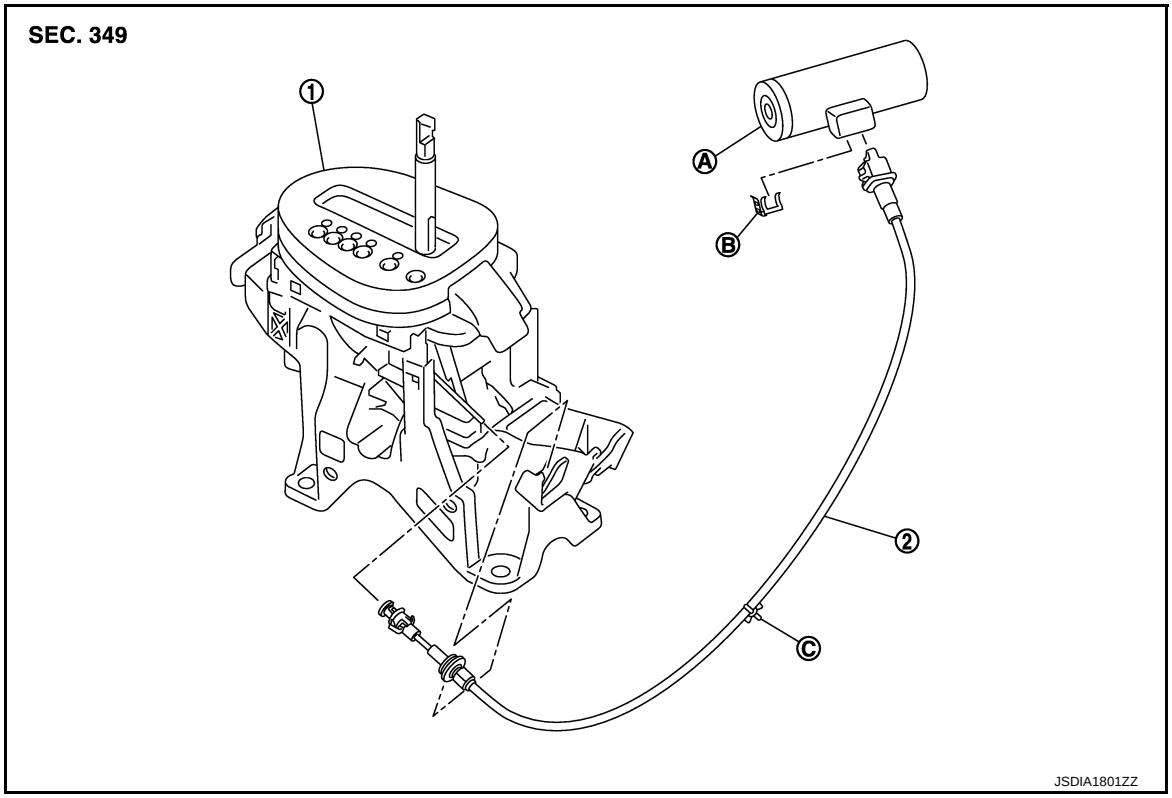
INSPECTION AFTER INSTALLATION

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-194, "Inspection and Adjustment".

KEY INTERLOCK CABLE

Exploded View

INFOID:0000000006601965



1. CVT shift selector assembly
2. Key interlock cable
A: Key cylinder
B: Clip
C: Clip

Removal and Installation

INFOID:0000000006601966

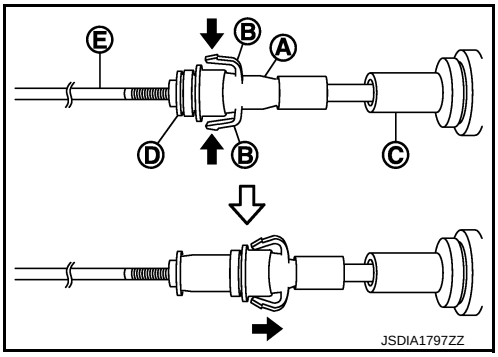
REMOVAL

CAUTION:

Always apply the parking brake before performing removal and installation.

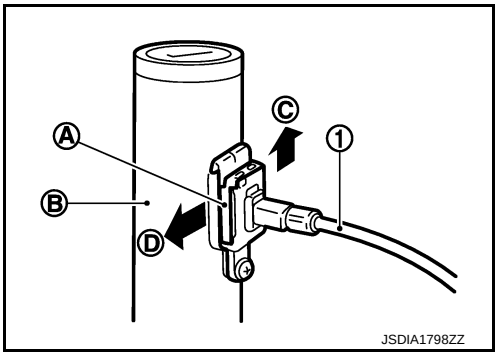
1. Shift the selector lever to the “P” position.
2. Remove the selector lever knob. Refer to TM-271, "Disassembly and Assembly".
3. Remove the center console. Refer to IP-23, "Removal and Installation".
4. Press the pawls (B) of the key interlock cable slider (A) while sliding it in the direction of the casing cap (C), and separate the adjusting holder (D) and slider.

   E :Key interlock rod



5. Remove the key interlock cable from the CVT shift selector.
6. Remove the steering column lower cover and driver instrument lower panel. Refer to IP-13, "Removal and Installation".

7. Lift 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

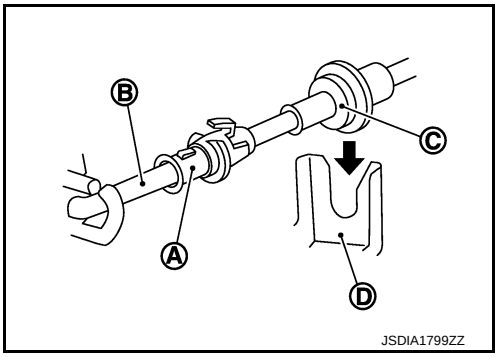
8. Disconnect the key interlock cable from the key cylinder.
9. Disengage the clip and disconnect the key interlock cable from the vehicle.

INSTALLATION

- Install the adjusting holder (A) onto the key interlock rod (B), then install the casing cap (C) onto the CVT shift selector cable bracket (D).

CAUTION:

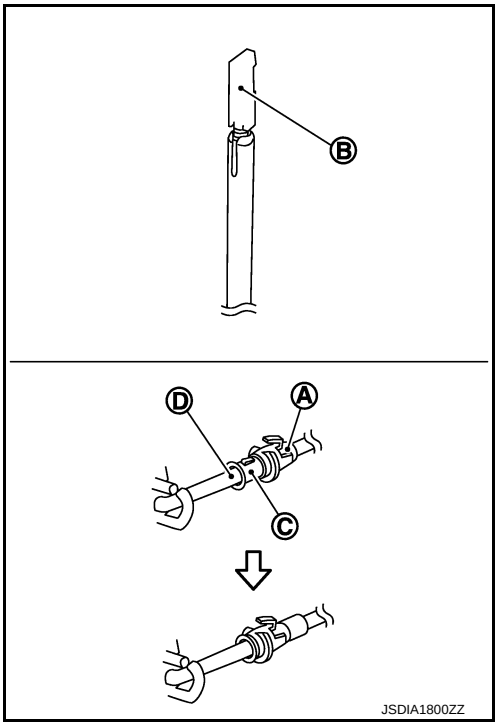
- **When installing the key interlock cable, never bend or twist the cable forcefully.**
- **After connecting the key interlock cable to the CVT shift selector cable bracket, be sure to check that the casing cap is completely fastened to the cable bracket. If the casing cap is easily displaced, replace the key interlock cable.**



- 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:

- **Never squeeze the pawls on the key interlock cable slider when holding the slider.**
- **Never apply force in a perpendicular direction to the key interlock rod when sliding the slider.**



Inspection

INFOID:0000000006601967

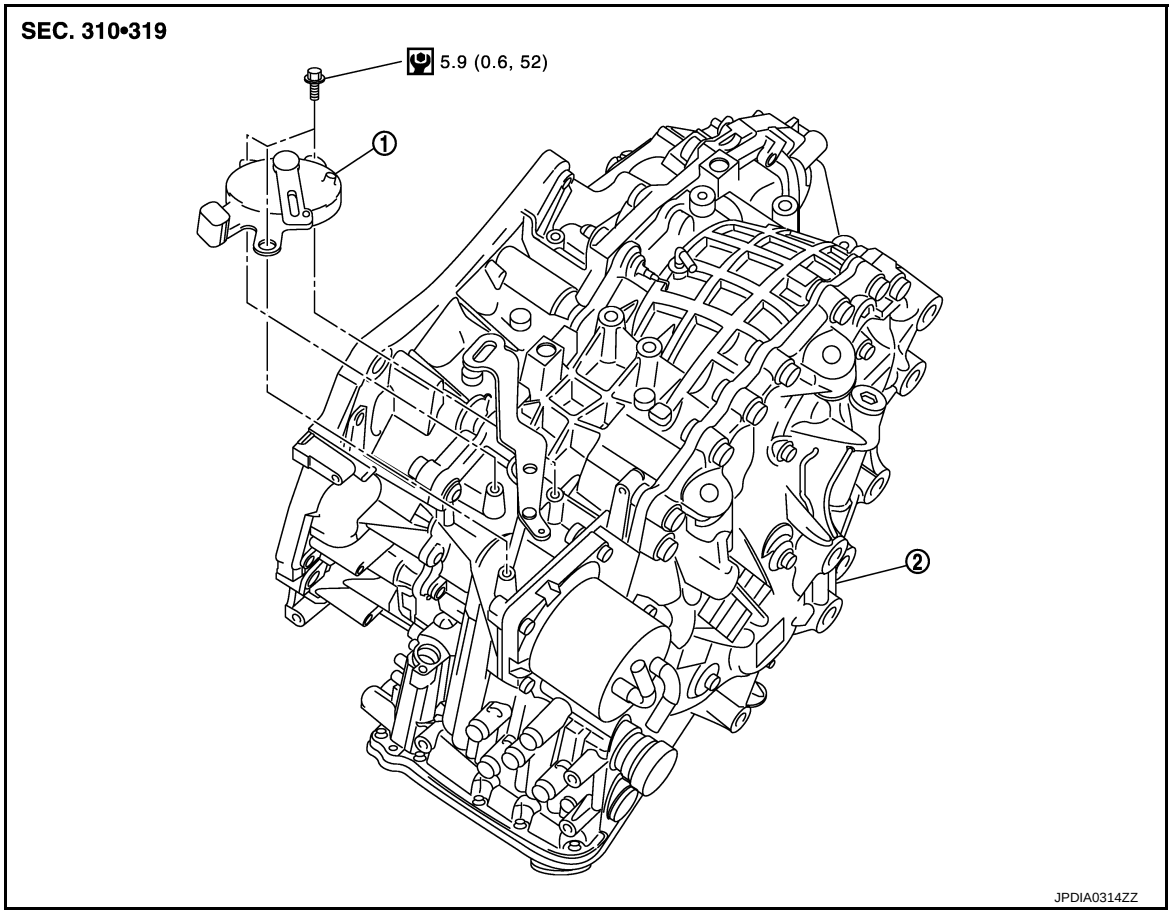
INSPECTION AFTER INSTALLATION

- Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-194, "Inspection and Adjustment".
- The key can be removed only when the selector lever is in the “P” position.
- It must not be possible to turn the ignition switch to LOCK when the selector lever is not in the “P” position.

TRANSMISSION RANGE SWITCH

Exploded View

INFOID:0000000006601717



1. Transmission range switch
2. Transaxle assembly

Removal and Installation

INFOID:0000000006601718

REMOVAL

1. Remove battery. Refer to PG-124, "Removal and Installation".
2. Remove transmission range switch connector.
3. Remove control cable. Refer to TM-273, "Removal and Installation".
4. Remove transmission range switch from transaxle assembly.

INSTALLATION

Install in the reverse order of removal.

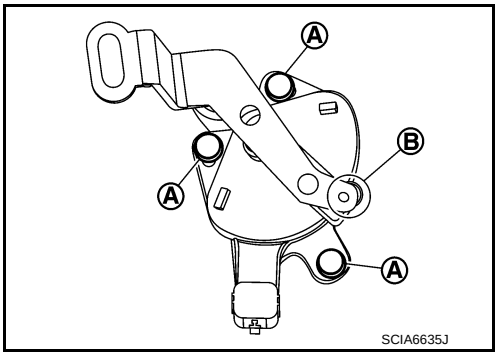
Inspection and Adjustment

INFOID:0000000006601719

ADJUSTMENT OF TRANSMISSION RANGE SWITCH

1. Move selector lever to “N” position.
2. Remove control cable from manual lever.

3. Loosen mounting bolts (A) of transmission range switch. Insert a pin (ϕ4 mm) into the adjusting holes (B) on both transmission range switch and manual lever for adjusting the position.
4. Tighten mounting bolts of transmission range switch.
5. Connect control cable on manual lever. Refer to TM-194, "Inspection and Adjustment".



ADJUSTMENT AFTER INSTALLATION

Adjust the CVT positions after installing the CVT shift selector. Refer to TM-194, "Inspection and Adjustment".

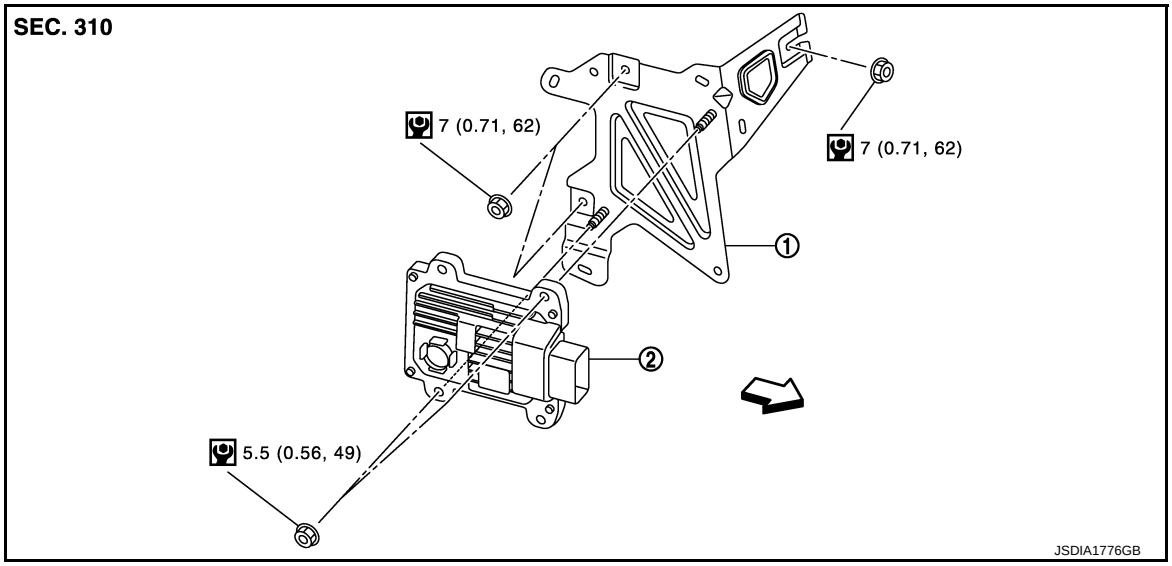
INSPECTION AFTER INSTALLAION

Check the CVT positions after adjusting the CVT positions. Refer to TM-194, "Inspection and Adjustment".

TCM

Exploded View

INFOID:0000000006601941



1. Bracket
2. TCM

⇦ :Vehicle front

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000006601942

NOTE:
When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM. Refer to TM-374, "Description".

REMOVAL

1. Remove the battery. Refer to PG-124, "Removal and Installation".
2. Remove air duct (inlet) and air cleaner case. Refer to EM-26, "Removal and Installation".
3. Disconnect the TCM connector.
4. Remove the TCM.
5. Remove the bracket.

INSTALLATION

Installation is the reverse order of removal.

Adjustment

INFOID:0000000006601943

ADJUSTMENT AFTER INSTALLATION

Perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to TM-374, "Description".

AIR BREATHER HOSE

Removal and Installation

INFOID:0000000006601734

REMOVAL

1. Remove air cleaner case. Refer to EM-26, "Removal and Installation".
2. Remove clip from bracket.
3. Remove air breather hose from transaxle assembly.

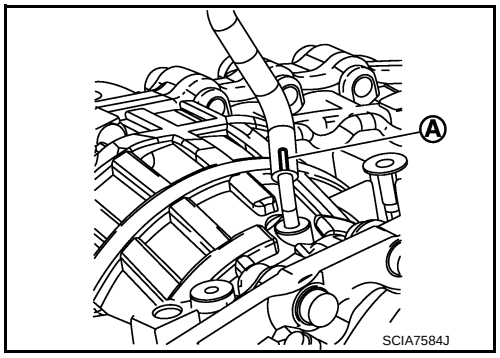
INSTALLATION

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

CAUTION:

Check air breather hose not collapsed or blocked due to folding or bending when installed.

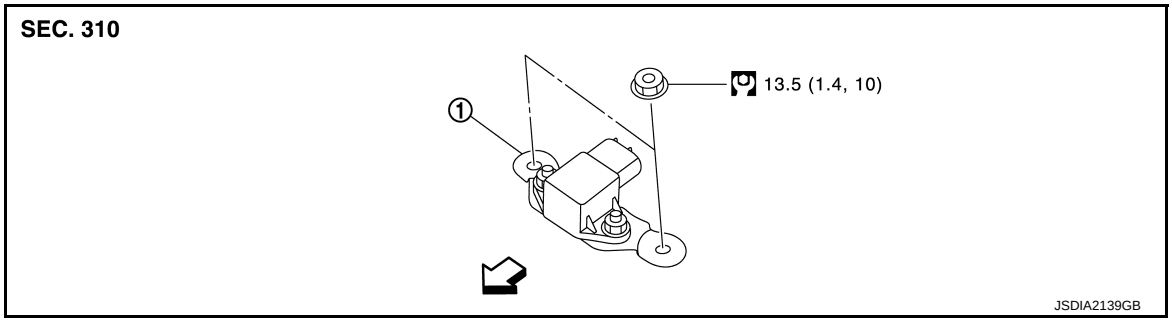
- Install air breather hose to air breather tube so that the paint mark (A) faces upward. Also insert hose to the bend of air breather tube.



G SENSOR

Exploded View

INFOID:0000000006601944



1. G sensor

⇦ : Vehicle front

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000006601945

CAUTION:
- **Never drop or strike G sensor, because it has little tolerance for impact.**
- **Never use a power tool to avoid impact.**

REMOVAL

1. Disconnect the battery cable from the negative terminal. Refer to PG-124, "Removal and Installation".
2. Remove driver seat (LHD) or passenger seat (RHD). Refer to SE-19, "Removal and Installation".
3. Remove center pillar lower garnish (left side) and dash side finisher (left side). Refer to INT-20, "CENTER PILLAR LOWER GARNISH : Removal and Installation" (center pillar lower garnish) and INT-20, "DASH SIDE FINISHER : Removal and Installation" (dash side finisher).
4. Pull up floor carpet. Refer to INT-23, "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:0000000006601946

ADJUSTMENT AFTER INSTALLATION

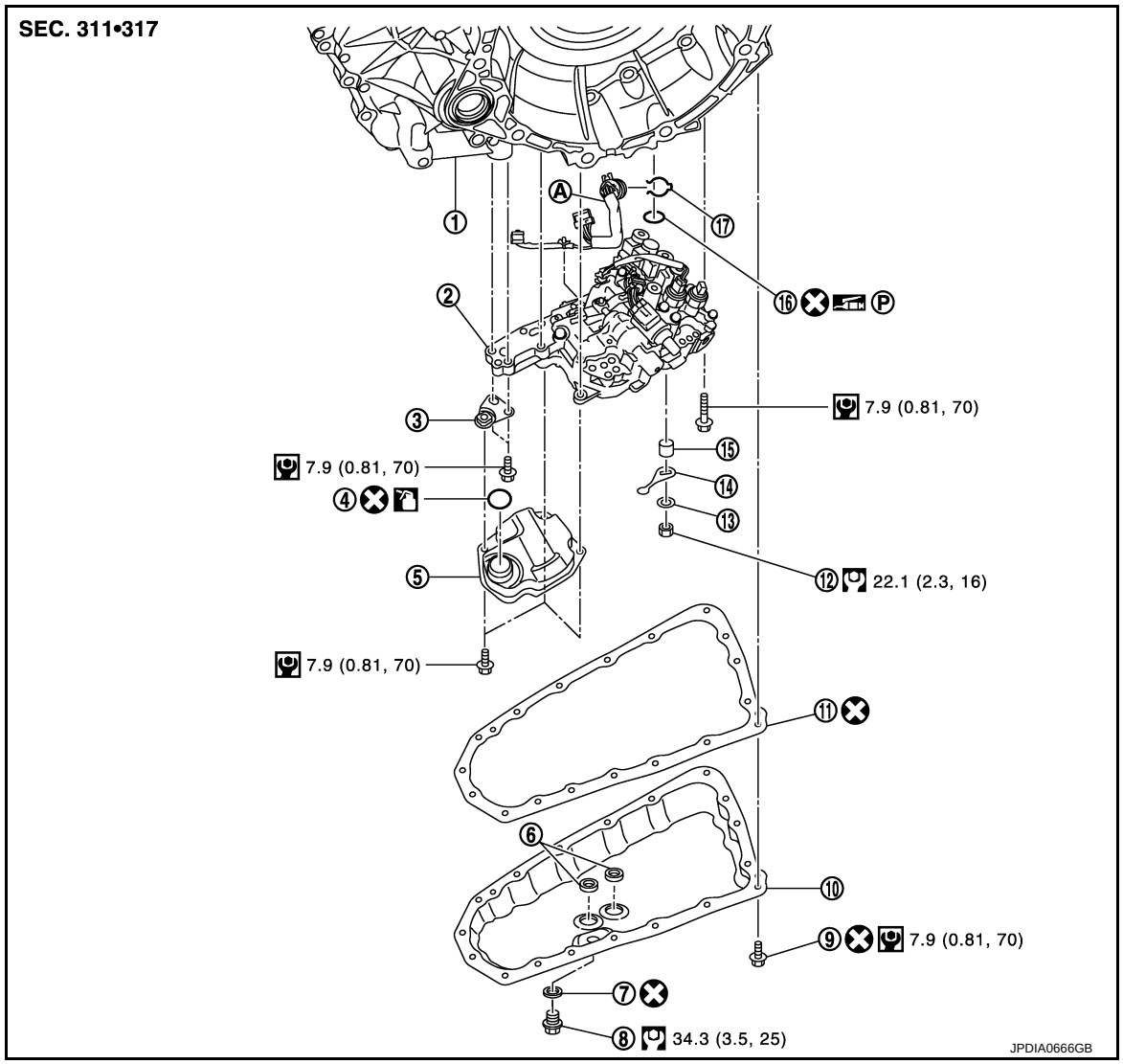
Perform “G SENSOR CALIBRATION”. Refer to TM-377, "Description".

CONTROL VALVE

Exploded View

INFOID:0000000006707486

COMPONENT PARTS LOCATION



1. Transaxle assembly
2. Control valve
3. Bracket
4. O-ring
5. Oil strainer assembly
6. Magnet
7. Drain plug gasket
8. Drain plug
9. Oil pan mounting bolt
10. Oil pan
11. Oil pan gasket
12. Lock nut
13. Washer
14. Manual plate
15. Collar
16. Lip seal
17. Snap ring

A. CVT unit connector

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

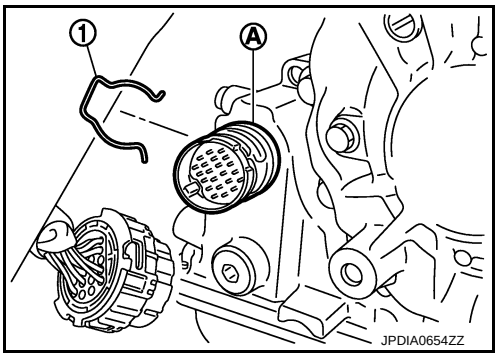
: NISSAN CVT Fluid NS-2

Removal and Installation

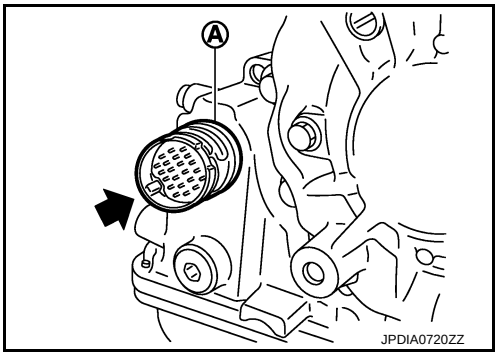
INFOID:0000000006707487

REMOVAL

1. Disconnect battery cable from negative terminal. Refer to PG-124, "Removal and Installation".
2. Remove drain plug from oil pan and then drain the CVT fluid.
3. Remove drain plug gasket.
4. Disconnect the CVT unit connector. Refer to TM-125, "Removal and Installation Procedure for CVT Unit Connector".
5. Remove the snap ring (1) from the CVT unit connector (A).

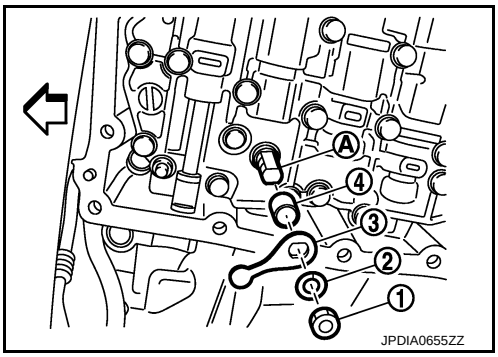


6. Press the CVT unit connector (A) into the transaxle case.
   CAUTION:
   Never damage the CVT unit connector.
   NOTE:
   Clean around the connector to prevent foreign materials from entering into the transaxle case.



7. Remove the oil pan mounting bolts, and then remove the oil pan and oil pan gasket.
8. Remove the magnets from the oil pan.
9. Remove the lock nut (1) and washer (2), and then remove the manual plate (3).

   ⇦ : Vehicle front

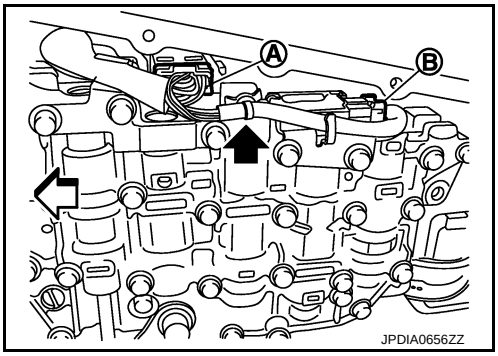


10. Remove the collar (4) from the manual shaft (A).
    CAUTION:
    Never drop the collar.

11. Disconnect the connectors (A) and (B).

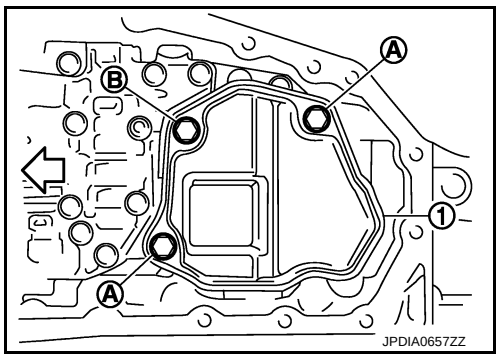
    ⬅ : Clip

    ⇦ : Vehicle front



12. Remove the oil strainer assembly mounting bolts (A) and (B), and then remove the oil strainer assembly (1).

⇦ : Vehicle front

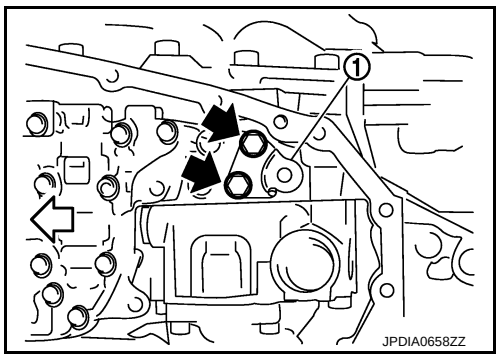


13. Remove O-ring from oil strainer assembly.

14. Remove the bracket (1).

⬅ : Bolt

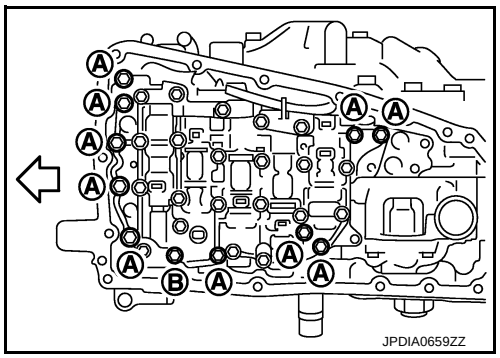
⇦ : Vehicle front



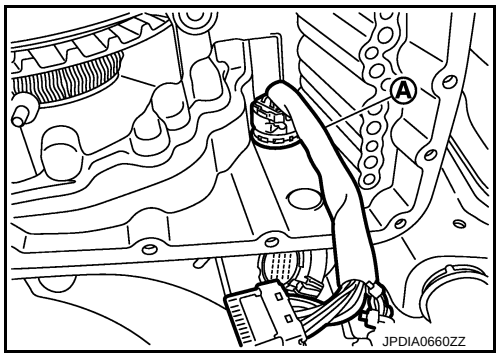
15. Remove the control valve mounting bolts (A) and (B), and then remove the control valve from the transaxle case.

⇦ : Vehicle front

CAUTION:
Never drop the control valve, ratio control valve and manual shaft.

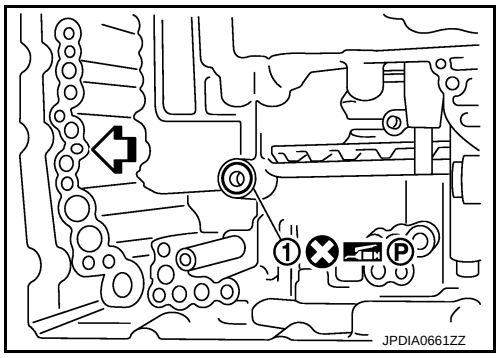


16. Remove CVT unit connector (A) from the transaxle case inside.



17. Remove the lip seal (1) from the transaxle case.

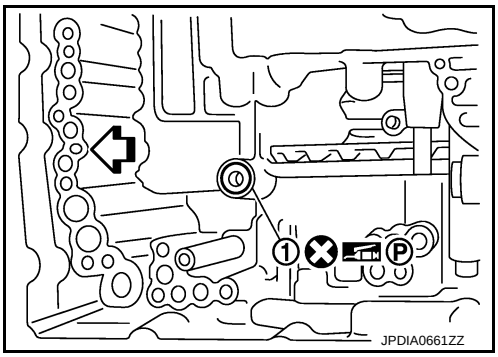
⇦ : Vehicle front



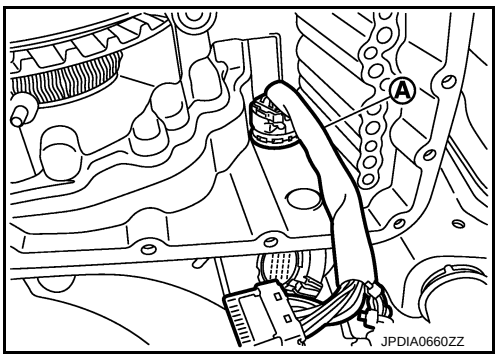
INSTALLATION

1. Install the lip seal (1) to the transaxle case.

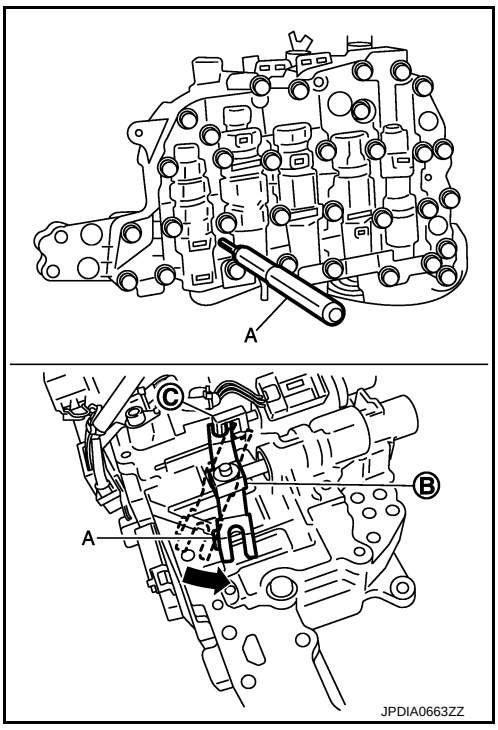
⇦ : Vehicle front



2. Install the CVT unit connector (A) to the transaxle case.
CAUTION:
Connect the CVT unit connector with the stopper facing up, and then press in until it clicks.



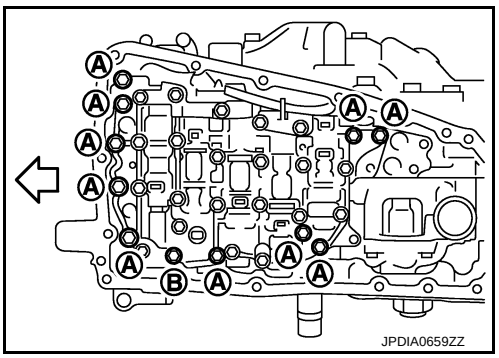
3. Press in the ratio control valve (B) in the (⬅) direction, and then fix the linkage in the position shown in the figure with the linkage fixing pin (A) from the back of control valve through the hole for fixing.
4. Check that one end of linkage engages with the step motor end (C) and that the linkage is in the direction shown in the figure.
5. Install the control valve to the transaxle case.
CAUTION:
- **Never drop the linkage fixing pin. If it is dropped, repeat the installation procedure from step 3.**
- **Never pinch the harness into between the control valve and the transaxle case.**



6. Fix the control valve using the control valve mounting bolts (A) and (B).

⇦ : Vehicle front

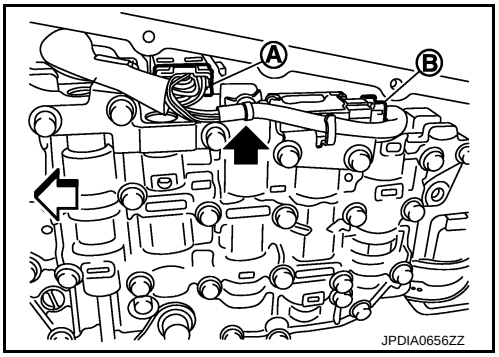
Bolt	Bolt length (mm)	Number of bolts
A	54	10
B	44	1



7. Pull the linkage fixing pin out.
8. Connect the connectors (A) and (B).

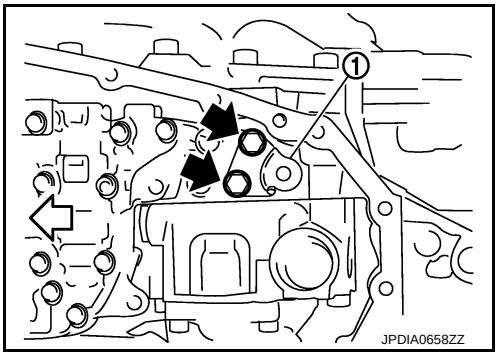
⬅ : Clip
⇦ : Vehicle front

CAUTION:
- **Never pinch the harness into between the control valve and the transaxle case.**
- **Securely insert the connector until it clicks and locks.**



9. Install the bracket (1).

⬅ : Bolt
⇦ : Vehicle front



10. Install O-ring to oil strainer assembly.

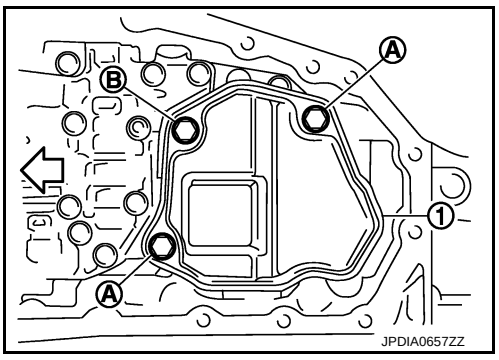
CAUTION:
- **Never reuse O-ring.**
- **Apply CVT fluid NS-2 to O-ring.**

11. Install the oil strainer assembly (1) using the oil strainer assembly mounting bolts (A) and (B).

⇦ : Vehicle front

Bolt	Bolt length (mm)	Number of bolts
A	12	2
B	44	1

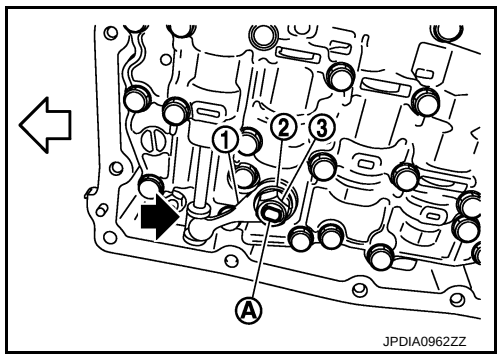
NOTE:
Remove the bracket and adjust the position again if the bolt hole positions are not aligned.



12. Install the collar to the manual shaft.

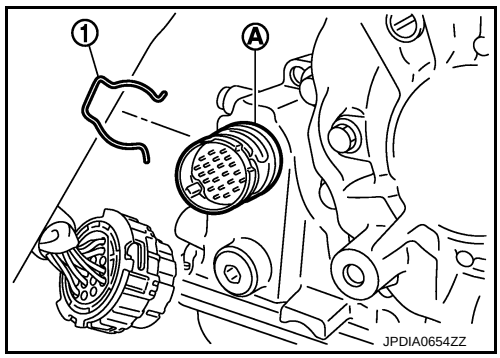
CAUTION:
Never drop the collar.

13. Install the manual plate (1) while aligning with the groove (A) of the manual valve.
CAUTION:
Assemble the manual plate while aligning its end with the cutout (⇦) of the manual valve.

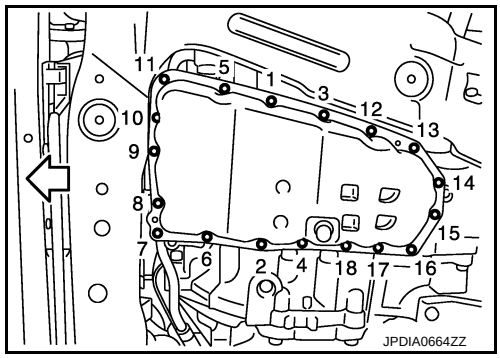


⇦ : Vehicle front

14. Install the washer (2) and the lock-nut (3), and then tighten to the specified torque.
15. Install the snap ring (1) to the CVT unit connector (A).
16. Connect the CVT unit connector. Refer to TM-125, "Removal and Installation Procedure for CVT Unit Connector".
17. Install the magnet while aligning it with the convex side of oil pan.
CAUTION:
Completely eliminate the iron powder from the magnet mounting area of oil pan and the magnet.



18. Install the oil pan to the transaxle case with the following procedure.
    1. Install the oil pan gasket to the oil pan.
    CAUTION:
    - **Completely wipe out any moisture, oil, and old gasket from the oil pan gasket mounting surface and bolt mounting hole of oil pan and transaxle case.**
    - **Never reuse oil pan gasket.**
    2. Install the oil pan assembly to the transaxle case, and then temporarily tighten the oil pan mounting bolt.
    CAUTION:
    Never reuse oil pan mounting bolts.
    3. Tighten the oil pan mounting bolts in the order shown in the figure to the specified torque.
    4. Tighten the oil pan mounting bolts again clockwise from (1) shown in the figure to the specified torque.



19. Install drain plug gasket to drain plug.
CAUTION:
Never reuse drain plug gasket.
20. Install drain plug to oil pan.
21. Fill CVT fluid from CVT fluid charging pipe to the specified level.

CVT fluid	**: Refer to TM-308, "General Specification".**
Fluid capacity	**: Refer to TM-308, "General Specification".**

CAUTION:
- **Use only Genuine NISSAN CVT Fluid NS-2. Never mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**
- **When filling CVT fluid, take care not to scatter heat generating parts such as exhaust.**
- **Sufficiently shake the container of CVT fluid before using.**
- **Delete CVT fluid deterioration date with CONSULT-III after changing CVT fluid. Refer to TM-159, "CONSULT-III Function (TRANSMISSION)".**

22. With the engine warmed up, drive the vehicle in an urban area.
NOTE:
When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to80°C (122 to 176°F).
23. Check CVT fluid level and condition. Refer to TM-184, "Inspection".

24. Connect battery cable to negative terminal. Refer to PG-124, "Removal and Installation".

Inspection and Adjustment

INFOID:0000000006707488

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 REMOVAL

Check the CVT fluid level and leakage. Refer to TM-184, "Inspection".

INSPECTION AFTER INSTALLATION

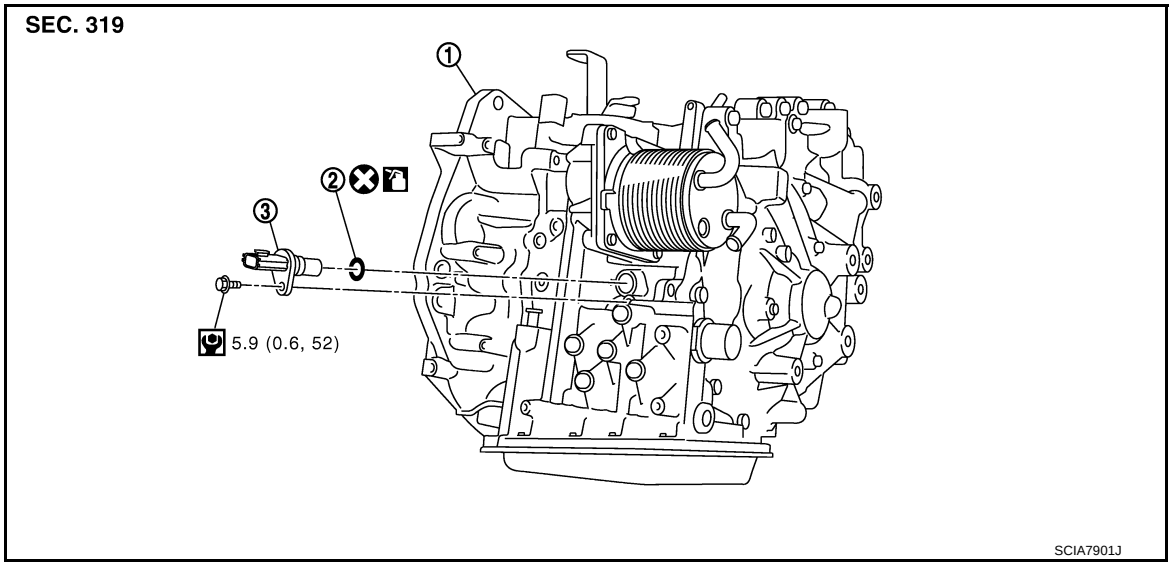
Erase the TCM data.

- Erase the CVT fluid degradation data. Refer to TM-159, "CONSULT-III Function (TRANSMISSION)".
- When replacing the control valve, erase EEP ROM in TCM. Refer to TM-180, "Description".

PRIMARY SPEED SENSOR

Exploded View

INFOID:0000000006601720



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-2

Removal and Installation

INFOID:0000000006601721

REMOVAL

1. Remove the battery. Refer to PG-124, "Removal and Installation".
2. Remove ECM bracket. Refer to EC-447, "Removal and Installation".
3. Remove primary speed sensor connector.
4. Remove primary speed sensor.
5. Remove O-ring from primary speed sensor.

INSTALLATION

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

CAUTION:

- **Never reuse O-ring.**
- **Apply CVT fluid to O-ring.**

Inspection and Adjustment

INFOID:0000000006601955

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-480, "Inspection".

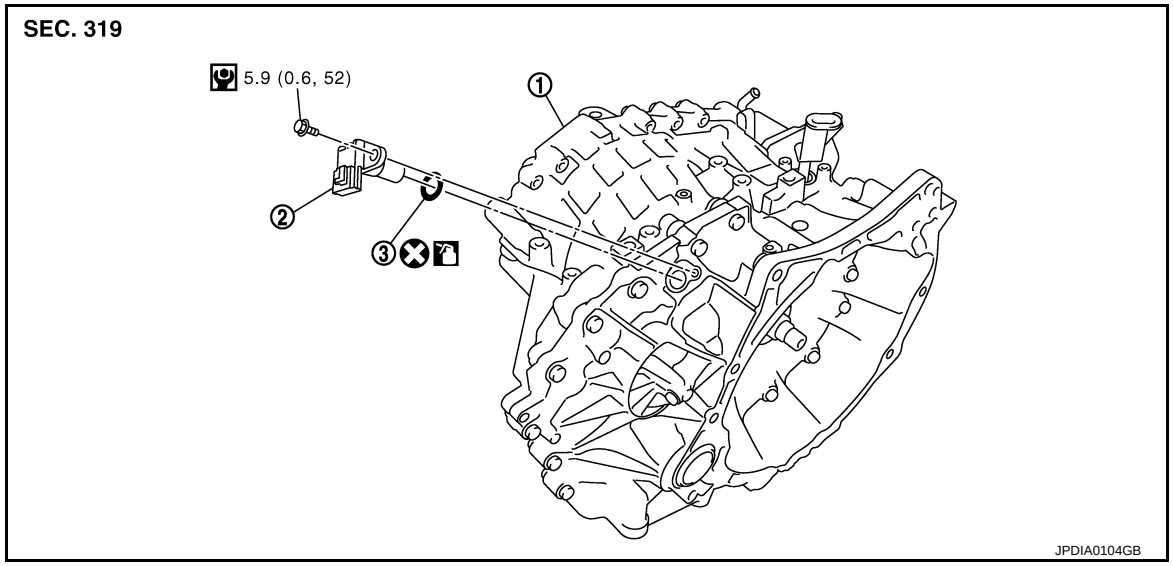
ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level. Refer to TM-379, "Adjustment".

SECONDARY SPEED SENSOR

Exploded View

INFOID:0000000006601722



1. Transaxle assembly
2. Secondary speed sensor
3. O-ring

: Always replace after every disassembly.

: N·m (kg-m, in-lb)

: Genuine NISSAN CVT Fluid NS-2

Removal and Installation

INFOID:0000000006601723

REMOVAL

1. Remove air cleaner case. Refer to EM-26, "Removal and Installation".
2. Remove secondary speed sensor connector.
3. Remove secondary speed sensor.
4. Remove O-ring from secondary speed sensor.

INSTALLATION

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

CAUTION:

- **Never reuse O-ring.**
- **Apply CVT fluid to O-ring.**

Inspection and Adjustment

INFOID:0000000006601957

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-480, "Inspection".

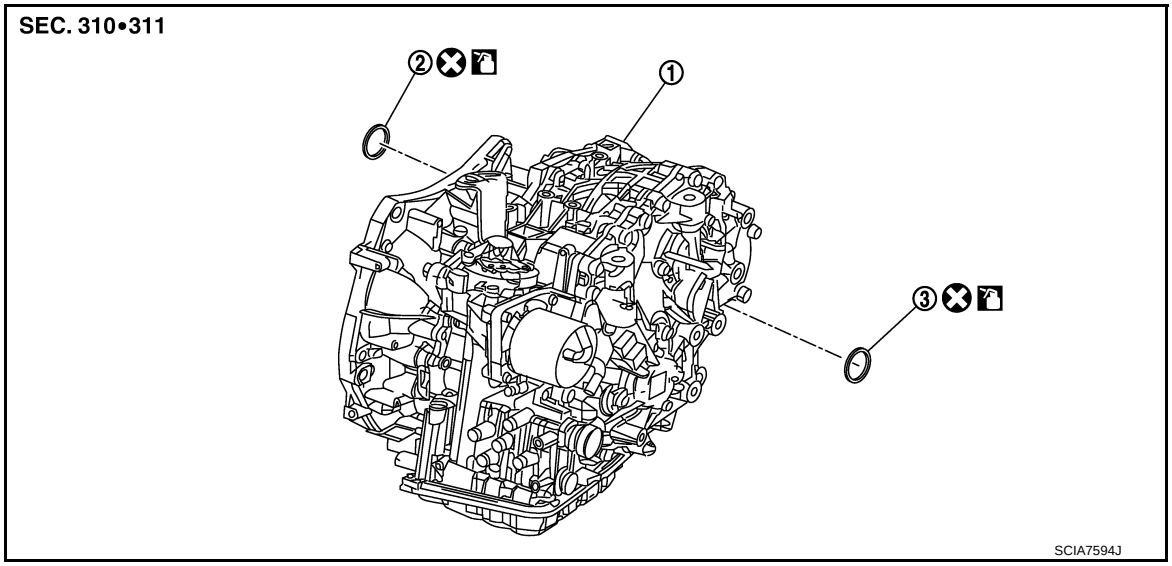
ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level. Refer to TM-379, "Adjustment".

DIFFERENTIAL SIDE OIL SEAL

Exploded View

INFOID:0000000006628058



1. Transaxle assembly
2. Differential side oil seal (left side)
3. Differential side oil seal (right side)

: Always replace after every disassembly.

: Genuine NISSAN CVT Fluid NS-2

Removal and Installation

INFOID:0000000006628059

REMOVAL

NOTE:

Cap or plug openings to prevent fluid from spilling.

1. Remove the left front drive shaft. Refer to FAX-22, "LEFT SIDE : Removal and Installation".
2. Remove the transfer assembly. Refer to DLN-93, "Removal and Installation".
3. 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

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

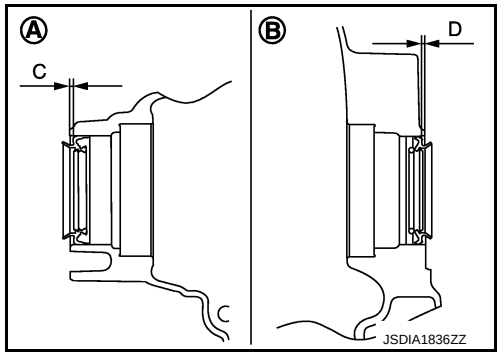
CAUTION:

- **Never reuse differential side oil seal.**
- **Apply Genuine NISSAN CVT Fluid NS-2 to the differential side oil seal lip and around the oil seal.**
- **When inserting the drive shaft, be sure to use a protector (SST: KV38107900). Refer to FAX-22, "LEFT SIDE : Removal and Installation".**

Use a drift (commercial service tool) and drive the differential side oil seal in until the amount of oil seal projection from the case edge matches dimensions (C) and (D).

CAUTION:

Be careful not to scratch the lip of the differential side oil seal when press-fitting it.



A : Differential side oil seal (left side)

B : Differential side oil seal (right side)

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 1.0 ± 0.5 mm (0.039 ± 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	Commercial service tool with outer dia. 60 mm (2.36 in) and inner dia. 55 mm (2.17 in)

Inspection

INFOID:0000000006601729

After completing installation, check for CVT fluid leakage and CVT fluid level. Refer to TM-184, "Inspection".

OIL PUMP FITTING BOLT

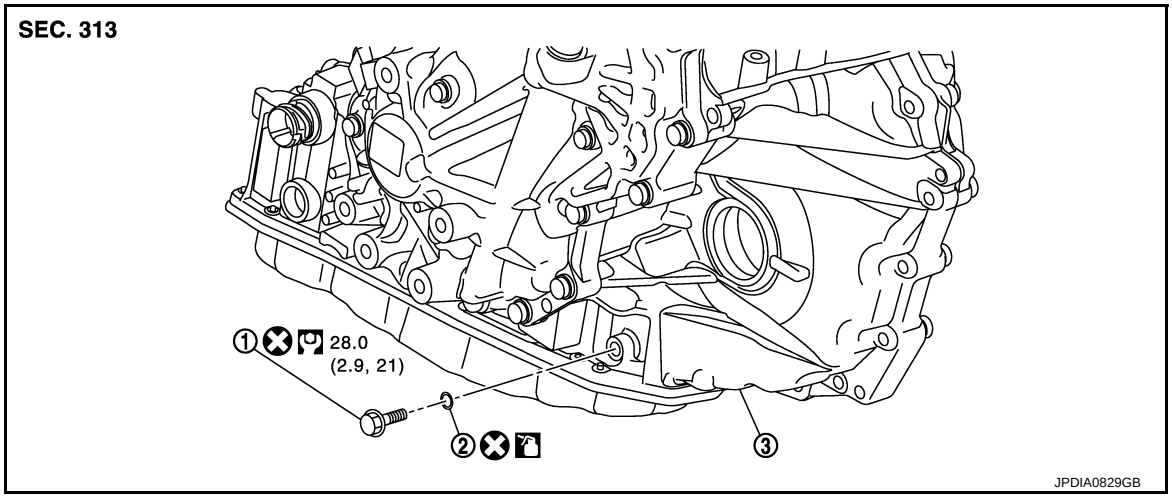
Description

INFOID:0000000006601730

Replace the oil pump fitting bolt and the O-ring if oil leakage or exudes from the oil pump fitting bolt.

Exploded View

INFOID:0000000006601731



1. Oil pump fitting bolt
2. O-ring
3. Transaxle assembly

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)

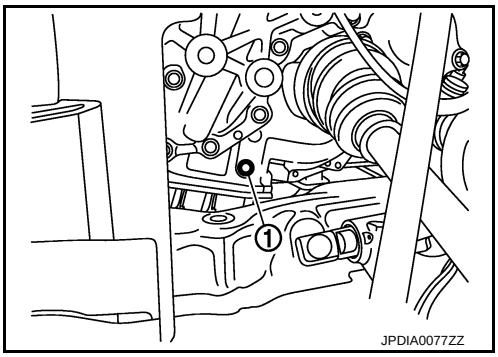
: Genuine NISSAN CVT Fluid NS-2

Removal and Installation

INFOID:0000000006601732

REMOVAL

1. Remove Oil pump fitting bolt (1) from transaxle assembly.
2. Remove O-ring from oil pump fitting bolt.



INSTALLATION

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

- After completing installation, check for CVT fluid leakage and CVT fluid level. Refer to TM-184, "Inspection".

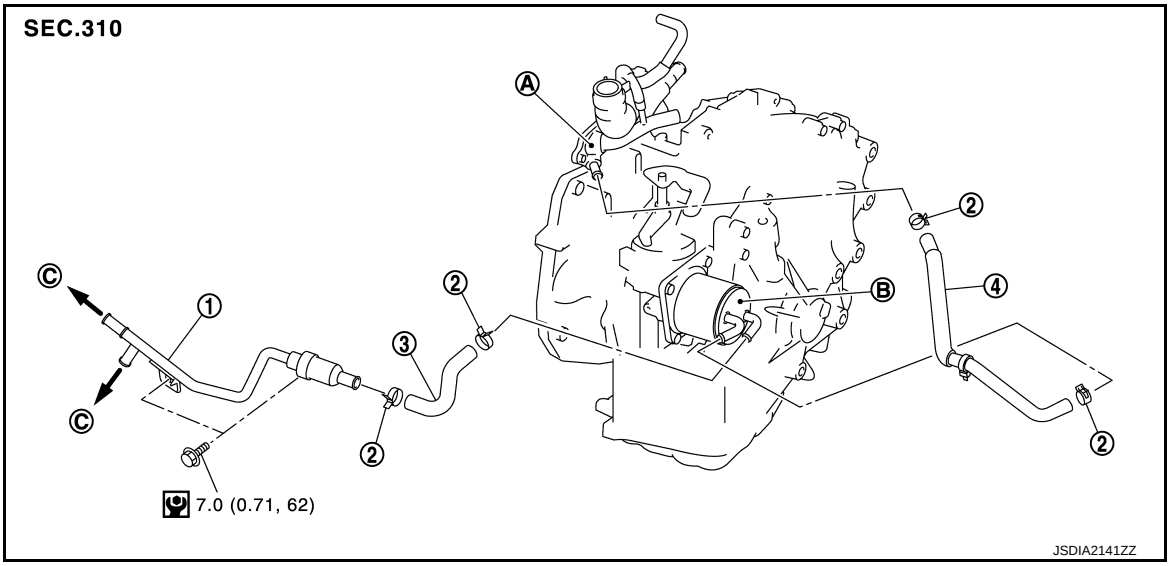
CAUTION:

- **Never reuse O-ring.**
- **Apply CVT fluid to O-ring.**

WATER HOSE

Exploded View

INFOID:0000000006608932



1. Hose clamp
2. Water hose
A. Water outlet
B. Oil warmer

Removal and Installation

INFOID:0000000006609008

REMOVAL

WARNING:

Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator.

CAUTION:

Perform these steps after the coolant temperature has cooled sufficiently.

1. Remove the hose clamp and remove the water hose.

INSTALLATION

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

CAUTION:

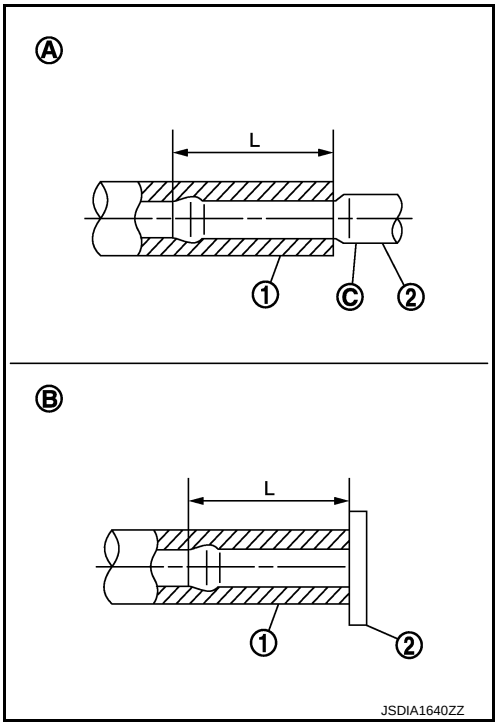
Never reuse copper washer.

- Refer to the following when installing water hoses.

Hose name	Hose end	Direction of paint mark	Direction of hose clamp tab
Water hose	Water outlet	Upward	Backward
	Oil wamer	Leftward	Upward

- Insert water hose according to dimension “L” described below.

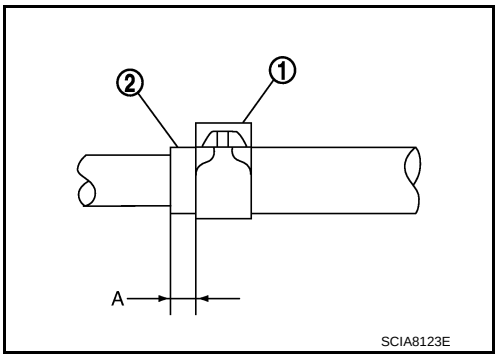
water hose (1)	Insertion side tube (2)	Tube type	Dimension “L”
water hose	Water outlet	A	27 mm (1.06 in) [End reaches the 2-stage bulge (C).]
	Oil wamer	B	27 mm (1.06 in) (End reaches the tube bend R position)



- Set hose clamps (1) at the both ends of water hoses (2) with dimension “A” from the hose edge.

Dimension “A” : 5 – 7 mm (0.20 – 0.28 in)

- Hose clamp should not interfere with the bulge of fluid cooler tube.



Inspection

INFOID:0000000006608934

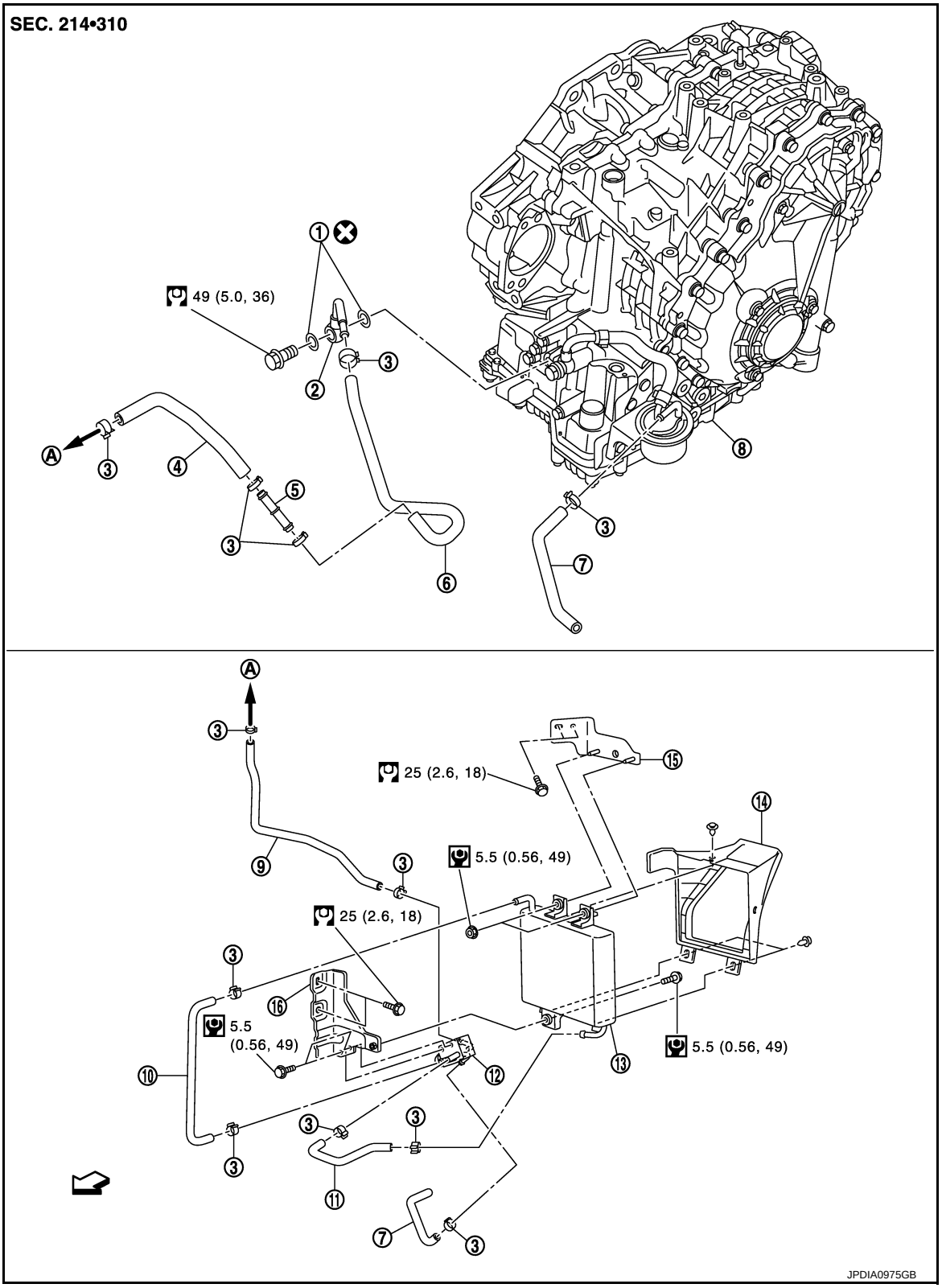
INSPECTION AFTER INSTALLATION

Start the engine, and check the joints for coolant leakage. Refer to CO-11, "Inspection".

FLUID COOLER SYSTEM

Exploded View

INFOID:0000000006601950



1. Copper washer
2. CVT fluid cooler tube
3. Hose clamp
4. Fluid cooler hose A
5. Fluid cooler tube
6. Fluid cooler hose B
7. Fluid cooler hose C
8. Transaxle assembly
9. Fluid cooler hose D

10. Fluid cooler hose E
11. Fluid cooler hose F
12. Bypass valve
13. Fluid cooler
14. Air guide
15. Bracket A
16. Bracket B
A. To radiator

⇦: Vehicle side

Removal and Installation

INFOID:0000000006601951

REMOVAL

1. Remove engine under cover.
2. Remove front bumper assembly. Refer to EXT-13, "Removal and Installation".
3. Remove air guide from fluid cooler.
4. Remove fluid cooler hose E and fluid cooler hose F.
5. Remove fluid cooler.
6. Remove air duct (inlet). Refer to EM-26, "Removal and Installation".
7. Remove fluid cooler hose C and fluid cooler hose D.
8. Remove bypass valve from bracket B.
9. Remove fluid cooler hose A and fluid cooler hose B.
10. Remove fluid cooler tube.
11. Remove bracket A and bracket B.
12. Remove CVT fluid cooler tube from transaxle assembly.

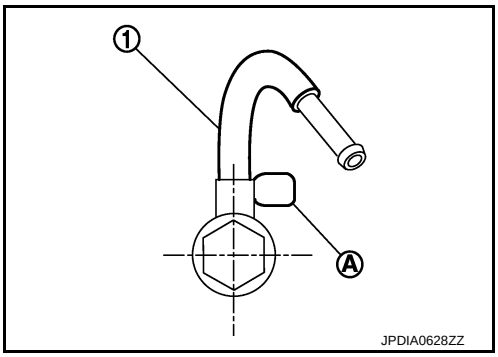
INSTALLATION

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

CAUTION:

Never reuse copper washer.

- When installing CVT fluid cooler tube (1) to transaxle assembly:
- Contact CVT fluid cooler tube a boss portion (A) of the transaxle case.
- Tighten the bolt of CVT fluid cooler tube without moving the CVT fluid cooler tube



- Refer to the followings when installing fluid cooler hose.

Fluid cooler hose	Hose end	Paint mark	Position of hose clamp*
A	Radiator assembly side	Facing upward	A
	Fluid cooler tube side	Facing upward	A
B	Fluid cooler tube side	Facing upward	A
	CVT fluid cooler tube side	Facing upward	A
C	Transaxle assembly side	Facing upward	B
	Bypass valve side	Facing to the left of the vehicle	B
D	Radiator assembly side	Facing to the left of the vehicle	C
	Bypass valve side	Facing backward	D
E	Fluid cooler side	Facing upward	A
	Bypass valve side	Facing downward	E

Fluid cooler hose	Hose end	Paint mark	Position of hose clamp*
F	Bypass valve side	Facing downward	E
	Fluid cooler side	Facing forward	B

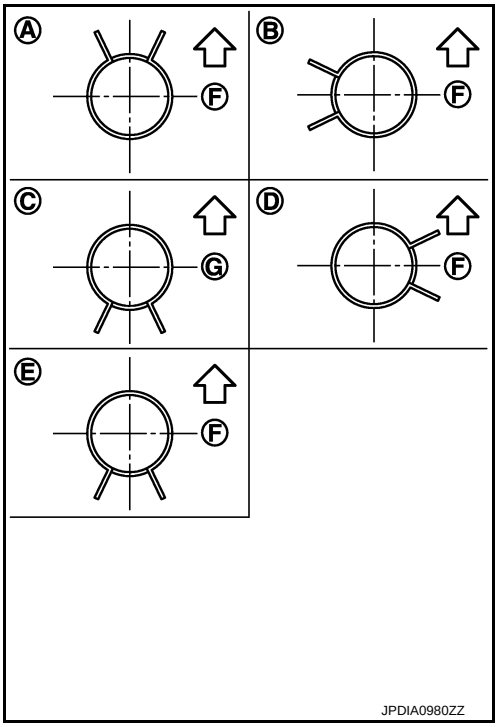
*: Refer to the illustrations for the specific position each hose clamp tab.

- The illustrations indicate the view from the hose ends.

⇦F : Vehicle upper

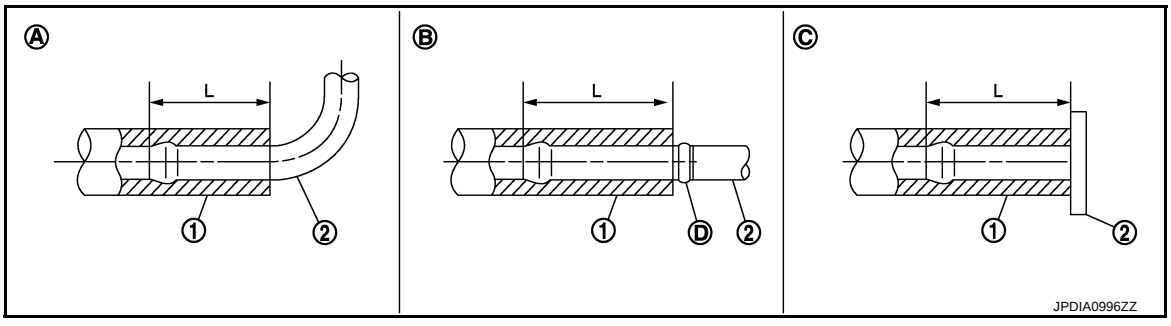
⇦G : Vehicle front

- When installing hose clamps center line of each hose clamp tab should be positioned as shown in the figure.

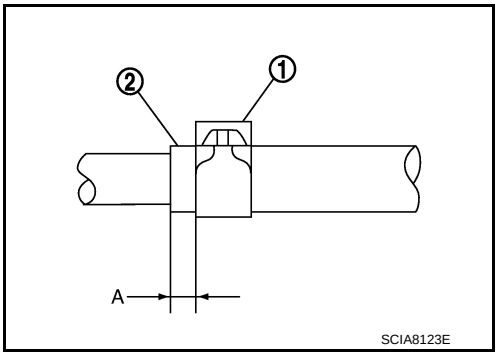


- Insert fluid cooler hose according to dimension (L) described below.

(1)	(2)	Tube type	Dimension L
Fluid cooler hose A	Radiator assembly side	C	Insert the hose until the hose touches the radiator.
	Fluid cooler tube side	B	28 mm (1.10 in) [End reaches the spool portion (D).]
Fluid cooler hose B	Fluid cooler tube side	B	
	CVT fluid cooler tube side	A	End reaches the radius curve end.
Fluid cooler hose C	Transaxle assembly side	A	
	Bypass valve side	A	
Fluid cooler hose D	Radiator assembly side	A	
	Bypass valve side	A	
Fluid cooler hose E	Fluid cooler side	A	
	Bypass valve side	C	28 mm (1.10 in) (Insert the hose until the hose touches the bypass valve.)
Fluid cooler hose F	Bypass valve side	C	
	Fluid cooler side	A	End reaches the radius curve end.



- Set hose clamps (1) at the both ends of fluid cooler hose (2) with dimension (A) from the hose edge.



(1)	(2)	Dimension A
Fluid cooler hose A	Radiator assembly side	5 – 9 mm (0.20 – 0.35 in)
	Fluid cooler tube side	5 mm (0.20 in)
Fluid cooler hose B	Fluid cooler tube side	
	CVT fluid cooler tube side	
Fluid cooler hose C	Transaxle assembly side	
	Bypass valve side	
Fluid cooler hose D	Radiator assembly side	5 – 9 mm (0.20 – 0.35 in)
	Bypass valve side	5 mm (0.20 in)
Fluid cooler hose E	Fluid cooler side	
	Bypass valve side	
Fluid cooler hose F	Bypass valve side	
	Fluid cooler side	

- Hose clamp should not interfere with the bulge of fluid cooler tube.

Inspection

INFOID:0000000006601952

INSPECTION AFTER INSTALLATION

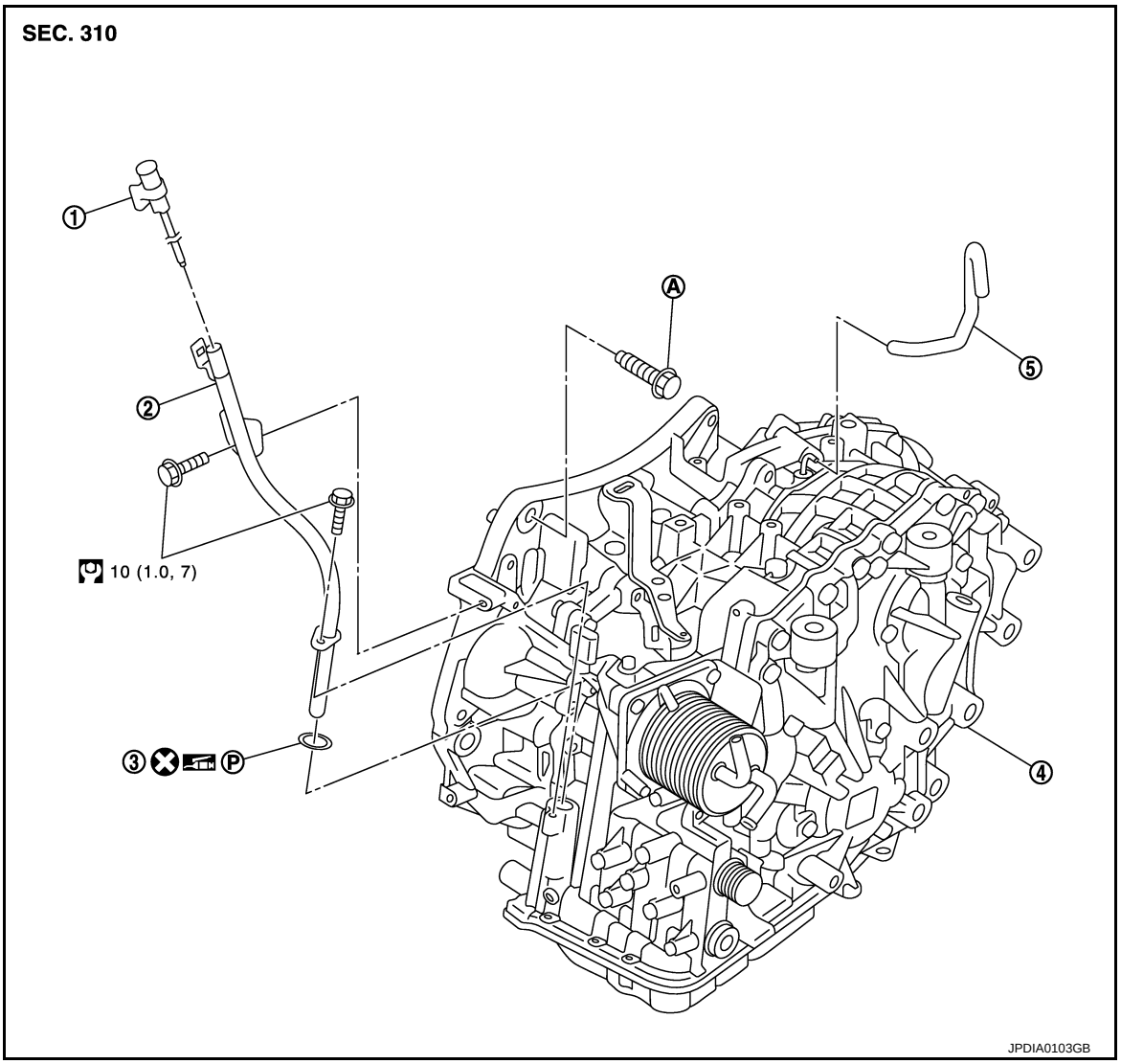
Check for CVT fluid leakage and CVT fluid level. Refer to TM-184, "Inspection".

UNIT REMOVAL AND INSTALLATION

TRANSAXLE ASSEMBLY

Exploded View

INFOID:0000000006601747



1. CVT fluid level gauge
2. CVT fluid charging pipe
3. O-ring
4. Transaxle assembly
5. Air breather hose

A. For tightening torque, refer to TM-301, "Removal and Installation".

Removal and Installation

INFOID:0000000006601748

REMOVAL

WARNING:

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

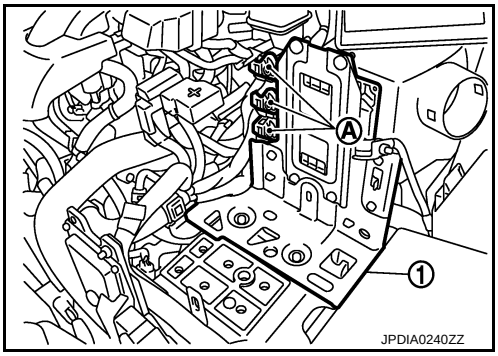
CAUTION:

- **Perform this step engine is cold.**
- **When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM. Refer to TM-180, "Description".**

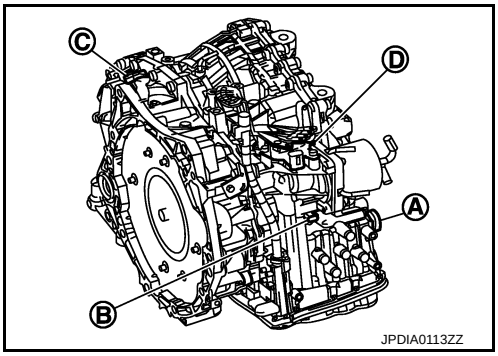
NOTE:

Cap or cover any transaxle openings to prevent transaxle fluid from spiling.

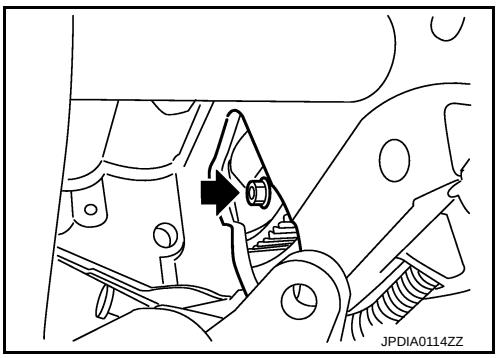
1. Disconnect the battery cable from the negative terminal.
2. Remove air breather hose. Refer to TM-281, "Removal and Installation".
3. Remove air duct (inlet). Refer to EM-26, "Removal and Installation".
4. Remove battery. Refer to PG-124, "Removal and Installation".
5. Disconnect connectors (A) and then remove bracket (1).
6. Remove air cleaner case. Refer to EM-26, "Removal and Installation".
7. Drain engine coolant. Refer to CO-11, "Draining".
8. Remove CVT fluid level gauge.
9. Remove CVT fluid charging pipe from transaxle assembly.
10. Remove O-ring from CVT fluid charging pipe.



11. Disconnect fluid cooler hose from transaxle assembly. Refer to TM-298, "Removal and Installation".
12. Disconnect following harness connector and wire harness.
    - CVT unit harness connector (A).
    - Primary speed sensor harness connector (B).
    - Secondary speed sensor harness connector (C).
    - Transmission range switch connector (D).
13. Remove harness and clip from the transaxle assembly.
14. Remove water hose. Refer to TM-295, "Removal and Installation".
15. Remove control cable from transaxle assembly. Refer to TM-273, "Removal and Installation".
16. Remove starter motor. Refer to STR-29, "MR16DDT : Removal and Installation".
17. Remove engine under cover with power tool.



18. Turn crankshaft, and remove the four tightening nuts (⬅) for drive plate and torque converter.
    CAUTION:
    When turning crankshaft, turn it clockwise as viewed from the front of the engine.
19. Remove exhaust front tube. Refer to EX-6, "Removal and Installation".
20. Separate the propeller shaft. Refer to DLN-121, "Removal and Installation".
21. Remove front drive shafts. Refer to FAX-21, "Exploded View".
22. Remove front suspension member from vehicle. Refer to FSU-18, "Removal and Installation".



23. Remove transfer assembly from transaxle assembly with power tool. Refer to DLN-93, "Removal and Installation".
24. Support transaxle assembly with a transmission jack.
    CAUTION:
    When setting the transmission jack, be careful not to collide against the drain plug.
25. Support engine assembly with a transmission jack.
    CAUTION:
    When setting the transmission jack, be careful not to collide against the drain plug.
26. Remove engine mounting insulator (LH). Refer to EM-59, "4WD : Removal and Installation".
27. Remove bolts fixing transaxle assembly to engine assembly.
28. Remove transaxle assembly from vehicle.
    CAUTION:
    - **Secure torque converter to prevent it from dropping.**

- **Secure transaxle assembly to a transmission jack.**

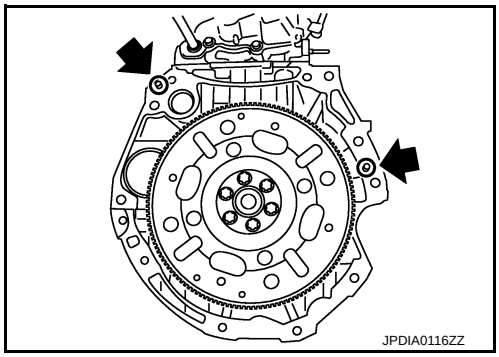
29. Remove heater thermostat. Refer to TM-295, "Removal and Installation".

INSTALLATION

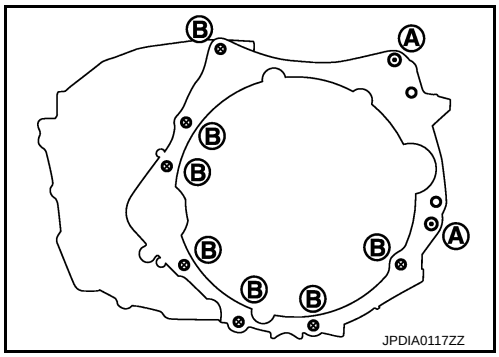
Note following, and install in the reverse order of removal.

CAUTION:

- **Check fitting of dowel pin (⬅) when installing transaxle assembly to engine assembly.**

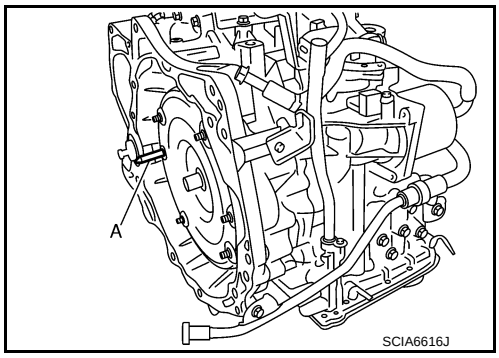


- **When installing transaxle assembly to the engine assembly, attach the fixing bolts in accordance with the following.**

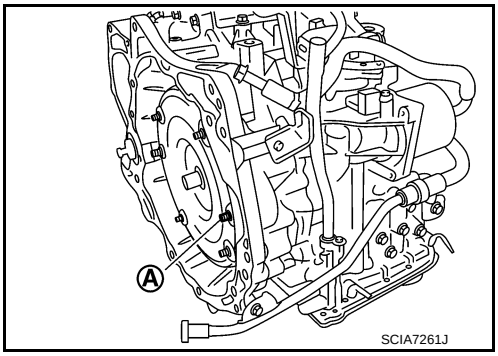


Insertion direction	Transaxle to engine	Engine to transaxle
Bolt No.	A	B
Number of bolts	2	7
Bolt length mm (in)	55 (2.17)	50 (1.97)
Tightening torque N·m (kg-m, ft-lb)	62 (6.3, 46)	

- Set and screw in the drive plate location guide (commercial service tool: 31197CA000) (A) onto the stud bolts for the torque converter locate.



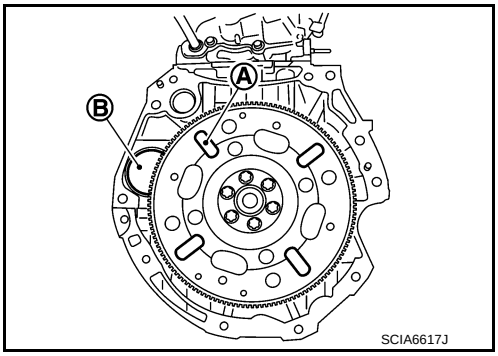
- When not using drive plate location guide, rotate torque converter so that the stud bolt (A) for mounting the drive plate location guide of torque converter aligns with the mounting position of starter motor.



- Rotate crankshaft so that the hole (A) for inserting drive plate location guide of drive plate aligns with the mounting position (B) of starter motor.

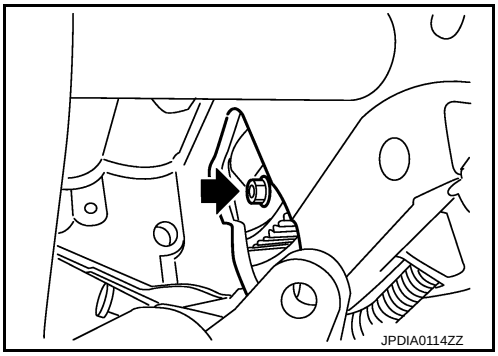
NOTE:
When not using drive plate location guide, insert stud bolt of torque converter into the hole of drive plate, aligning the drive plate hole position and torque converter.

CAUTION:
Note that the stud bolt strikes the drive plate hole position is not aligned the torque converter stud bolt.



- Align the position of tightening nuts (⬅) for drive plate with those of the torque converter, and temporarily tighten the nuts. Then, tighten the bolts with the specified torque.

:51 N·m (5.2 kg-m,38 ft-lb)



CAUTION:
- **When turning crankshaft, turn it clockwise as viewed from the front of the engine.**
- **When tightening the tightening nuts for the torque converter after fixing the crankshaft pulley bolts, confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to .**
- **After converter is installed to drive plate, rotate crankshaft several turns and check that transaxle rotates freely without binding.**

Inspection and Adjustment

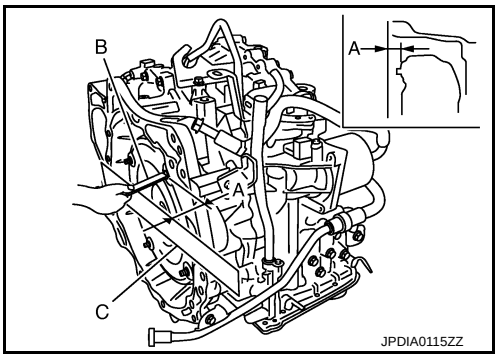
INFOID:0000000006601749

INSPECTION BEFORE INSTALLATION

After inserting a torque converter to the CVT, check dimension (A) with in the reference value limit.

B : Scale
C : Straightedge

Dimension (A) : Refer to TM-308, "Torque Converter".



INSPECTION AFTER INSTALLATION

Check the following.
- Check for CVT fluid leakage and check CVT fluid level. Refer to TM-184, "Inspection".
- Check CVT position. Refer to TM-194, "Inspection and Adjustment".

- Start and warm up the engine. Visually check that there is no leakage of engine coolant and CVT fluid.

ADJUSTMENT AFTER INSTALLATION

When replacing the transaxle assembly,

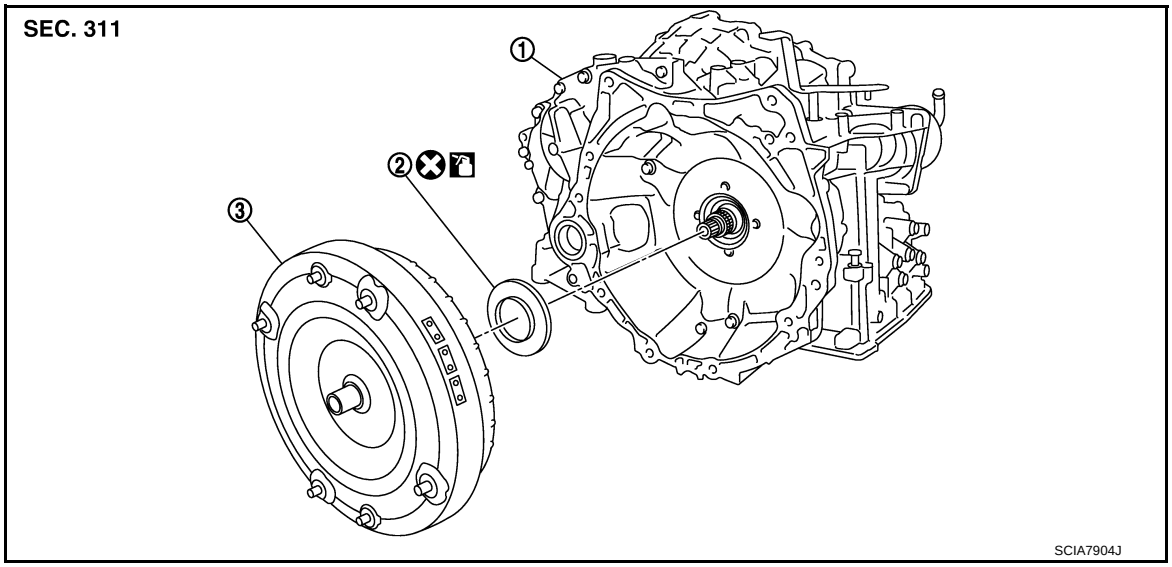
- Erase CVT fluid degradation level data. Refer to TM-159, "CONSULT-III Function (TRANSMISSION)".
- Erase EEP ROM in TCM. Refer to TM-180, "Description".

UNIT DISASSEMBLY AND ASSEMBLY

TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

Exploded View

INFOID:0000000006601750



1. Transaxle assembly
2. Converter housing oil seal
3. Torque converter

: Always replace after every disassembly.

: Apply CVT Fluid NS-2.

Disassembly

INFOID:0000000006601751

1. Remove transaxle assembly. Refer to TM-301, "Removal and Installation".
2. Remove torque converter from transaxle assembly.
   CAUTION:
   Never damage bush on the inside of torque converter sleeve when removing torque converter.
3. Remove converter housing oil seal using a flat-bladed screwdriver.
   CAUTION:
   Be careful not to scratch converter housing.

Assembly

INFOID:0000000006601752

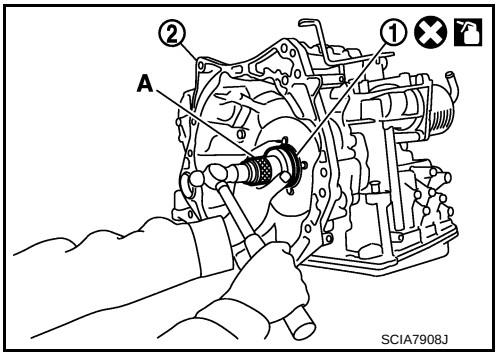
Note the following, and install in the reverse order of removal.

- Drive converter housing oil seal (1) evenly using a drift (A) (commercial service tool) so that converter housing oil seal protrudes by the dimension (B) respectively.

Unit: mm (in)

Commercial service tool: A	Outer diameter: 65 (2.56)
	Inner diameter: 60 (2.36)

2 : Transaxle assembly

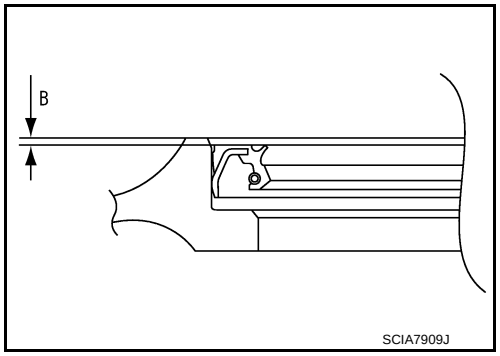


Unit: mm (in)

Dimension B	1.0 ± 0.5 (0.039 ± 0.020)

NOTE:
Converter housing oil seal pulling direction is used as the reference.

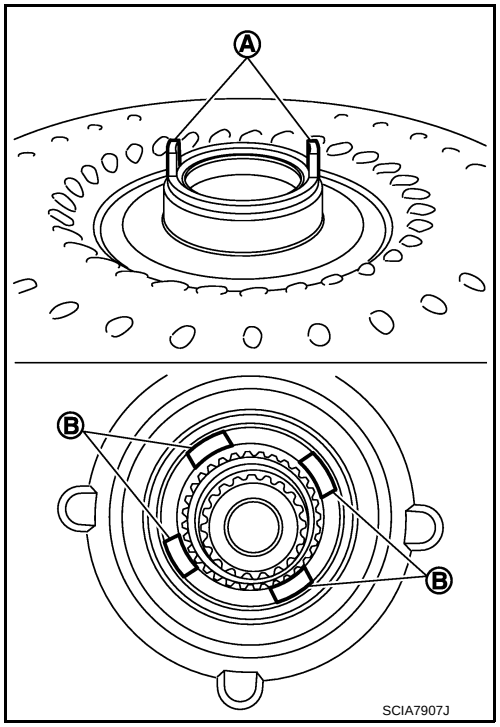
- After completing installation, check for CVT fluid leakage and CVT fluid level. Refer to TM-184, "Inspection".



- Attach the pawl (A) of the torque converter to the drive sprocket hole (B) on the transaxle assembly side.

CAUTION:

- **Rotate the torque converter for installing torque converter.**
- **Never damage the bushing inside the torque converter sleeve when installing the converter housing oil seal.**



Inspection

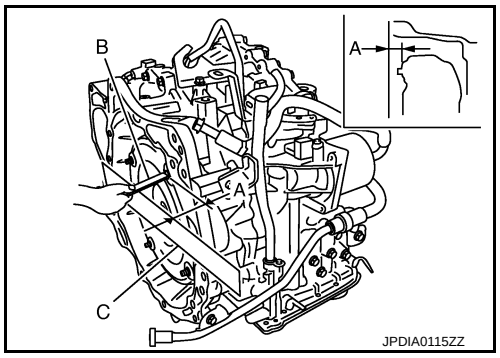
INFOID:0000000006601753

INSPECTION AFTER INSTALLATION

- After inserting a torque converter to the CVT, check dimension (A) with in the reference value limit.

B : Scale
C : Straightedge

Dimension (A) : Refer to TM-308, "Torque Converter".



SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000006601754

Applied model		MR16DDT
		4WD
CVT model		RE0F10B
CVT assembly	Model code number	3TX0E
Transmission gear ratio	D range	2.349 – 0.394
	Reverse	1.750
	Final drive	6.466
Recommended fluid		NISSAN CVT Fluid NS-2*1
Fluid capacity		8.5 liter (7-1/2 Imp qt)*2

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-2. Never mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**

*1: Refer to MA-13, "Fluids and Lubricants".

*2: The fluid capacity is the reference value. Check the fluid level with CVT fluid level gauge.

Shift Characteristics

INFOID:0000000006601755

Numerical value data are reference values.

Unit: rpm

Engine type	Throttle position	Shift pattern	Engine speed	
			At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
MR20DE	8/8	“D” position	3,600 – 4,500	4,500 – 5,400
	2/8	“D” position	1,200 – 3,100	1,300 – 3,500

CAUTION:

Lock-up clutch is engaged when vehicle speed is approximately 18 km/h (11 MPH) to 90 km/h (56 MPH).

Stall Speed

INFOID:0000000006601756

Stall speed	2,500 – 3,000 rpm

Line Pressure

INFOID:0000000006601757

Unit: kPa (bar, kg/cm^2, psi)

Engine speed	Line pressure
	“R” and “D” positions
At idle	750 (7.50, 7.65, 108.8)
At stall	5,700 (57.00, 58.14, 826.5)*

*: Reference values

Torque Converter

INFOID:0000000006601762

Dimension between end of converter housing and torque converter	14.4 mm (0.567 in)

PRECAUTION

PRECAUTIONS

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

INFOID:0000000006628081

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 “SRS AIR BAG” and “SEAT BELT” of this Service Manual.

The vehicle may be equipped with a passenger air bag deactivation switch. Because no rear seat exists where a rear-facing child restraint can be placed, the switch is designed to turn off the passenger air bag so that a rear-facing child restraint can be used in the front passenger seat. The switch is located in the center of the instrument panel, near the ashtray. When the switch is turned to the ON position, the passenger air bag is enabled and could inflate for certain types of collision. When the switch is turned to the OFF position, the passenger air bag is disabled and will not inflate. A passenger air bag OFF indicator on the instrument panel lights up when the passenger air bag is switched OFF. The driver air bag always remains enabled and is not affected by the passenger air bag deactivation switch.

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 “SRS AIR BAG”.**
- **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.**
- **The vehicle may be equipped with a passenger air bag deactivation switch which can be operated by the customer. When the passenger air bag is switched OFF, the passenger air bag is disabled and will not inflate. When the passenger air bag is switched ON, the passenger air bag is enabled and could inflate for certain types of collision. After SRS maintenance or repair, make sure the passenger air bag deactivation switch is in the same position (ON or OFF) as when the vehicle arrived for service.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag 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 Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:0000000006628082

NOTE:

- Before removing and installing any control units, first turn the ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Turn the ignition switch to ACC position.
   (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

Precaution for TCM and Transaxle Assembly Replacement

INFOID:0000000006598882

CAUTION:
- **To replace TCM, refer to TM-374, "Description".**
- **To replace transaxle assembly, refer to TM-375, "Description".**

Precaution for G Sensor Removal/Installation or Replacement

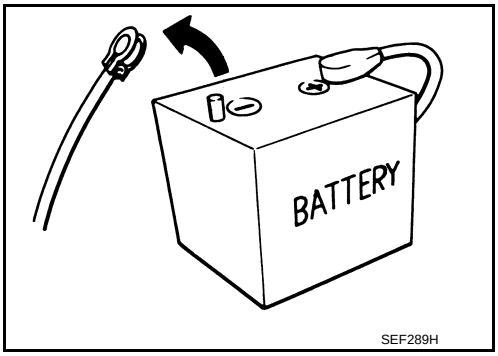
INFOID:0000000006598883

CAUTION:
To remove/install or replace G sensor, refer to TM-377, "Description".

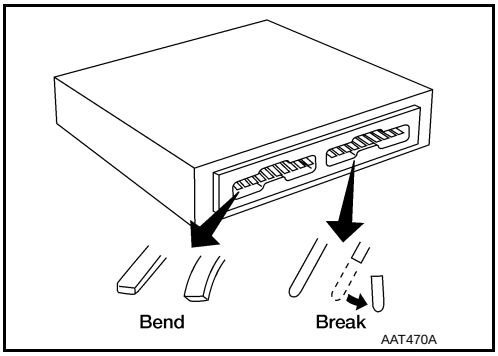
General Precautions

INFOID:0000000006598884

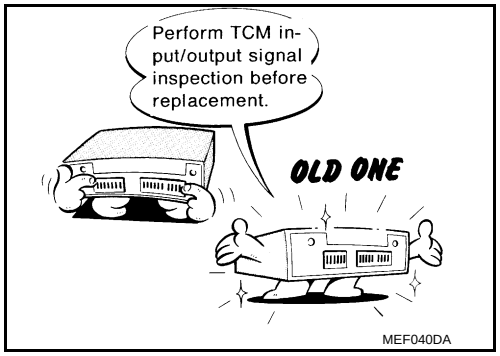
- **Turn ignition switch OFF and disconnect the battery cable from the negative terminal before connecting or disconnecting the CVT assembly harness connector. Because battery voltage is applied to TCM even if ignition switch is turned OFF.**



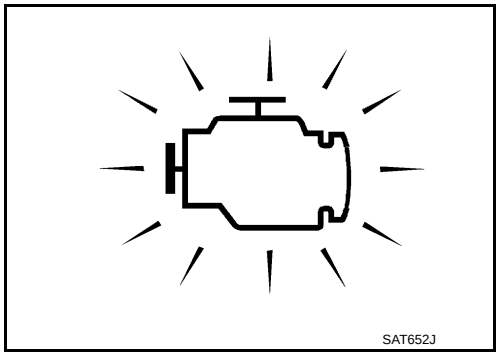
- **When connecting or disconnecting pin connectors into or from TCM, do not damage pin terminals (bend or break).**
  Check that there are not any bends or breaks on TCM pin terminal, when connecting pin connectors.



- **Perform TCM input/output signal inspection and check whether TCM functions normally or not before replacing TCM. Refer to TM-354, "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-13, "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:0000000006598885

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:

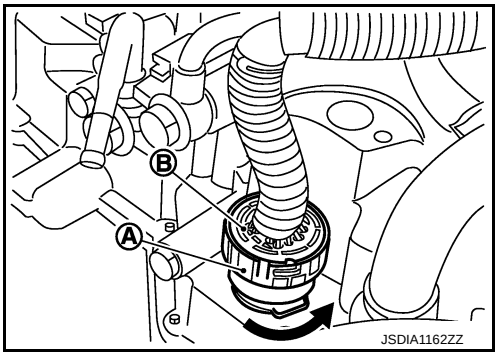
- **Be sure to turn the ignition switch OFF and disconnect the battery cable from the negative terminal before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MIL to light up.**
- **Be sure to connect and lock the connectors securely 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:0000000006598886

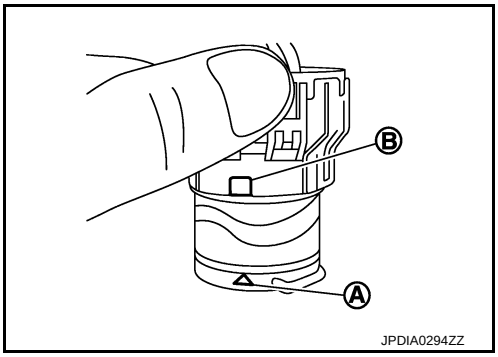
REMOVAL

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

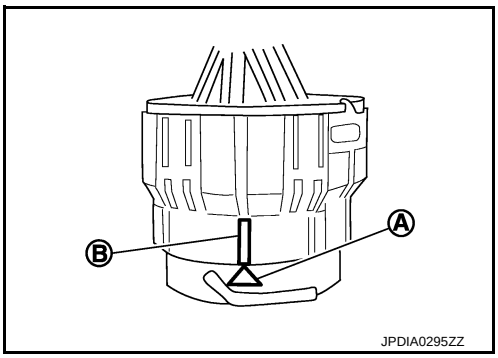


INSTALLATION

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.

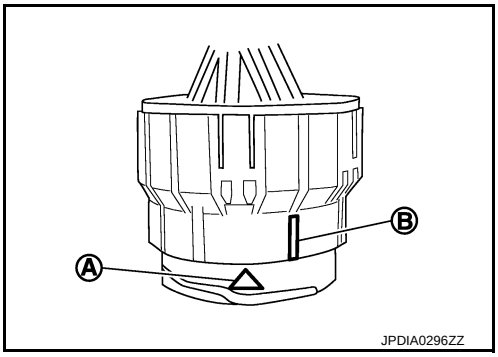


3. Rotate bayonet ring clockwise until marking (A) on CVT unit harness connector terminal body is aligned with the slit (B) on bayonet ring as shown in the figure (correctly fitting condition).



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.**

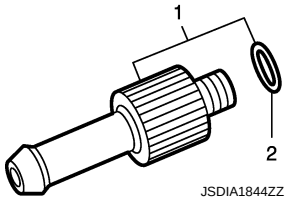
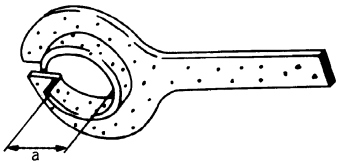


PREPARATION

PREPARATION

Special Service Tools

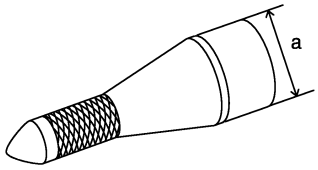
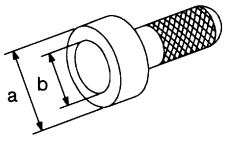
INFOID:0000000006487544

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	 PDIA1183J	Installing drive shaft

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

Commercial Service Tools

INFOID:0000000006487545

Tool number Tool name		Description
31197EU50A Drive plate location guide a: ϕ 25 mm	 JPDIA0676ZZ	Installing transaxle assembly
Drift a: ϕ 56 mm b: ϕ 50 mm	 NT115	Installing differential side oil seal

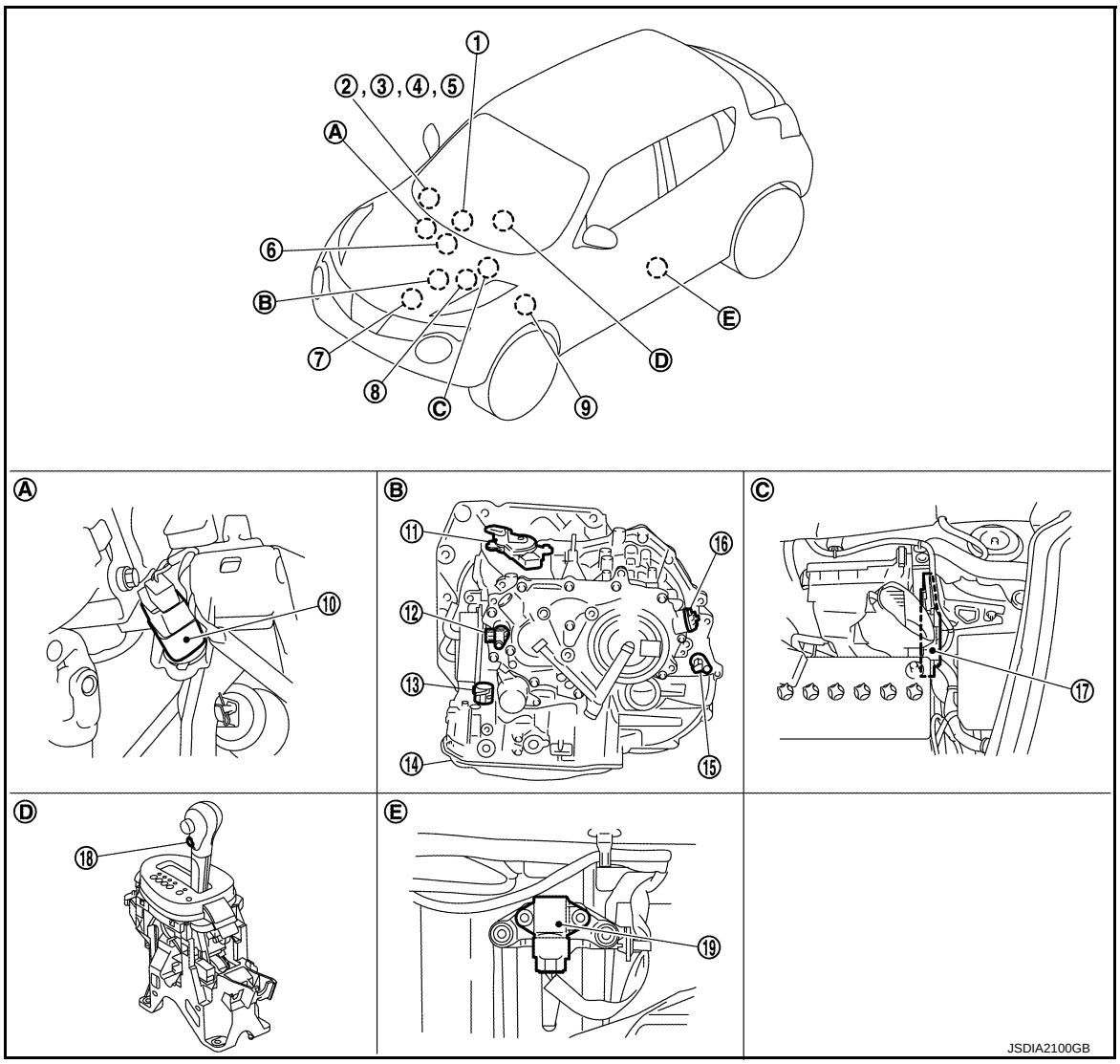
SYSTEM DESCRIPTION

COMPONENT PARTS

CVT CONTROL SYSTEM

CVT CONTROL SYSTEM : Component Parts Location

INFOID:0000000006487546



1. Multi display unit (MDU)* Refer to DMS-3, "Component Parts Location".
2. Combination meter
3. S mode indicator (On the combination meter)
4. Shift position indicator (On the combination meter)
5. Malfunction indicator lamp (MIL) (On the combination meter)
6. ABS actuator and electric unit (control unit) Refer to BRC-97, "Component Parts Location" (With ESP), BRC-9, "Component Parts Location" (Without ESP).
7. ECM Refer to EC-455, "ENGINE CONTROL SYSTEM : Component Parts Location".
8. IPDM E/R Refer to PCS-5, "Component Parts Location" (With Intelligent Key system), PCS-5, "Component Parts Location" (Without Intelligent Key system).
9. BCM Refer to BCS-6, "BODY CONTROL SYSTEM : Component Parts Location" (With Intelligent Key system), BCS-96, "BODY CONTROL SYSTEM : Component Parts Location" (Without Intelligent Key system)
10. Stop lamp switch
11. Transmission range switch
12. Primary speed sensor

13. CVT unit connector
14. Control valve assembly
15. Output speed sensor
16. Secondary speed sensor
17. TCM
18. S mode switch
19. G sensor
A. Brake pedal, upper
B. Transaxle assembly
C. Engine room
D. CVT shift selector assembly
E. Driver seat (LHD) or passenger seat (RHD), under

*: With Nissan Dynamic Control System

NOTE:

The following components are included in control valve assembly (14).

- CVT fluid temperature sensor
- Secondary pressure sensor
- ROM assembly
- Line pressure solenoid valve
- Low brake solenoid valve
- High clutch & reverse brake solenoid valve
- Torque converter clutch solenoid valve

CVT CONTROL SYSTEM : Component Description

INFOID:0000000006487547

Name	Function
TCM	TM-316, "CVT CONTROL SYSTEM : TCM"
Transmission range switch	TM-316, "CVT CONTROL SYSTEM : Transmission Range Switch"
Primary speed sensor	TM-316, "CVT CONTROL SYSTEM : Primary Speed Sensor"
Secondary speed sensor	TM-317, "CVT CONTROL SYSTEM : Secondary Speed Sensor"
Output speed sensor	TM-317, "CVT CONTROL SYSTEM : Output Speed Sensor"
CVT fluid temperature sensor	TM-318, "CVT CONTROL SYSTEM : CVT Fluid Temperature Sensor"
Secondary pressure sensor	TM-318, "CVT CONTROL SYSTEM : Secondary Pressure Sensor"
Primary pressure solenoid valve	TM-319, "CVT CONTROL SYSTEM : Primary Pressure Solenoid Valve"
Low brake solenoid valve	TM-319, "CVT CONTROL SYSTEM : Low Brake Solenoid Valve"
High clutch & reverse brake solenoid valve	TM-319, "CVT CONTROL SYSTEM : High Clutch & Reverse Brake Solenoid Valve"
Torque converter clutch solenoid valve	TM-319, "CVT CONTROL SYSTEM : Torque Converter Clutch Solenoid Valve"
Line pressure solenoid valve	TM-320, "CVT CONTROL SYSTEM : Line Pressure Solenoid Valve"
Accelerator pedal position sensor	EC-459, "Accelerator Pedal Position Sensor"
G sensor	TM-320, "CVT CONTROL SYSTEM : G Sensor"
S mode switch	TM-320, "CVT CONTROL SYSTEM : S Mode Switch"
S mode indicator	TM-320, "CVT CONTROL SYSTEM : S Mode Indicator"
Shift position indicator	TM-320, "CVT CONTROL SYSTEM : Shift Position Indicator"
Malfunction indicator lamp (MIL)	EC-466, "Malfunction Indicator"
Stop lamp switch	BRC-104, "Stop Lamp Switch"

Name	Function
ECM	• For purposes including improving the feeling when shifting speeds and preventing drops in engine speed, control signals are exchanged between the ECM and TCM, and real-time cooperative control is performed according to the vehicle driving conditions. (Engine and CVT integrated control) - 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. • The TCM receives the following signal via CAN communications from the ECM for judging the vehicle driving conditions. - Engine speed signal - Accelerator pedal position signal - Closed throttle position signal • TCM sends and receives the following signals with ECM through CAN communication to perform D position N idle control. - N idle instruction signal
BCM	The TCM receives the following signal via CAN communications from the BCM for judging the vehicle driving conditions. • Stop lamp switch signal • Turn indicator signal
ABS actuator and electric unit (control unit)	The TCM receives the following signal via CAN communications from the ABS actuator and electric unit (control unit) for judging the vehicle driving conditions. • Vehicle speed signal (ABS) • ABS operation signal • TCS operation signal • ESP operation signal
Combination meter	The TCM receives the following signal via CAN communications from the combination meter for judging the driving request from the driver. • S mode switch signal
IPDM E/R	The TCM receives the following signal via CAN communications from the IPDM E/R for judging the driving request from the driver. • A/C compressor feedback signal
MDU*	The TCM receives the following signals from MDU via CAN communication to switch driving mode of the Nissan Dynamic Control System. • NORMAL mode signal • ECO mode signal • SPORT mode signal

*: With Nissan Dynamic Control System

CVT CONTROL SYSTEM : TCM

INFOID:0000000006487548

- 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-329, "CVT CONTROL SYSTEM : System Description".

CVT CONTROL SYSTEM : Transmission Range Switch

INFOID:0000000006487549

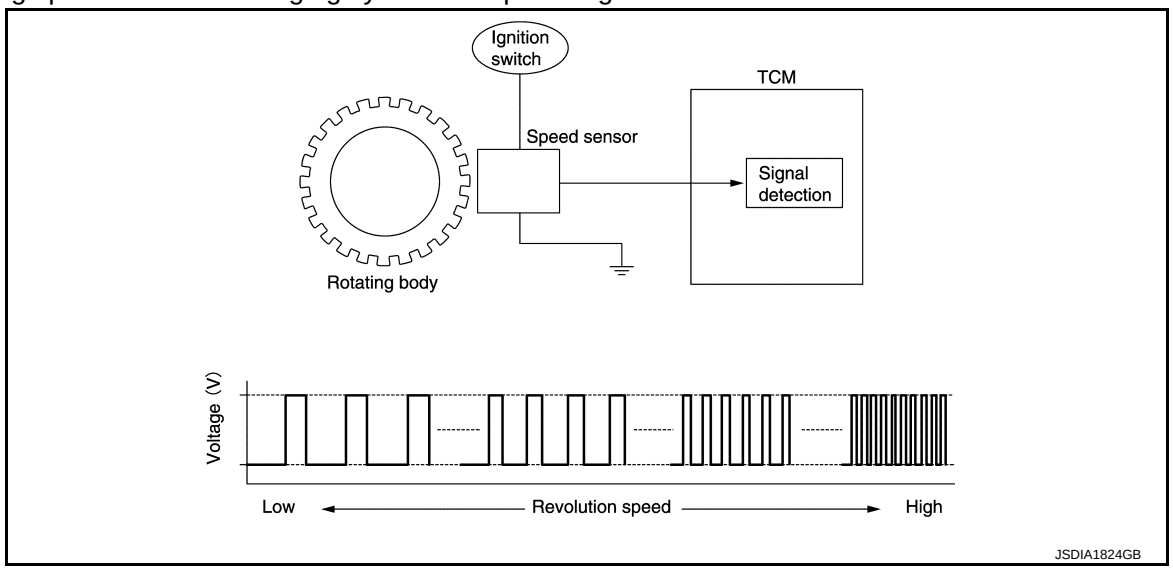
- The transmission range switch is installed to upper part of transaxle case.
- The transmission range switch detects the selector lever position.

CVT CONTROL SYSTEM : Primary Speed Sensor

INFOID:0000000006487550

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

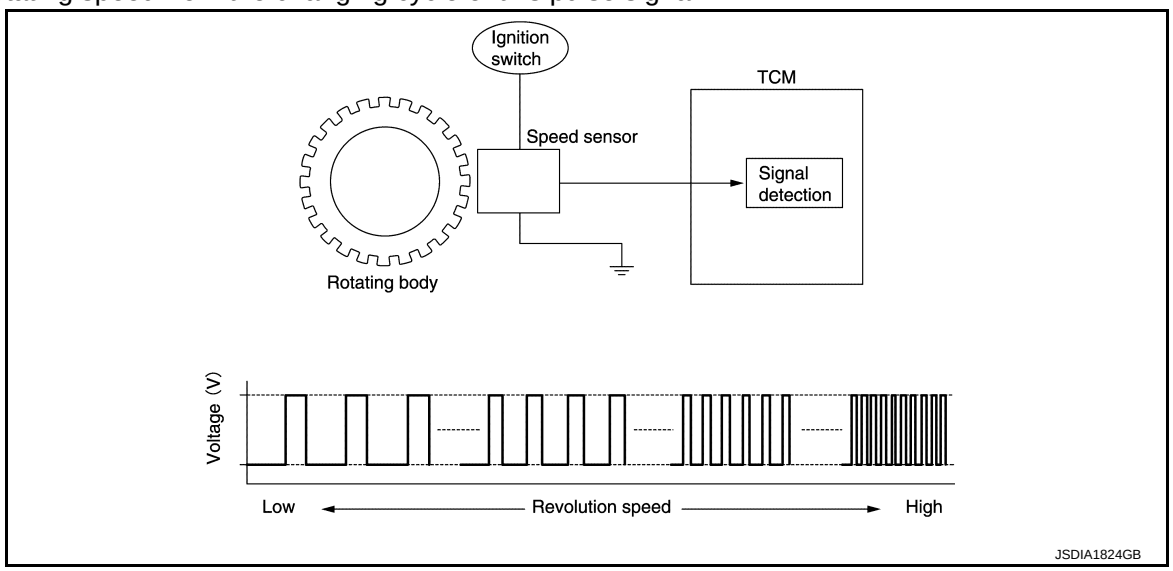
- The primary speed sensor generates the ON-OFF pulse (short waveform) in proportion to the rotating body speed which is “The higher the rotating body speed is, the faster the change cycle is”. The TCM judges the rotating speed from the changing cycle of this pulse signal.



CVT CONTROL SYSTEM : Secondary Speed Sensor

INFOID:0000000006487551

- The secondary speed sensor is installed to side cover of transaxle.
- The secondary speed sensor detects secondary pulley speed.
- The secondary speed sensor generates the ON-OFF pulse (short waveform) in proportion to the rotating body speed which is “The higher the rotating body speed is, the faster the change cycle is”. The TCM judges the rotating speed from the changing cycle of this pulse signal.

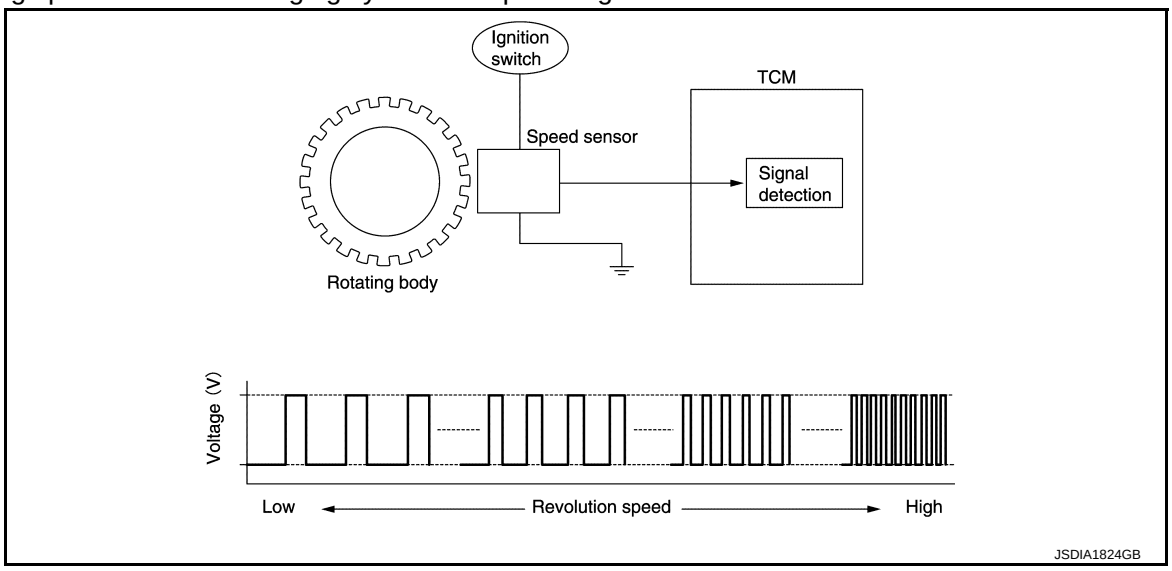


CVT CONTROL SYSTEM : Output Speed Sensor

INFOID:0000000006487552

- 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.

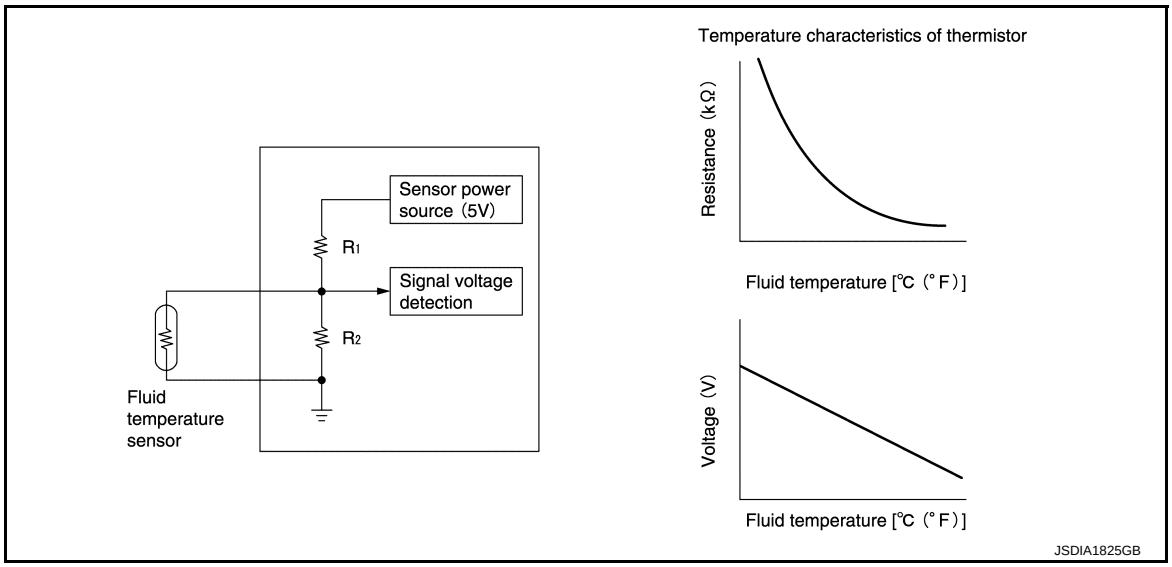
- The output speed sensor generates the ON-OFF pulse (short waveform) in proportion to the rotating body speed which is “The higher the rotating body speed is, the faster the change cycle is”. The TCM judges the rotating speed from the changing cycle of this pulse signal.



CVT CONTROL SYSTEM : CVT Fluid Temperature Sensor

INFOID:0000000006487553

- The CVT fluid temperature sensor 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.

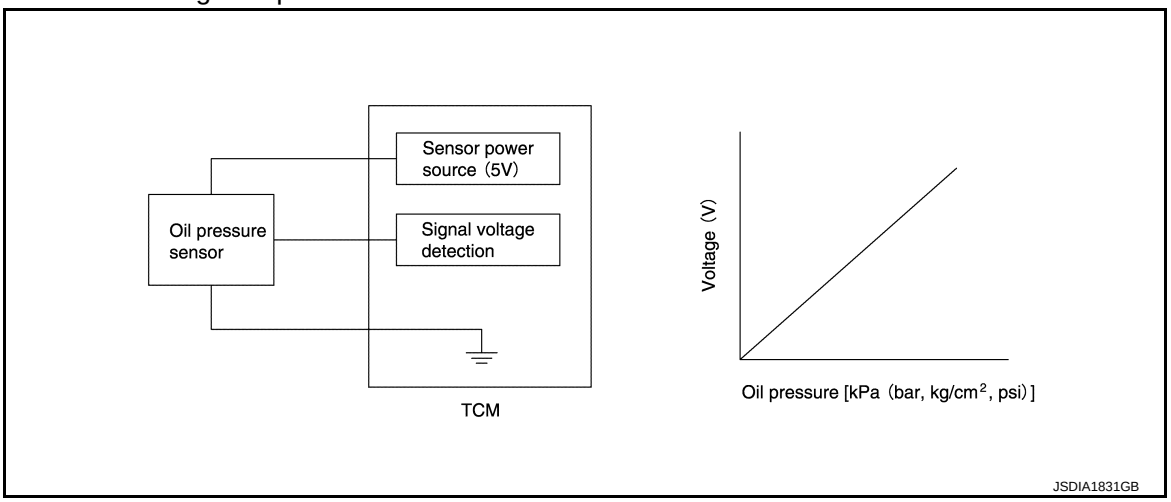


CVT CONTROL SYSTEM : Secondary Pressure Sensor

INFOID:0000000006487554

- The secondary pressure sensor 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:0000000006487555

- The primary pressure solenoid valve 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-325, "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:0000000006487556

- The low brake solenoid valve 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:0000000006487557

- The high clutch & reverse brake solenoid valve 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:0000000006487558

- The torque converter clutch solenoid valve 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-325, "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:0000000006487559

- The line pressure solenoid valve 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-325, "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:0000000006487561

- 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 : S Mode Switch

INFOID:0000000006487562

- The S mode switch is installed to the selector lever knob.
- When the S mode indicator on the combination meter is OFF and the S mode switch is pressed, the S mode is active and the S mode indicator is ON.
- When the S mode indicator on the combination meter is ON and the S mode switch is pressed, the S mode is cancelled and the S mode indicator is OFF.

CVT CONTROL SYSTEM : S Mode Indicator

INFOID:0000000006487563

- S mode indicator is positioned on the combination meter.
- The S mode indicator is ON when set to the S mode.
- S mode indicator turns on for a certain period of time when the ignition switch turns ON, and then turns off.

Condition (status)	S mode indicator
Ignition switch OFF.	OFF
Ignition switch ON.	ON
Approx. 2 seconds after ignition switch ON	OFF
S mode switch is pressed (in normal operation of the system) when the selector lever is in the “D” position and the S mode indicator is OFF	ON
S mode switch is pressed when the selector lever is in the “D” position and the S mode indicator is on.	OFF
Selector lever is shifted to other position when the selector lever is at “D” position and the S mode indicator is ON.	OFF

CVT CONTROL SYSTEM : Shift Position Indicator

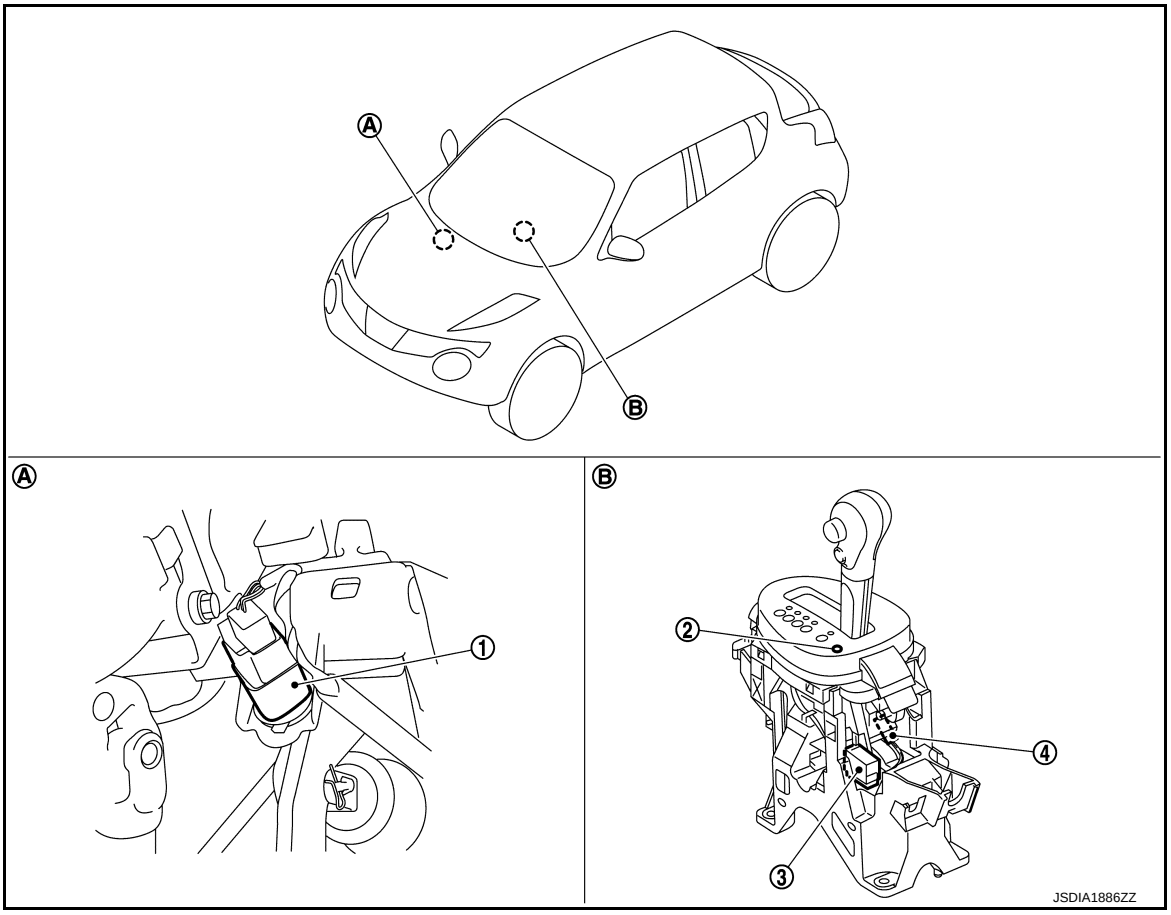
INFOID:0000000006488182

TCM transmits shift position signal to combination meter via CAN communication. The actual shift position is displayed on combination meter according to the signal.

A/T SHIFT LOCK SYSTEM

A/T SHIFT LOCK SYSTEM : Component Parts Location

INFOID:0000000006487566



1. Stop lamp switch
2. Shift lock release button
3. Shift lock solenoid
4. Park position switch
A: Brake pedal, upper
B: CVT shift selector assembly

A/T SHIFT LOCK SYSTEM : Component Description

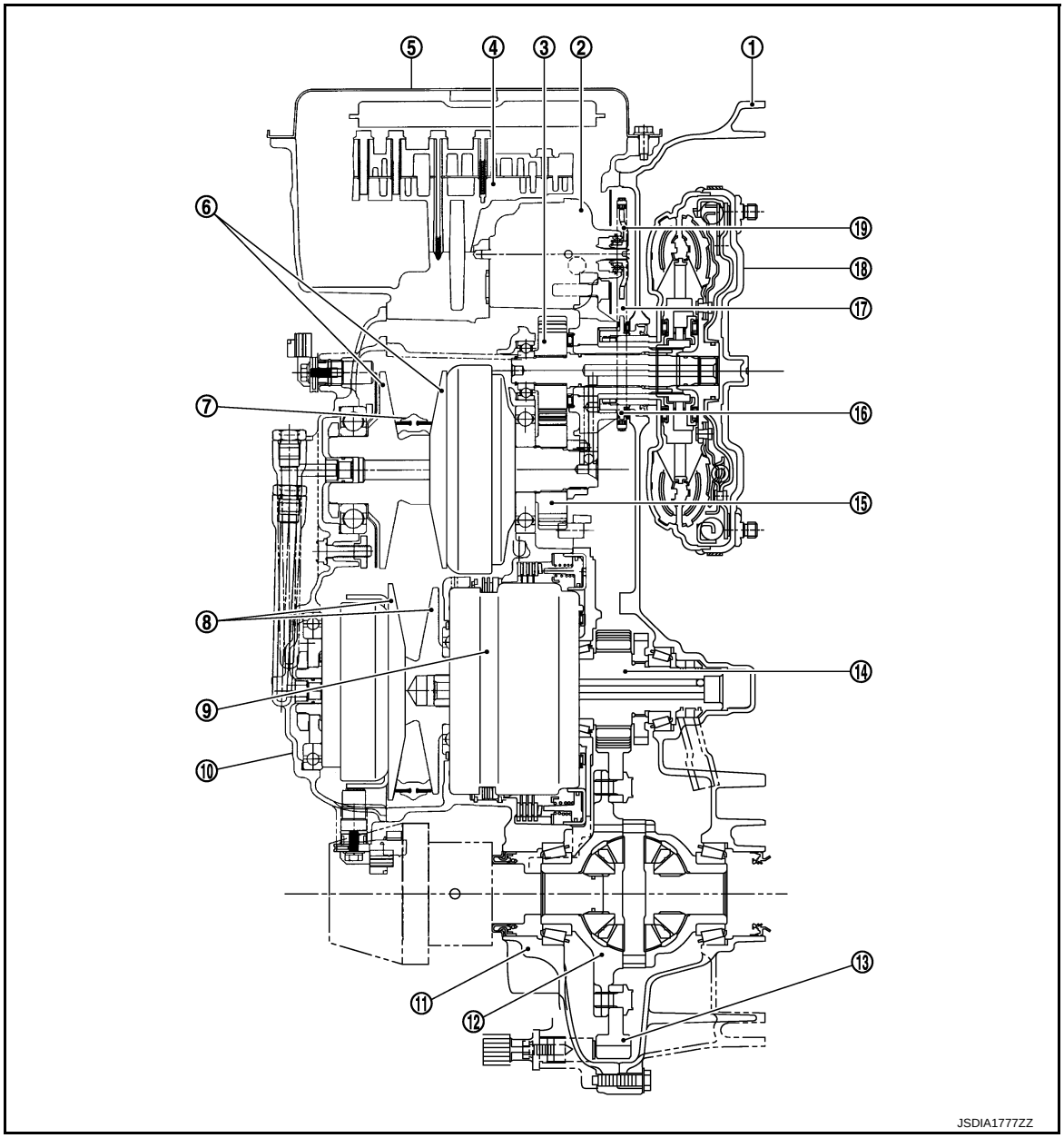
INFOID:0000000006487567

Component	Function
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
Lock lever	• Rotates according to shift lock solenoid activation and releases the shift lock. • If shift lock solenoid does not activate, lock lever can be rotated when shift lock release button is pressed and shift lock is released.
Detent rod	It links with the selector button and restricts the selector lever movement.
Park position switch	It detects that the selector lever is in “P” position.
Shift lock release button	Forcibly releases the shift lock when pressed.
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:0000000006487569



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:0000000006487570

×: Engaged or applied.

Slector 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:0000000006487571

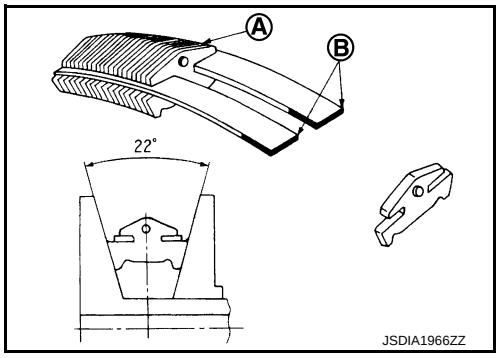
BELT & PULLEY

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 (A) and two steel rings (B) 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:

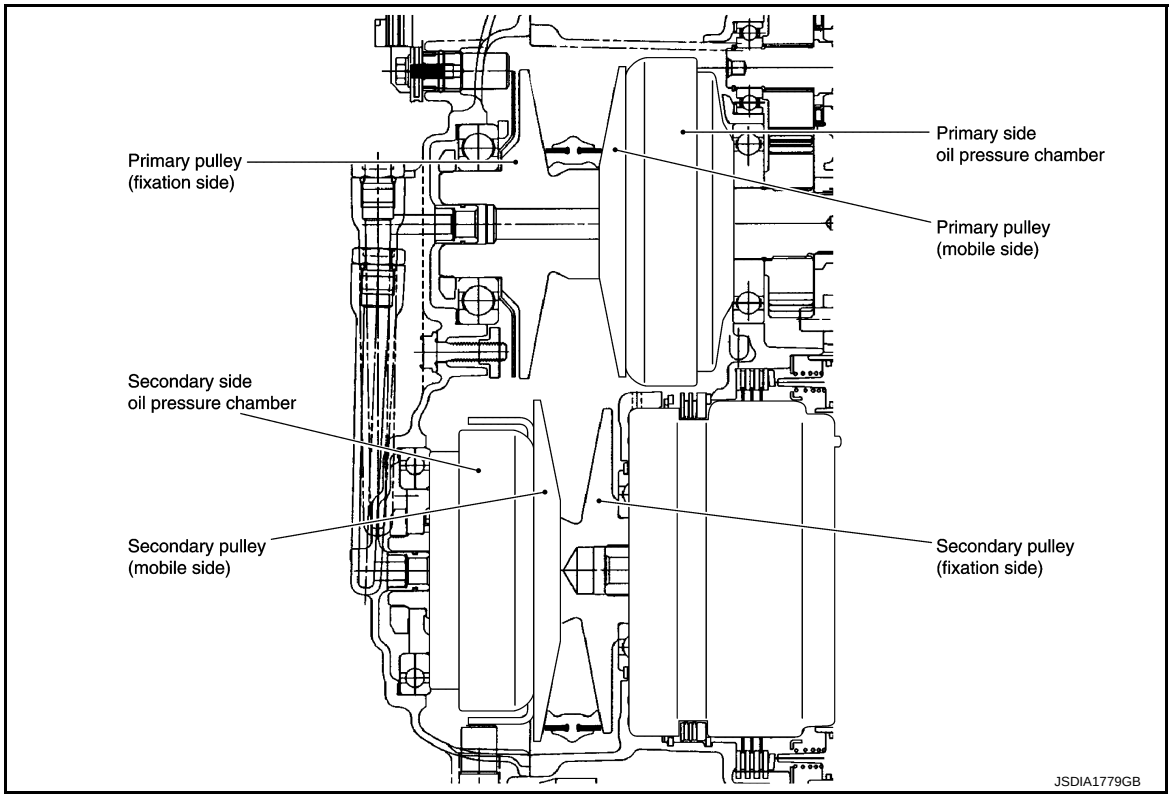


Oil pressure applies to the secondary pulley to nip the plate. ⇒The plate is pushed and extended outward. ⇒The steel ring shows withstands. ⇒Pulling force is generated on the steel ring. ⇒The plate of the primary pulley is nipped between the pulley. ⇒Friction force is generated between the steel belt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

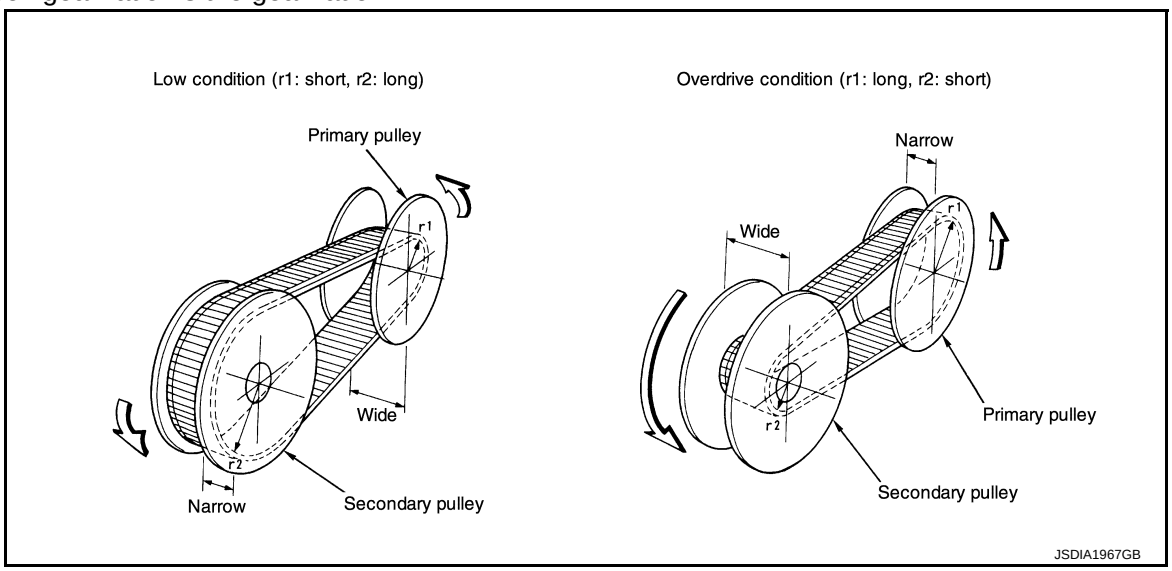
Pulley

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.



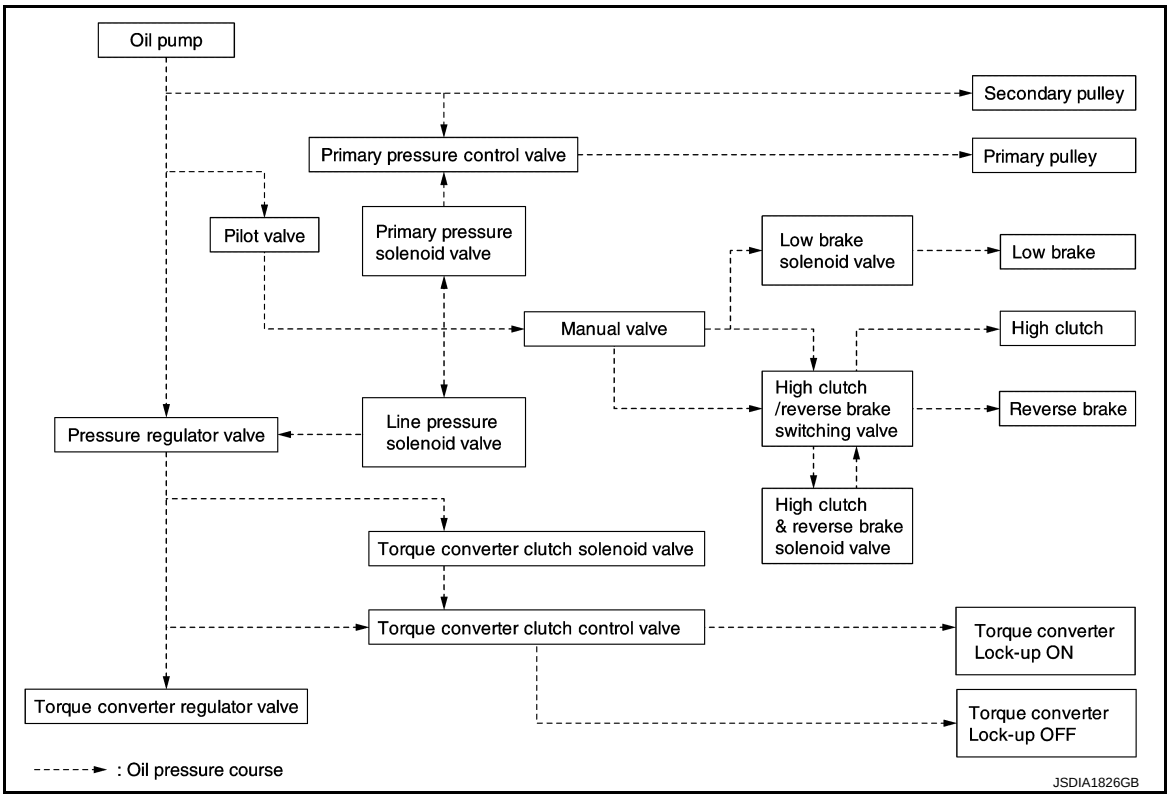
AUXILIARY GEARBOX MECHANISM

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

TRANSAXLE : Oil Pressure System

INFOID:0000000006487572

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:0000000006487573

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 change 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.

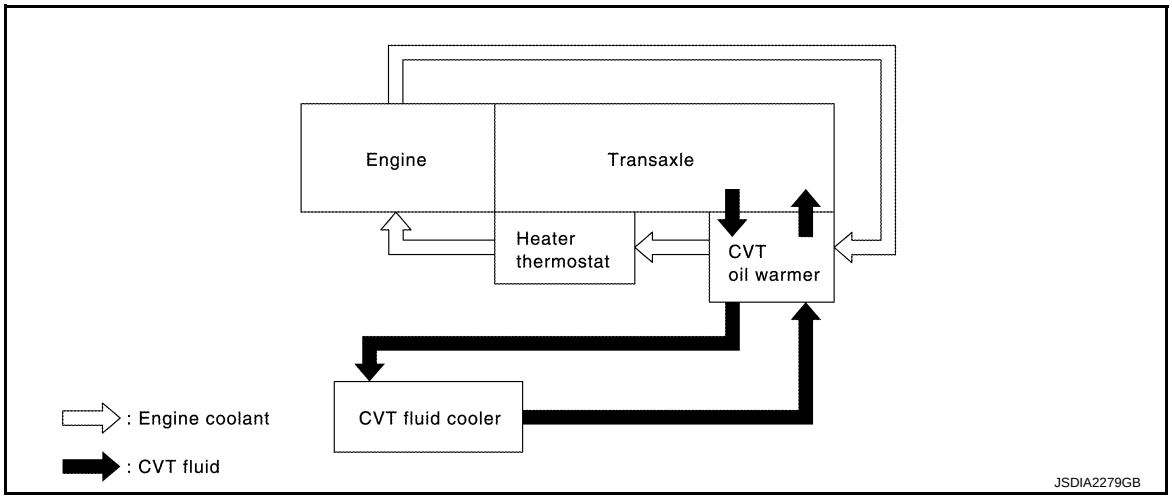
Part name	Function
Pilot valve	Adjusts line pressure and produces a constant pressure (pilot pressure) necessary for activating each solenoid valve.
Manual valve	Distributes the clutch and brake operation pressures (pilot pressure) corresponding to each shift position.
High clutch/reverse brake switching 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-319, "CVT CONTROL SYSTEM : Primary Pressure Solenoid Valve"
Low brake solenoid valve	TM-319, "CVT CONTROL SYSTEM : Low Brake Solenoid Valve"
High clutch & reverse brake solenoid valve	TM-319, "CVT CONTROL SYSTEM : High Clutch & Reverse Brake Solenoid Valve"
Torque converter clutch solenoid valve	TM-319, "CVT CONTROL SYSTEM : Torque Converter Clutch Solenoid Valve"
Line pressure solenoid valve	TM-320, "CVT CONTROL SYSTEM : Line Pressure Solenoid Valve"

FLUID COOLER & FLUID WARMER SYSTEM

FLUID COOLER & FLUID WARMER SYSTEM : System Description

INFOID:0000000006706350

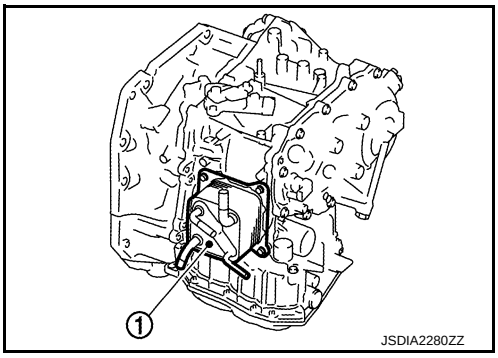
CVT FLUID COOLER SCHEMATIC



COMPONENT DESCRIPTION

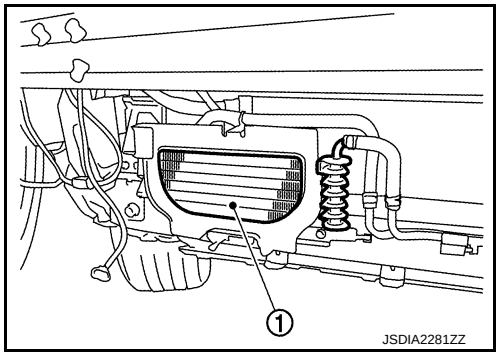
CVT Oil Warmer

- 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 A/T fluid temperature is high.



CVT Fluid Cooler

- The CVT fluid cooler (1) is installed to the radiator core support.
- The CVT fluid cooler prevents CVT fluid temperature from an abnormal increase while driving the vehicle. When flowing into the CVT fluid cooler, CVT fluid is cooled by driving blast while driving the vehicle.

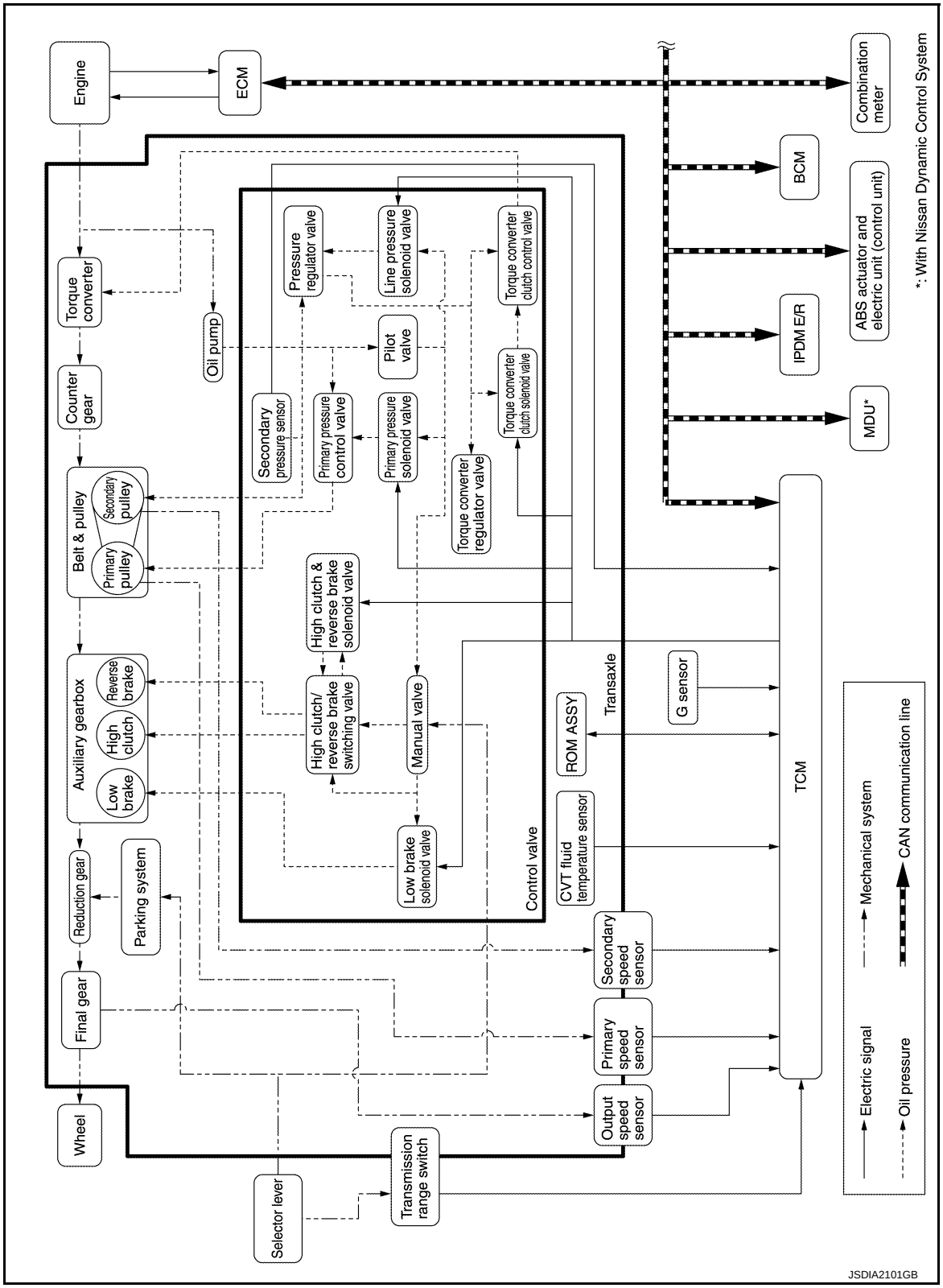


Heater thermostat

- The heater thermostat is installed on the front part of transaxle assembly.
- The heater thermostat starts opening before the completion of an engine warm-up and fully opens at the completion of the engine warm-up. This allows the transaxle to be warmed up when CVT fluid temperature is lower than coolant temperature under low temperature conditions.

SYSTEM
CVT CONTROL SYSTEM
CVT CONTROL SYSTEM : System Diagram

INFOID:0000000006487574



CVT CONTROL SYSTEM : System Description

INFOID:0000000006487575

INPUT/OUTPUT SIGNAL TABLE

Sensor (or signal)		TCM function		Actuator
• Engine and CVT integrated control signal • Engine speed signal • Accelerator pedal position signal • Closed throttle position signal • Stop lamp switch signal • Secondary pressure sensor • CVT fluid temperature sensor • Primary speed sensor • Secondary speed sensor • Output speed sensor • Transmission range switch signal • S mode switch signal • Vehicle speed signal (ABS) • ABS operation signal • TCS operation signal • ESP operation signal • A/C compressor feedback signal • G sensor • N idle instruction signal • Turn indicator signal • NORMAL mode signal* • ECO mode signal* • SPORT mode signal*	⇒	• Line pressure control (TM-334, "LINE PRESSURE CONTROL : System Description") • Shift change control (TM-335, "SHIFT CHANGE CONTROL : System Description") • Select control (TM-337, "SELECT CONTROL : System Description") • Lock-up control (TM-338, "LOCK-UP CONTROL : System Description") • Idle neutral control (TM-339, "IDLE NEUTRAL CONTROL : System Description") • Nissan Dynamic Control System (TM-341, "NISSAN DYNAMIC CONTROL SYSTEM : System Description") • Fail-safe mode (TM-362, "Fail-Safe") • Self-diagnosis function (TM-344, "Description") • Communication function with CONSULT-III (TM-347, "CONSULT-III Function (TRANSMISSION)") • CAN communication control (TM-390, "Description")	⇒	• Line pressure solenoid valve • Primary pressure solenoid valve • Torque converter clutch solenoid valve • High clutch & reverse brake solenoid valve • Low brake solenoid valve • S mode indicator • Shift position indicator

*: With Nissan Dynamic Control System

SYSTEM 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.
- Receives input signals from switches and sensors.
- Sends the output signal necessary for operation of solenoid valves, and evaluates the line pressure, shift timing, lockup operation, engine brake performance, etc.
- If a malfunction occurs on the electric system, activate the fail-safe mode only to drive the vehicle.

LIST OF CONTROL ITEMS AND INPUT/OUTPUT

Control Item		Gear shift control	Line pressure control	Shift 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	×	×	×	×	×
	S mode switch (CAN communication)	×				
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)			×		
	S mode indicator (CAN communication)	×				

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

CVT CONTROL SYSTEM : Fail-Safe

INFOID:0000000006600440

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.	—

DTC	Vehicle behavior	Conditions of vehicle
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 starts is 10°C or more.
	• Selector shock is large • Start is slow	Engine coolant temperature when engine starts is less than –10°C
	• Selector shock is large • Start is slow	Engine coolant temperature when engine starts is less than –35°C
P0712	• Acceleration is slow	Engine coolant temperature when engine starts is 10°C or more.
	• Selector shock is large • Start is slow	Engine coolant temperature when engine starts is less than –10°C
	• Selector shock is large • Start is slow	Engine coolant temperature when engine starts is less than –35°C
P0713	• Acceleration is slow	Engine coolant temperature when engine starts is 10°C or more.
	• Selector shock is large • Start is slow	Engine coolant temperature when engine starts is less than –10°C
	• Selector shock is large • Start is slow	Engine coolant temperature when engine starts is less than –35°C
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	• Start is slow • Acceleration is slow	—
P0848	• Start is slow • Acceleration is slow	—
P0863	• Not changed from normal driving	—
P0962	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed.	—

DTC	Vehicle behavior	Conditions of vehicle
P0963	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed.	—
P1586	• Not changed from normal driving	—
P1588	• Not changed from normal driving	—
P1701	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed.	—
P1739	• Start is slow	—
P173A	• Vehicle speed is not increased	—
P173B	• Start is slow	—
P173C	• Vehicle speed is not increased	—
P17B4	• Start is slow	—
P17B5	• Start is slow	Wire disconnection
	• Vehicle speed is not increased	Voltage shorting
P17B7	• Start is slow	—
P17B8	• Start is slow	Wire disconnection
	• Vehicle speed is not increased	Voltage shorting
P17BA	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed.	—
P17BB	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed.	—
P2765	• Selector shock is large • Start is slow • Acceleration is slow • Vehicle speed is not increased • Lock-up is not performed.	—
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	• Not changed from normal driving	—
U1000	• Not changed from normal driving	—
U1114	• Not changed from normal driving	—
U1117	• Not changed from normal driving	—
U1119	• Not changed from normal driving	—

CVT CONTROL SYSTEM : Protection control

INFOID:0000000006600441

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.

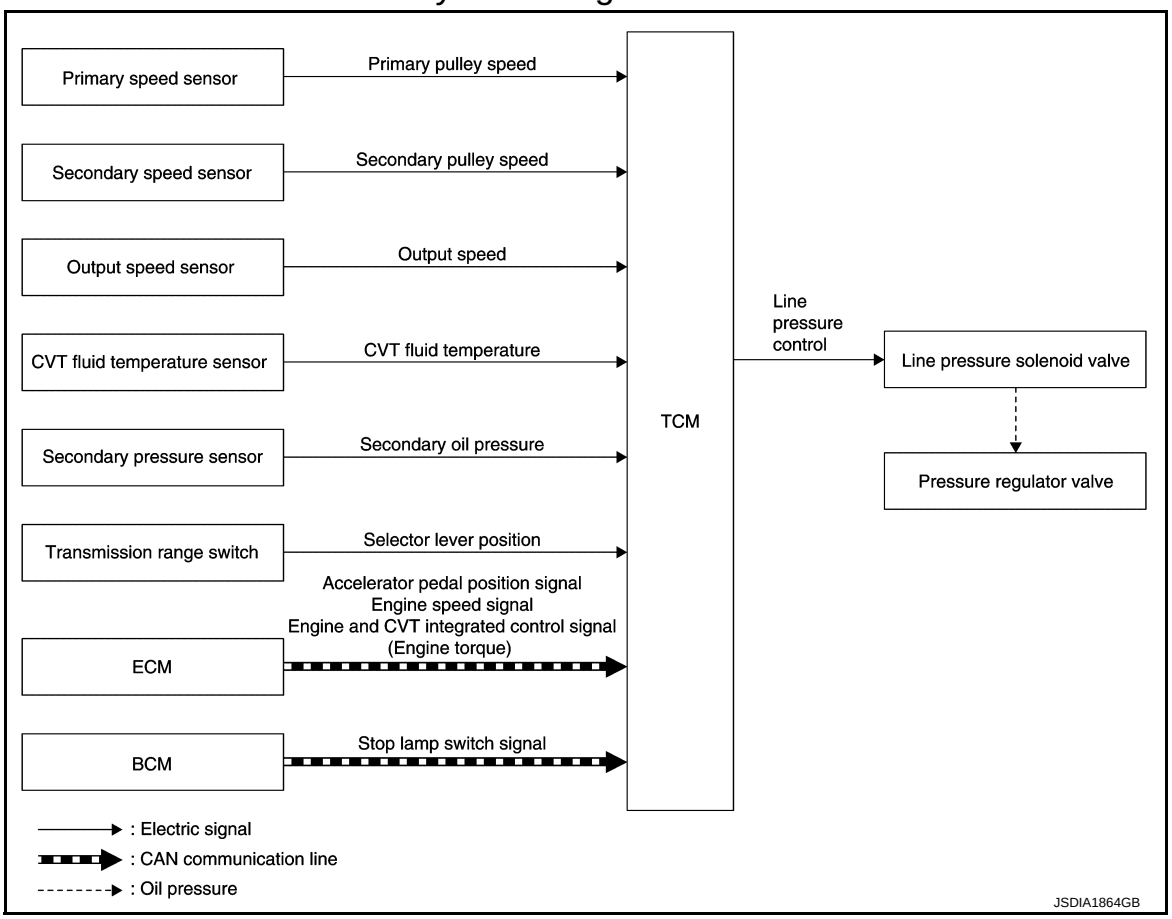
REVERSE PROHIBIT CONTROL

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 Diagram

INFOID:0000000006487580



LINE PRESSURE CONTROL : System Description

INFOID:0000000006487581

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

NORMAL OIL PRESSURE CONTROL

Appropriate line pressure and 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.

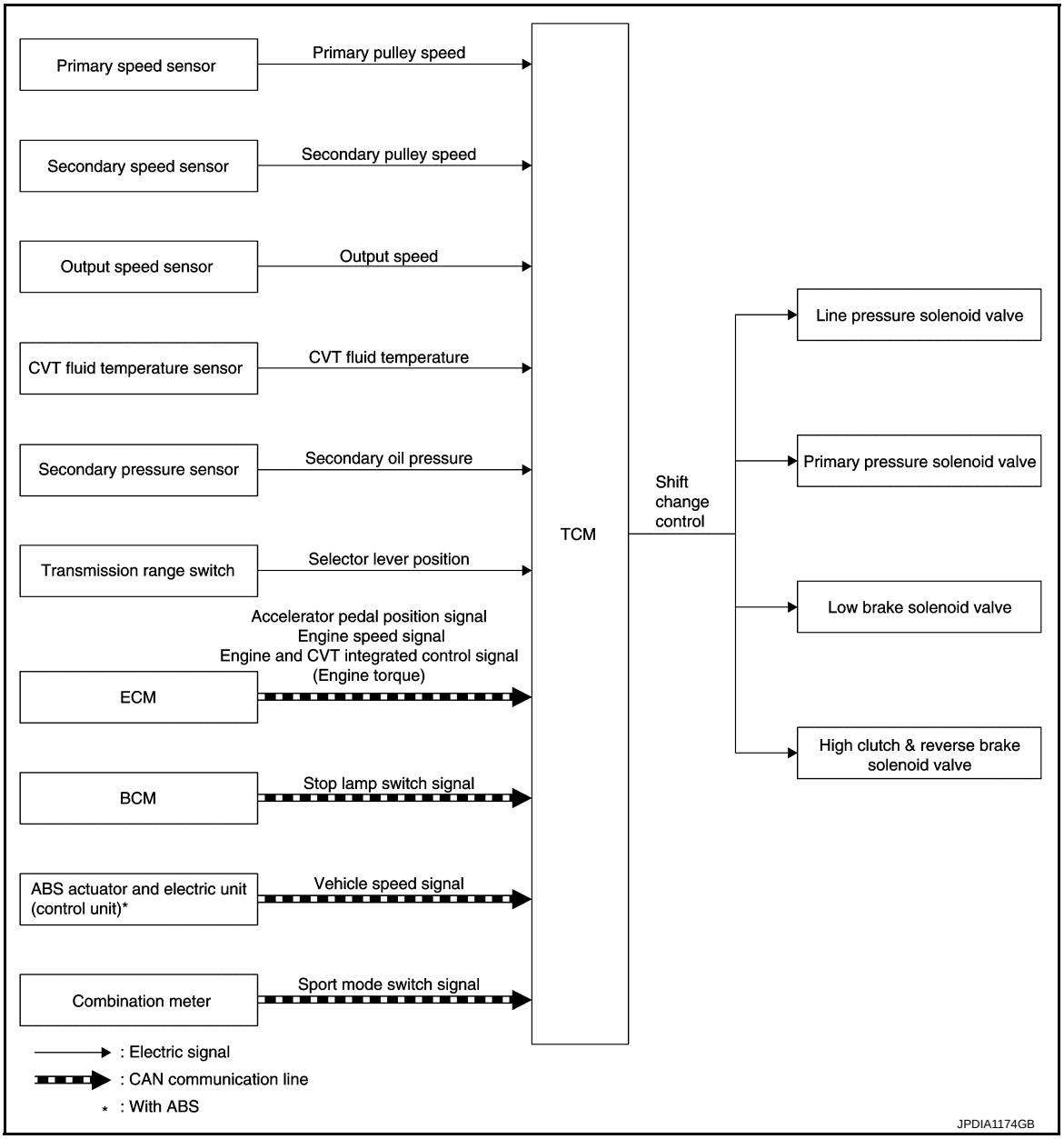
SECONDARY PRESSURE FEEDBACK CONTROL

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

SHIFT CHANGE CONTROL

SHIFT CHANGE CONTROL : System Diagram

INFOID:0000000006487578



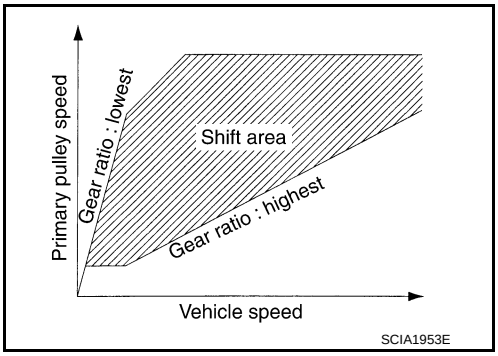
SHIFT CHANGE CONTROL : System Description

INFOID:0000000006487579

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.

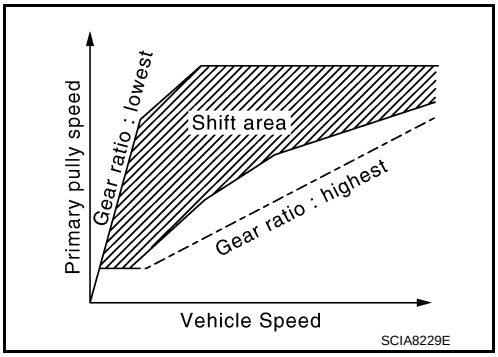
D POSITION (NORMAL)

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



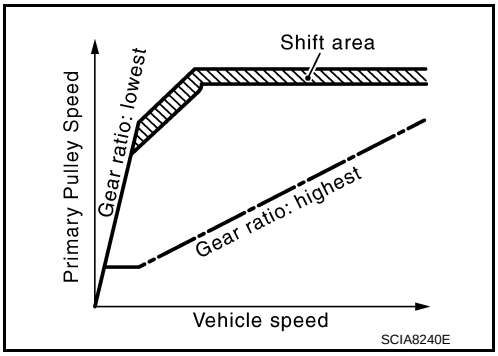
D POSITION (S MODE)

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.

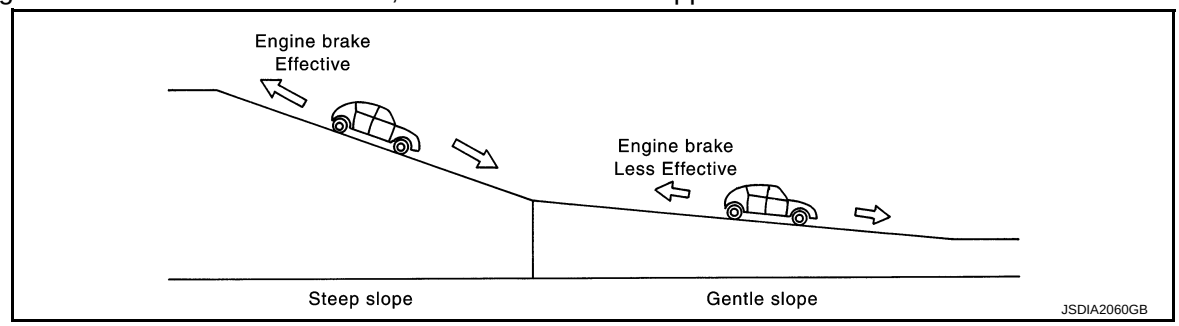


HILL CLIMBING AND DESCENDING CONTROL

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-III.



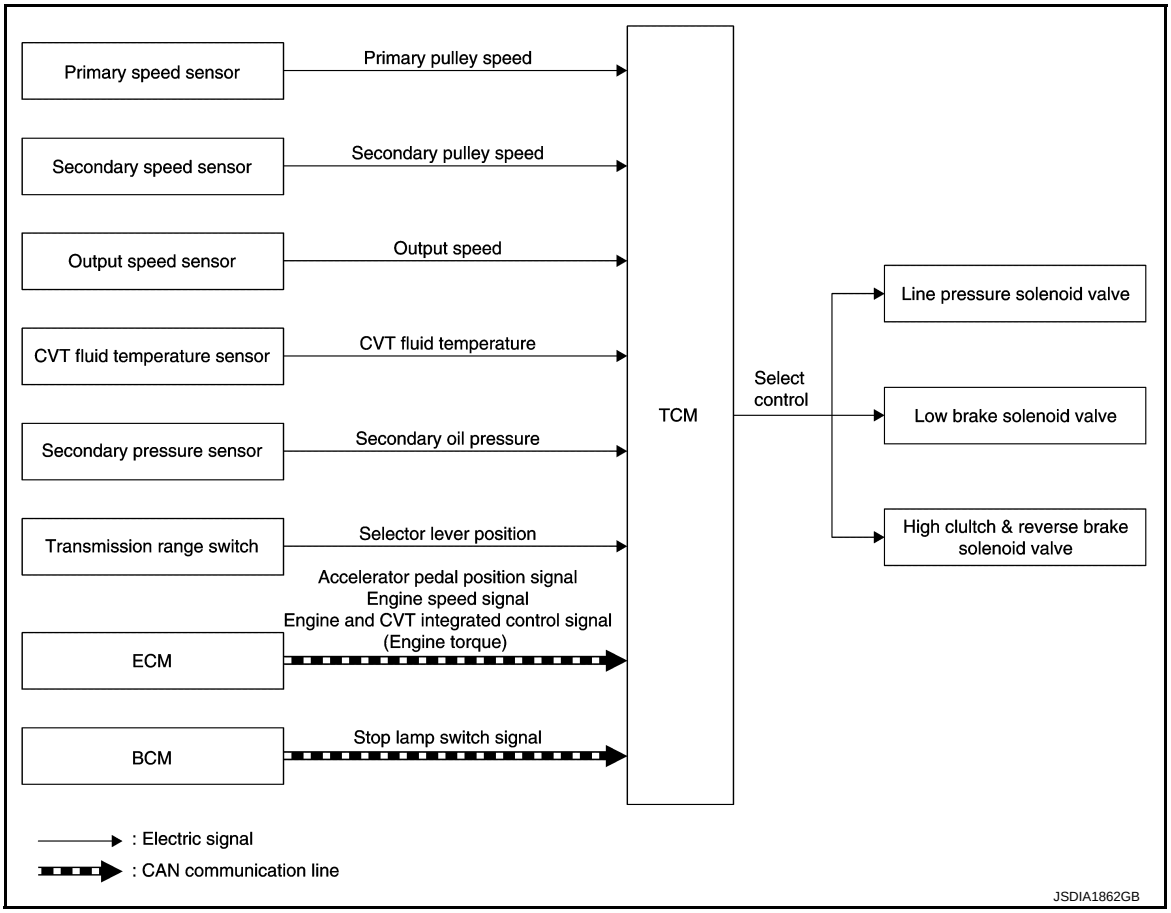
CONTROL IN ACCELERATION

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 diagram

INFOID:0000000006592653



SELECT CONTROL : System Description

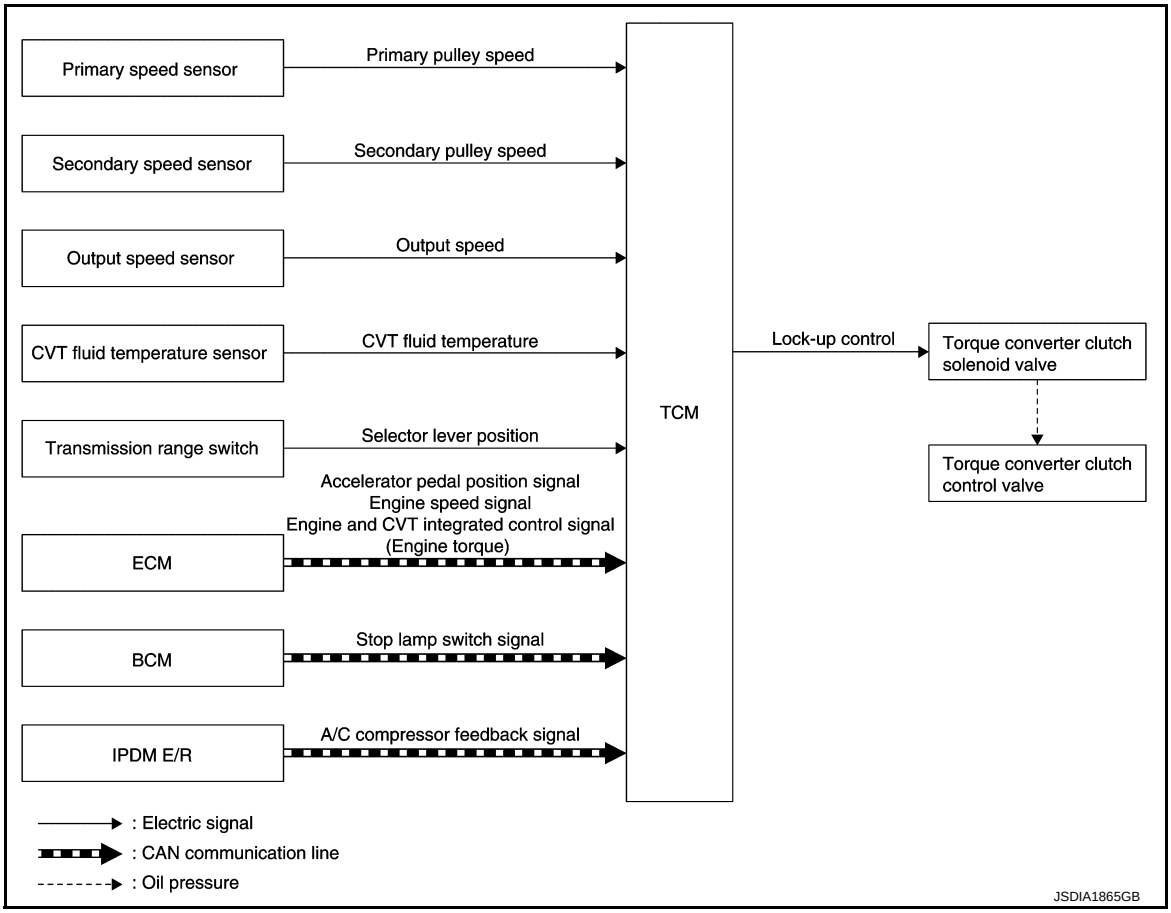
INFOID:0000000006592654

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 Diagram

INFOID:0000000006487584



LOCK-UP CONTROL : System Description

INFOID:0000000006487585

- 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.

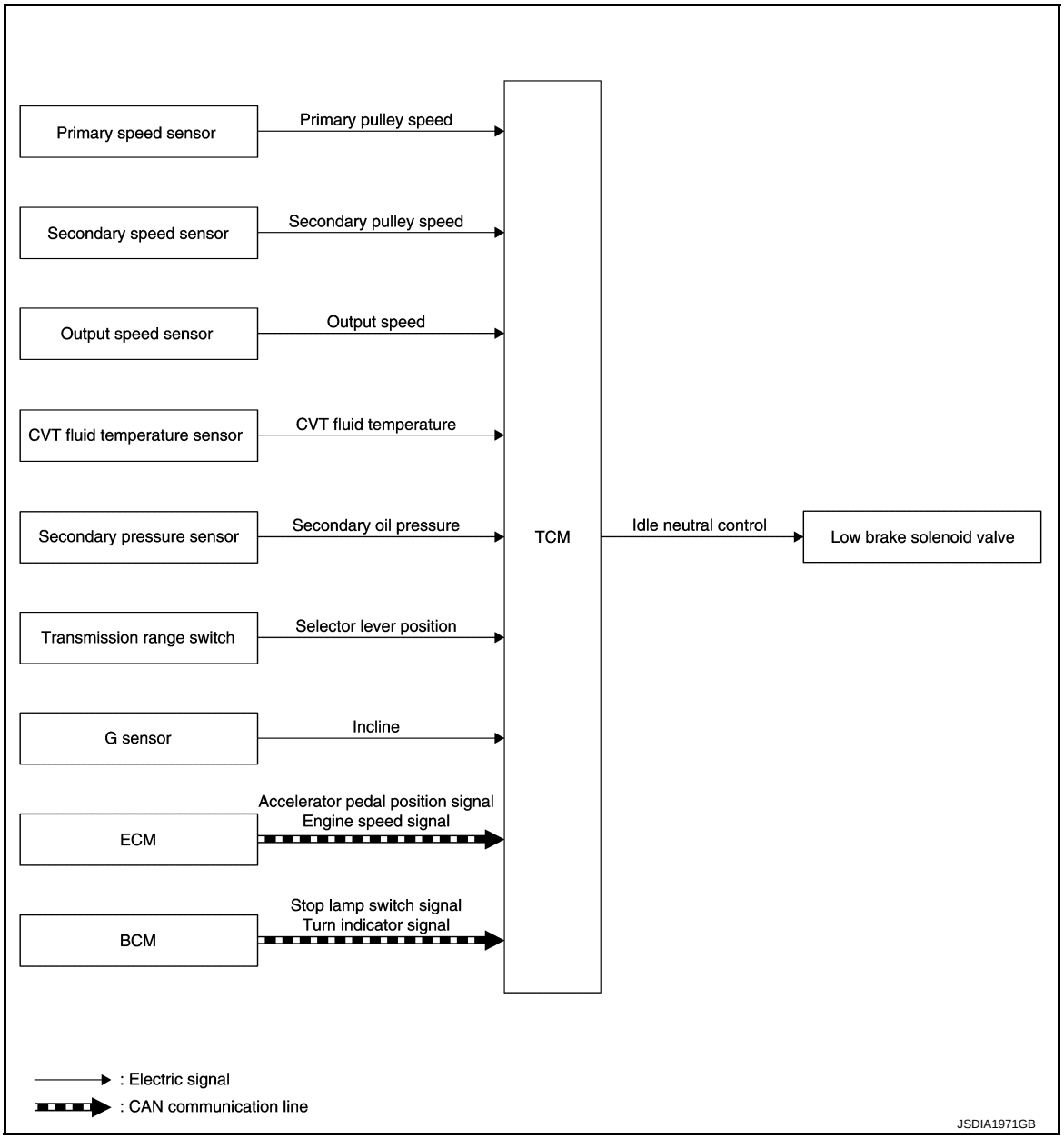
Lock-up release condition

- 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 Diagram

INFOID:0000000006487586

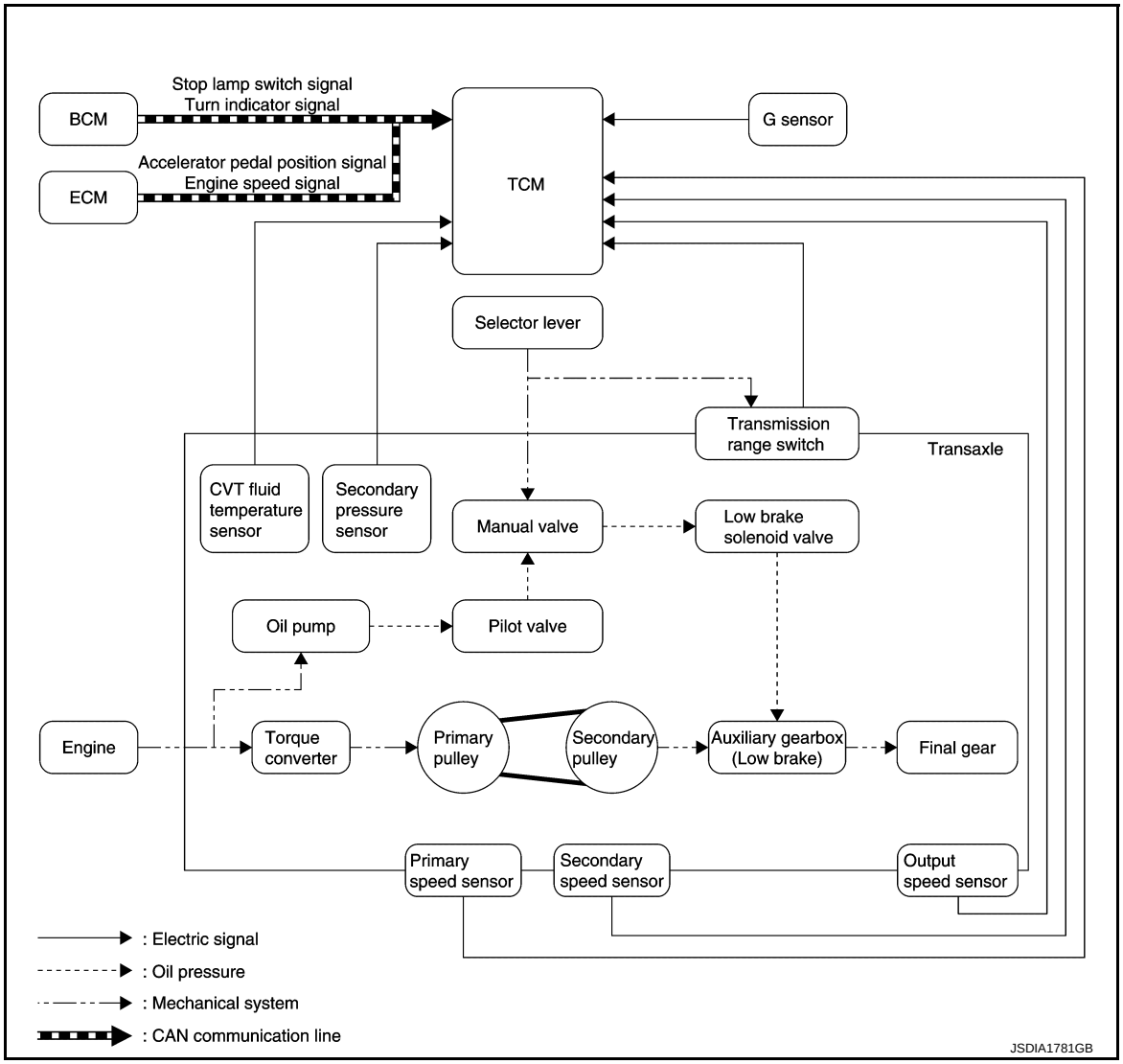


IDLE NEUTRAL CONTROL : System Description

INFOID:0000000006487587

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.

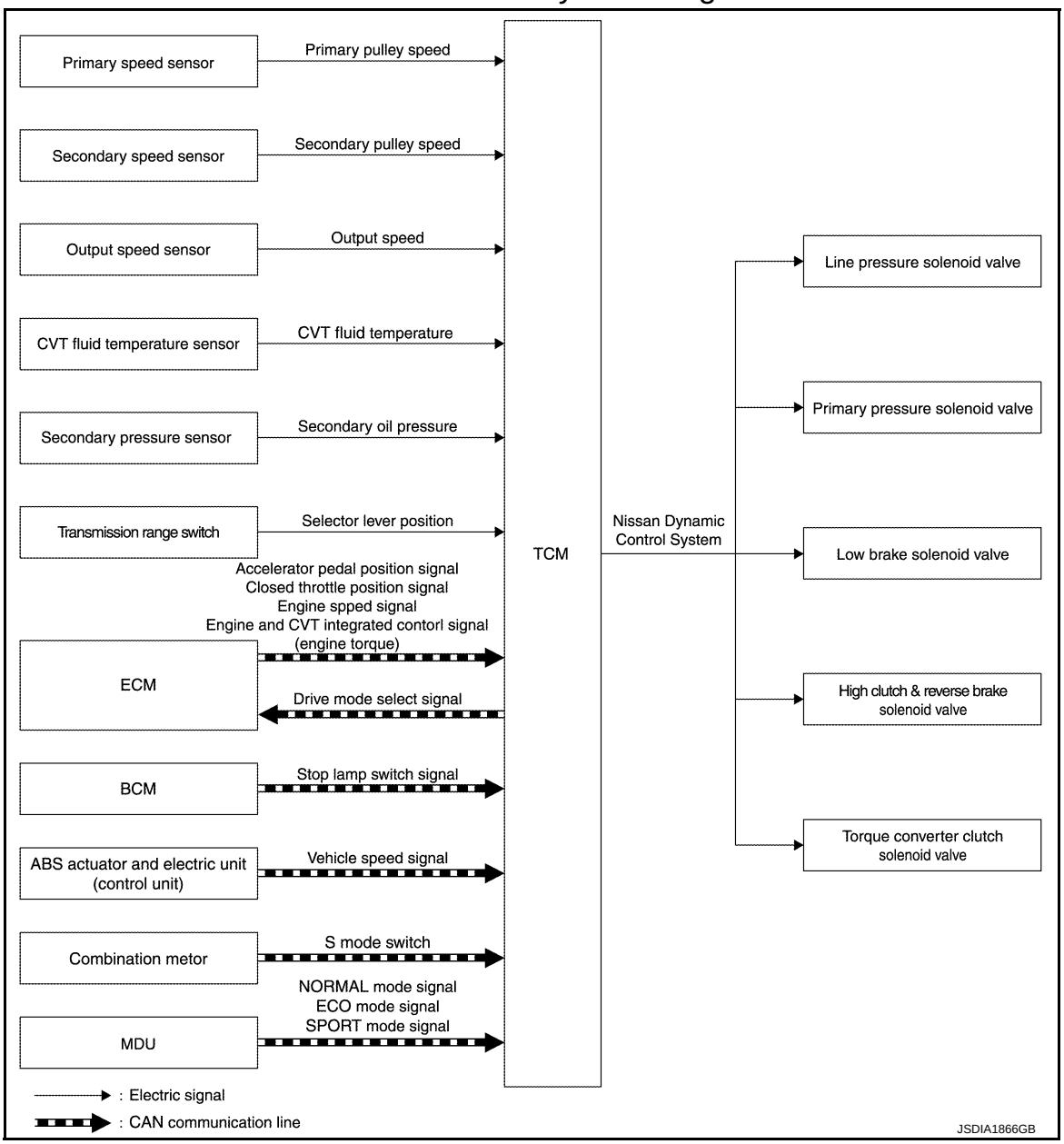
IDLE NEUTRAL CONTROL RESUME CONDITION

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.

NISSAN DYNAMIC CONTROL SYSTEM

NISSAN DYNAMIC CONTROL SYSTEM : System diagram

INFOID:0000000006487582



NISSAN DYNAMIC CONTROL SYSTEM : System Description

INFOID:0000000006487583

- TCM receives the NORMAL mode signal, ECO mode signal or SPORT mode signal from the multi display unit through CAN communication.
- TCM sends the recognized control mode to ECM through CAN communication (drive mode select signal).
- With operation on the multi display unit, the mode is changed on the display, but the mode is actually not changed due to CAN communication malfunction.
- 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 S mode is ON.

CONTROL DETAILS OF EACH MODE

Control mode	Control
NORMAL mode	Driving mode that automatically selects the shift schedule considering the balance of fuel economy and driving performance based on the driving condition and driving trend.
SPORT mode	Driving mode that keeps high engine revolution and provides direct feel and acceleration performance suitable for driving on winding road.
ECO mode	Driving mode that selects the shift schedule with priority on fuel economy which gives low engine revolution.

FAIL-SAFE

If CAN communication malfunction occurs between TCM and the multi display unit, the mode when the malfunction occurs is maintained for approximately 30 seconds and the mode is changed to NORMAL mode when the accelerator pedal is released.

A/T SHIFT LOCK SYSTEM

A/T SHIFT LOCK SYSTEM : System Description

INFOID:0000000006487589

- 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.

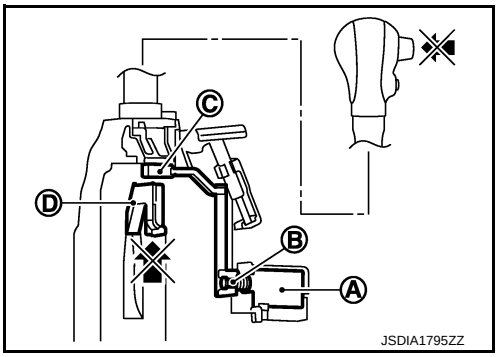
- Ignition switch is ON.
- Stop lamp switch ON (brake pedal is depressed)
- Press the selector button.

SHIFT LOCK OPERATION AT P POSITION

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

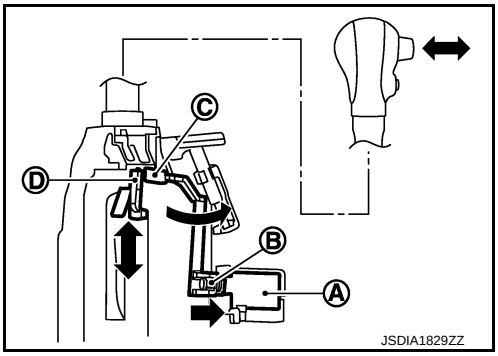
When the brake pedal is not depressed with the ignition switch ON, the shift lock solenoid (A) is OFF (not energized) and the solenoid rod (B) is extended with spring.

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



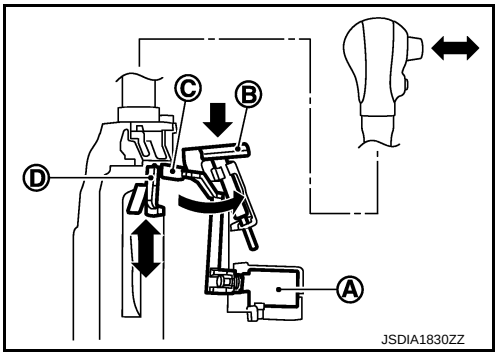
When brake pedal is depressed (selector lever operation allowed)

The shift lock solenoid (A) is turned ON (energized) when the brake pedal is depressed with the ignition switch ON. The solenoid rod (B) is compressed with the electromagnetic force. The connecting lock lever (C) rotates when the solenoid rod is compressed. Therefore, the detent rod (D) 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 (A) 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 (C) is forcibly rotated and the shift lock is released when the shift lock release button (B) is pressed from above. The selector operation from “P” position can be performed.



JSDIA1830ZZ

D : Dtent 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

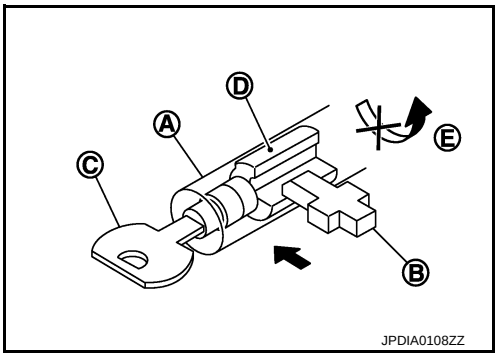
INFOID:0000000006487590

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



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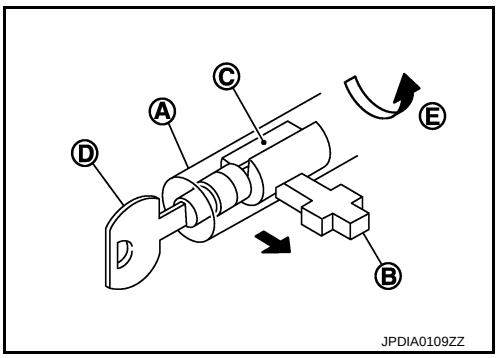
Key unlock status

The slider (B) in the key cylinder (A) 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 (C) can be rotated for this reason. The key (D) can be removed from the key cylinder because it can be turned to LOCK (E).



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ON BOARD DIAGNOSTIC (OBD) SYSTEM

Description

INFOID:0000000006487591

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:0000000006487592

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-III. Refer to GI-50, "Description".

DIAGNOSIS SYSTEM (TCM)

DIAGNOSIS DESCRIPTION

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

INFOID:0000000006601240

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-366, "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-366, "DTC Index")	—	—	×	—	×	—
2 trip detection diagnosis (Refer to TM-366, "DTC Index")	×	—	—	×	—	×

DIAGNOSIS DESCRIPTION : DTC and DTC of 1st Trip

INFOID:0000000006601241

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-347, "CONSULT-III Function (TRANSMISSION)".
- If DTC of the 1st trip is detected, it is necessary to check the cause according to the “Diagnosis flow”. Refer to TM-371, "Flowchart of Trouble Diagnosis".

DIAGNOSIS DESCRIPTION : Malfunction Indicator Lamp (MIL)

INFOID:0000000006601242

- 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 EC-466, "Malfunction Indicator".

DIAGNOSIS DESCRIPTION : Counter System

INFOID:0000000006601243

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 condition	Trip
MIL (OFF)	B	3
DTC (clear)	A	40
DTC at 1st trip (clear)	B	1

DRIVING CONDITION

Driving condition A

Driving condition 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 condition B

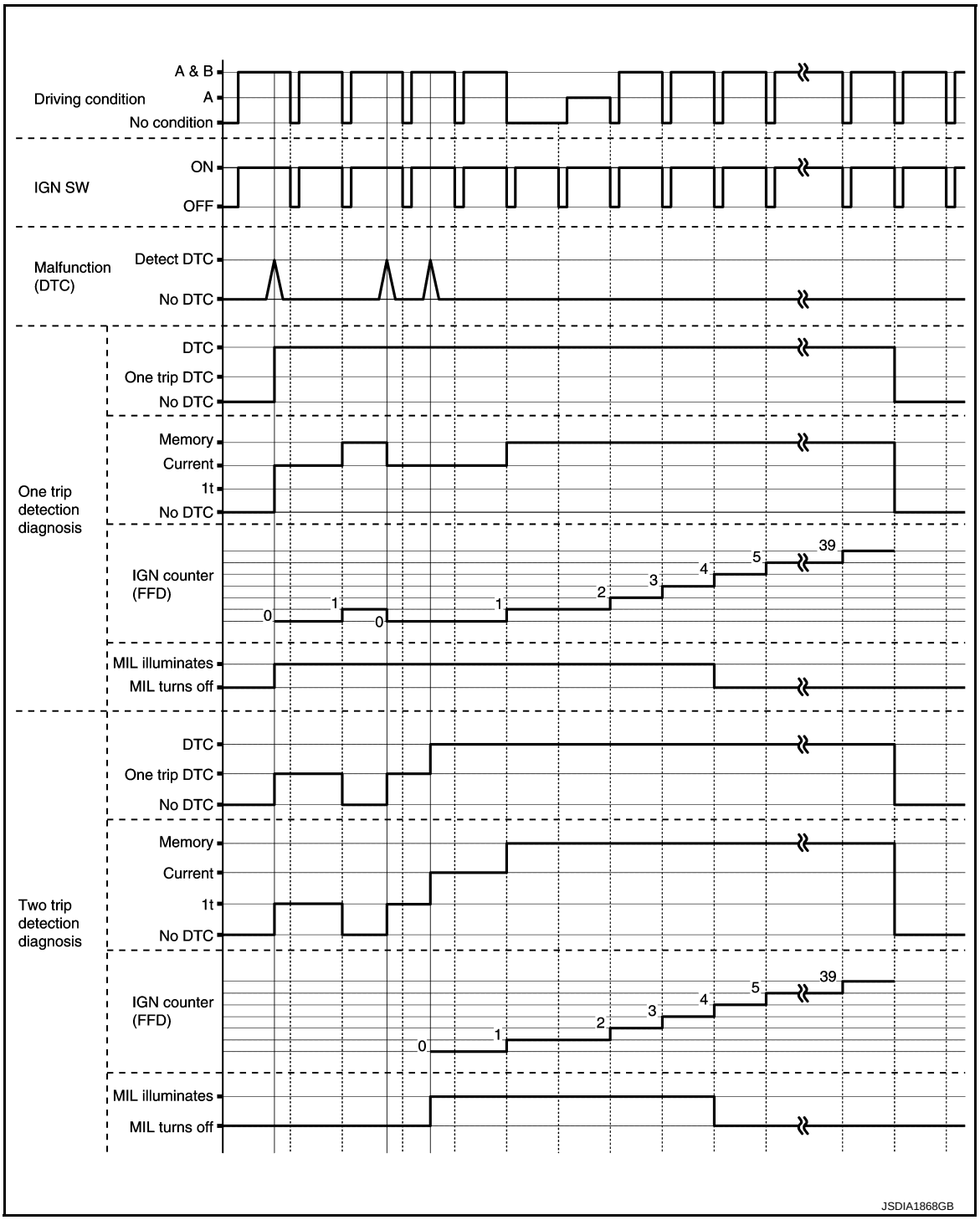
Driving condition B is the driving condition that performs all diagnoses once.
In specific, count-up is performed when all of the following conditions are satisfied.

- 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-III Function (TRANSMISSION)

INFOID:0000000006487593

APPLICABLE ITEM

Conditions	Function
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.
Function Test*	This mode can show results of self-diagnosis of ECU with either “OK” or “NG”. For engines, more practical tests regarding sensors/switches and/or actuators are available.
ECU Identification	Display the ECU identification number (part number etc.) of the selected system.
Special Function	Other results or histories, etc. that are recorded in ECU are displayed.

*: “Function Test” can be selected, but do not use it.

SELF DIAGNOSTIC RESULTS

Display Item List
Refer to TM-366, "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-III. “ Timing” shows current malfunction or malfunction in the past.
  If current DTC is detected, “timing” is “present”. If the “timing” is “memorized”, it is the malfunction occurred in the past. According to “ignition counter” in “FFD”, the number (trip) of operation without malfunction of the DTC can be checked.
- 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-III.
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 condition A" is displayed after normal recovery of DTC. Refer to TM-345, "DIAGNOSIS DESCRIPTION : Counter System".
- If malfunction (DTC) is currently detected, “0” is displayed.
- After normal recovery, every time "Driving condition 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

×: 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.

Monitored item	(Unit)	Monitor item selection		Remarks
		MAIN SIGNALS	ECU INPUT SIGNALS	
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.
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.

Monitored item	(Unit)	Monitor item selection		Remarks
		MAIN SIGNALS	ECU INPUT SIGNALS	
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.
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).

Monitored item	(Unit)	Monitor item selection		Remarks
		MAIN SIGNALS	ECU INPUT SIGNALS	
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 S mode 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.
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 S mode indicator signal transmitted through CAN communication.
SPORT MODE IND	(On/Off)	▼	▼	Displays the transmission status of the S mode indicator 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.
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.

Monitored item	(Unit)	Monitor item selection		Remarks
		MAIN SIGNALS	ECU INPUT SIGNALS	
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.
4WD-TCS SIGNAL	(On/Off)	▼	×	• Displays the reception status of the engine torque down request signal received through CAN communication.
RANGE		×	▼	Displays the gear position recognized by TCM.
M GEAR POS		×	▼	Display the target gear of manual mode
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.
DRIVE MODE STATS	(On/Off)	▼	▼	• Displays the drive mode status recognized by TCM. • Only vehicle with Nissan Dynamic Control System are displayed.
SNOW MODE	(On/Off)	▼	▼	• Display the drive mode (SNOW switch status) of Nissan Dynamic Control System received through CAN communication. • Only vehicle with Nissan Dynamic Control System are displayed. • It is displayed although not equipped.
ECO MODE	(On/Off)	▼	▼	• Display the driving mode (ECO switch status) of Nissan Dynamic Control System received through CAN communication. • Only vehicle with Nissan Dynamic Control System are displayed.
NORMAL MODE	(On/Off)	▼	▼	• Display the driving mode (AUTO switch status) of Nissan Dynamic Control Systemm received through CAN communication. • Only vehicle with Nissan Dynamic Control System are displayed.
SPORT MODE	(On/Off)	▼	▼	• Display the driving mode (SPORT switch status) of Nissan Dynamic Control System received through CAN communication. • Only vehicle with Nissan Dynamic Control System are displayed.
TRGT AUX GR RATIO		▼	▼	Displays the target gear ratio of the auxiliary gearbox calculated from processing of gear shift control.
G SEN CALIBRATION	(YET/DONE)	▼	▼	Displays the status of "G SENSOR CALIBRATION" in "Work support".
N IDLE STATUS	(On/Off)	▼	▼	Displays idle neutral status.

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.
CLUTCH POINT LEARNING*	Allow learning of the clutch engagement point of the auxiliary gearbox for TCM.

*: “Clutch point learning” can be selected, but do not use it.

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.

SPECIAL FUNCTION

Item name	Description
CALIB DATA	The calibration data status of TCM can be checked.

ECU DIAGNOSIS INFORMATION

TCM

Reference Value

INFOID:0000000006487594

CONSULT-III DATA MONITOR STANDARD VALUE

- In CONSULT-III, 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-III, 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-III 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-III shows gear position at end of shift.
- The solenoid display (ON/OFF) on CONSULT-III 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
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 obrained 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	Approx. 0.88 – 0.92 V
ATF TEMP SEN	CVT fluid: Approx. 20°C (68°F)	Approx. 2.01 – 2.05 V
	CVT fluid: Approx. 50°C (122°F)	Approx. 1.45 – 1.50 V
	CVT fluid: Approx. 80°C (176°F)	Approx. 0.90 – 0.94 V
G SENSOR	Vehicle is level	Approx. 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 obrained 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
TOTAL GEAR RATIO	Auxiliary gearbox: 1GR	Counter gear ratio ×Pulley ratio Auxiliary gearbox gear ratio
	Auxiliary gearbox: 2GR	Counter gear ratio ×Pulley ratio

Monitor item	Condition	Value/Status
PULLEY GEAR RATIO	In driving (forward)	Approx. 2.20 – 0.55
	In driving (reverse)	Approx. 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	Approx. 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)	Approx. 2.20 – 0.55
	In driving (reverse)	Approx. 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.	Approx. –0.500 MPa
	• Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 20 km/h (12 MPH) or more	Approx. 0.450 MPa
LINE PRS	• After engine warm up • Selector lever: “N” position • At idle	Approx. 0.500 MPa
	• After engine warming up • Selector lever: “N” position • Depress the accelerator pedal fully	Approx. 4.930 – 5.430 MPa
TRGT PRI PRESSURE	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	Approx. 0.325 MPa

Monitor item	Condition	Value/Status
TRGT HC/RB PRESS	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	Approx. 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	Approx. 0.400 MPa
TRGT LB PRESSURE	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	Approx. 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	Approx. 0.000 MPa
ISOLT1	• Engine started • Vehicle is stopped.	Approx. 0.000 A
	• Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 20 km/h (12 MPH) or more	Approx. 0.500 A
ISOLT2	• After engine warm up • Selector lever: “N” position • At idle	Approx. 0.800 – 0.900 A
	• After engine warming up • Selector lever: “N” position • Depress the accelerator pedal fully	Approx. 0.350 – 0.400 A
PRI SOLENOID	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	Approx. 0.850 – 0.900 A
HC/RB SOLENOID	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	Approx. 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	Approx. 0.800 – 0.850 A
L/B SOLENOID	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	Approx. 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	Approx. 0.000 A
SOLMON1	• Engine started • Vehicle is stopped.	Approx. 0.000 A
	• Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 20 km/h (12 MPH) or more	Approx. 0.500 A
SOLMON2	• After engine warm up • Selector lever: “N” position • At idle	Approx. 0.800 – 0.900 A
	• After engine warming up • Selector lever: “N” position • Depress the accelerator pedal fully	Approx. 0.350 – 0.400 A
PRI SOL MON	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	Approx. 0.850 – 0.900 A

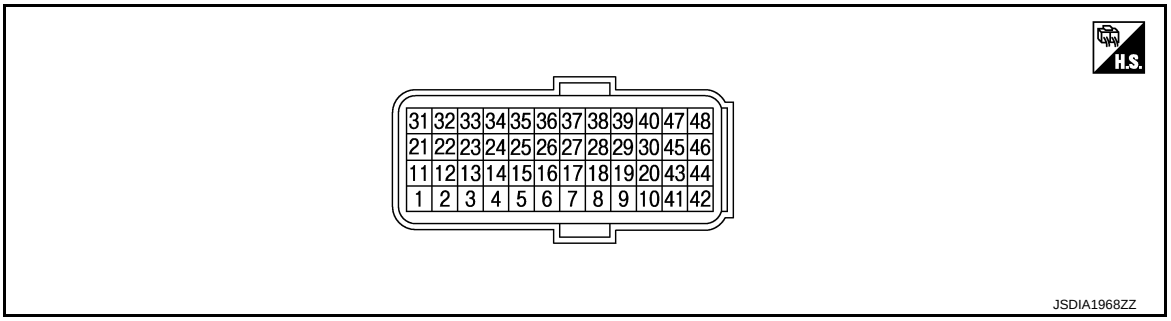
Monitor item	Condition	Value/Status
HC/RB SOL MON	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	Approx. 1,000 A
	Release the accelerator pedal after the following conditions are satisfied • Selector lever: “D” position • Accelerator pedal position: 1/8 or less • Vehicle speed: 50 km/h (31 MPH) or more	Approx. 0.800 – 0.850 A
L/B SOL MON	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	Approx. 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	Approx. 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 fully depressed	On
	Accelerator pedal is released	Off
SPORT MODE SW	Press the S mode switch.	On
	Release the S mode 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 S mode	On
	Other than the above	Off

Monitor item	Condition	Value/Status
SPORT MODE IND	In S mode	On
	Other than the above	Off
MMODE IND	Always	Off
VDC ON	ESP 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 (S mode indicator OFF)	D
	Selector lever: “D” position (S mode indicator ON)	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%)
PVIGN VOLT	Ignition switch: ON	10 – 16 V
DRIVE MODE STATS*	Nissan Dynamic Control System: NORMAL mode	NORMAL
	Nissan Dynamic Control System: ECO mode	ECO
	Nissan Dynamic Control System: SPORT mode	SPORT
SNOW MODE*	Always	Off
ECO MODE*	Nissan Dynamic Control System: ECO mode	On
	Other than the above	Off
NORMAL MODE*	Nissan Dynamic Control System: NORMAL mode	On
	Other than the above	Off
SPORT MODE*	Nissan Dynamic Control System: SPORT mode	On
	Other than the above	Off
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

Monitor item	Condition	Value/Status
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

*: With Nissan Dynamic Control System

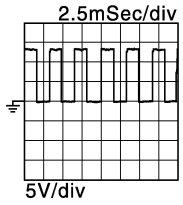
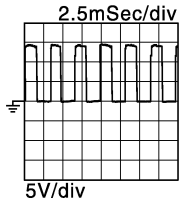
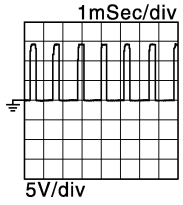
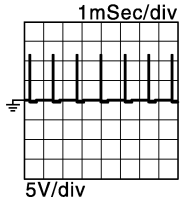
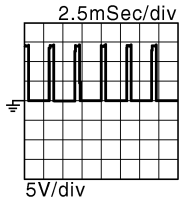
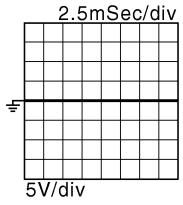
TERMINAL LAYOUT

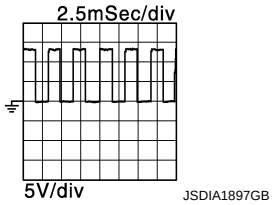


INPUT/OUTPUT SIGNAL STANDARD

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	−	Signal	Input/ Output			
2 (V)	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 (Y)	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 (L)	Ground	P range switch	Input		Selector lever: “P” position	10 – 16 V
					Other than the above	0 V
11 (Y)	Ground	Sensor ground	Input	Always		0 V
12 (SB)	Ground	CVT fluid temperature sensor	Output	Ignition switch ON	CVT fluid: Approx. 20°C	2.01 – 2.05 V
					CVT fluid: Approx. 50°C	1.45 – 1.50 V
					CVT fluid: Approx. 80°C	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
15 (BR)	Ground	Sensor ground	Input	Always		0 V
16 (P)	Ground	Secondary pressure sensor	Output	• Selector lever: “N” position • At idle		0.88 – 0.92 V

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	−	Signal	Input/ Output		
21 (BG)	—	ROM ASSY (CHIP SELECT)	—	—	—
22 (GR)	—	ROM ASSY (DATA I/O)	—	—	—
23 (P)	—	CAN-L	Input/ Output	—	—
24 (BR)	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 (LG)	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 (BG)	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	 JSDIA1897GB
				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	 JSDIA1899GB
38 (R)	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	 JSDIA1900GB
				• Engine started • Vehicle is stopped	 JSDIA1901GB
39 (G)	Ground	Low brake solenoid valve	Output	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	 JSDIA1902GB
				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	 JSDIA1903GB

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)	 JSDIA1897GB
41 (B)	Ground	Ground	Output	Always	0 V
42 (B)	Ground	Ground	Output	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 (Y)	Ground	Power supply	Input	Ignition switch: ON	10 – 16 V
				Ignition switch: OFF	0 V

Fail-Safe

INFOID:0000000006487595

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 starts is 10°C or more.
	• Selector shock is large • Start is slow	Engine coolant temperature when engine starts is less than –10°C
	• Selector shock is large • Start is slow	Engine coolant temperature when engine starts is less than –35°C

DTC	Vehicle behavior	Conditions of vehicle
P0712	• Acceleration is slow	Engine coolant temperature when engine starts is 10°C or more.
	• Selector shock is large • Start is slow	Engine coolant temperature when engine starts is less than −10°C
	• Selector shock is large • Start is slow	Engine coolant temperature when engine starts is less than −35°C
P0713	• Acceleration is slow	Engine coolant temperature when engine starts is 10°C or more.
	• Selector shock is large • Start is slow	Engine coolant temperature when engine starts is less than −10°C
	• Selector shock is large • Start is slow	Engine coolant temperature when engine starts is less than −35°C
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	• Start is slow • Acceleration is slow	—
P0848	• Start is slow • Acceleration is slow	—
P0863	• Not changed from normal driving	—
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.	—
P1586	• Not changed from normal driving	—
P1588	• Not changed from normal driving	—
P1701	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed.	—
P1739	• Start is slow	—
P173A	• Vehicle speed is not increased	—
P173B	• Start is slow	—
P173C	• Vehicle speed is not increased	—

DTC	Vehicle behavior	Conditions of vehicle
P17B4	• Start is slow	—
P17B5	• Start is slow	Wire disconnection
	• Vehicle speed is not increased	Voltage shorting
P17B7	• Start is slow	—
P17B8	• Start is slow	Wire disconnection
	• Vehicle speed is not increased	Voltage shorting
P17BA	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed.	—
P17BB	• Selector shock is large • Start is slow • Acceleration is slow • Lock-up is not performed.	—
P2765	• Selector shock is large • Start is slow • Acceleration is slow • Vehicle speed is not increased • Lock-up is not performed.	—
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	• Not changed from normal driving	—
U1000	• Not changed from normal driving	—
U1114	• Not changed from normal driving	—
U1117	• Not changed from normal driving	—
U1119	• Not changed from normal driving	—

Protection control

INFOID:0000000006487596

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:0000000006487597

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-430
	U0073 COMM BUS A OFF	TM-384
	U0100 LOST COMM (ECM A)	TM-385
	U0140 LOST COMM (BCM)	TM-386
	U0141 LOST COMM (BCM A)	TM-387
	U0155 LOST COMM (IPC)	TM-388
	U0300 CAN COMM DATA	TM-389
	U1000 CAN COMM CIRC	TM-390
	U1117 LOST COMM (ABS)	TM-391
	U1119 LOST COMM (MLTI DISP)	TM-392
2	P0740 TORQUE CONVERTER	TM-416
	P0743 TORQUE CONVERTER	TM-418
	P0962 PC SOLENOID A	TM-431
	P0963 PC SOLENOID A	TM-433
	P17B4 LOW BRAKE SOLENOID	TM-449
	P17B5 LOW BRAKE SOLENOID	TM-451
	P17B7 HIGH CLUTCH SOLENOID	TM-453
	P17B8 HIGH CLUTCH SOLENOID	TM-455
	P17BA PRIMARY PRESSURE SOL	TM-457
	P17BB PRIMARY PRESSURE SOL	TM-459
3	P1701 TCM	TM-440

Priority	DTC (Diagnostic Trouble Code)	Reference
4	P062F EEPROM	TM-393
	P0705 T/M RANGE SENSOR A	TM-394
	P0706 T/M RANGE SENSOR A	TM-400
	P0711 FLUID TEMP SENSOR A	TM-406
	P0712 FLUID TEMP SENSOR A	TM-406
	P0713 FLUID TEMP SENSOR A	TM-408
	P0715 INPUT SPEED SENSOR A	TM-410
	P0847 FLUID PRESS SEN/SW B	TM-426
	P0848 FLUID PRESS SEN/SW B	TM-428
	P1586 G SENSOR	TM-435
	P1588 G SENSOR	TM-438
	P2765 OUTPUT SPEED SENSOR	TM-461
5	P0720 OUTPUT SPEED SENSOR	TM-413
6	P0746 PC SOLENOID A	TM-422
	P1739 1GR INCORRECT	TM-441
	P173A 2GR INCORRECT	TM-443
	P173B 1GR INCORRECT	TM-445
	P173C 2GR INCORRECT	TM-447
7	P0744 TORQUE CONVERTER	TM-420
	P0846 FLUID PRESS SEN/SW B	TM-424

DTC Index

INFOID:0000000006487598

NOTE:
- If multiple malfunction codes are detected at the same time, check each code according to the "DTC check priority list". TM-365, "DTC Inspection Priority Chart".
- The ignition counter is displayed in “FFD”. Refer to TM-347, "CONSULT-III Function (TRANSMISSION)".

DTC*1, *2		Items (CONSULT-III screen terms)	Trip	MIL	Reference
GST	CONSULT-III (TRANSMIS-SION)				
P062F	P062F	EEPROM	1	ON	TM-393
P0705	P0705	T/M RANGE SENSOR A	2	ON	TM-394
P0706	P0706	T/M RANGE SENSOR A	2	ON	TM-400
P0711	P0711	FLUID TEMP SENSOR A	2	ON	TM-404
P0712	P0712	FLUID TEMP SENSOR A	2	ON	TM-406
P0713	P0713	FLUID TEMP SENSOR A	2	ON	TM-408
P0715	P0715	INPUT SPEED SENSOR A	2	ON	TM-410
P0720	P0720	OUTPUT SPEED SENSOR	2	ON	TM-413
P0740	P0740	TORQUE CONVERTER	2	ON	TM-416
P0743	P0743	TORQUE CONVERTER	2	ON	TM-418
P0744	P0744	TORQUE CONVERTER	2	ON	TM-420
P0746	P0746	PC SOLENOID A	2	ON	TM-422
P0846	P0846	FLUID PRESS SEN/SW B	2	ON	TM-424
P0847	P0847	FLUID PRESS SEN/SW B	2	ON	TM-426
P0848	P0848	FLUID PRESS SEN/SW B	2	ON	TM-428

DTC*1, *2		Items (CONSULT-III screen terms)	Trip	MIL	Reference
GST	CONSULT-III (TRANSMIS-SION)				
—	P0863	CONTROL UNIT (CAN)	1	—	TM-430
P0962	P0962	PC SOLENOID A	2	ON	TM-431
P0963	P0963	PC SOLENOID A	2	ON	TM-433
—	P1586	G SENSOR	1	—	TM-435
—	P1588	G SENSOR	1	—	TM-438
P1701	P1701	TCM	1	ON	TM-440
P1739	P1739	1GR INCORRECT	2	ON	TM-441
P173A	P173A	2GR INCORRECT	2	ON	TM-443
P173B	P173B	1GR INCORRECT	2	ON	TM-445
P173C	P173C	2GR INCORRECT	2	ON	TM-447
P17B4	P17B4	LOW BRAKE SOLENOID	2	ON	TM-449
P17B5	P17B5	LOW BRAKE SOLENOID	2	ON	TM-451
P17B7	P17B7	HIGH CLUTCH SOLENOID	2	ON	TM-453
P17B8	P17B8	HIGH CLUTCH SOLENOID	2	ON	TM-455
P17BA	P17BA	PRIMARY PRESSURE SOL	2	ON	TM-457
P17BB	P17BB	PRIMARY PRESSURE SOL	2	ON	TM-459
P2765	P2765	OUTPUT SPEED SENSOR	2	ON	TM-461
—	U0073	COMM BUS A OFF	1	—	TM-384
U0100	U0100	LOST COMM (ECM A)	2	ON	TM-385
—	U0140	LOST COMM (BCM)	1	—	TM-386
—	U0141	LOST COMM (BCM A)	1	—	TM-387
—	U0155	LOST COMM (IPC)	1	—	TM-388
—	U0300	CAN COMM DATA	1	—	TM-389
—	U1000	CAN COMM CIRC	1	—	TM-390
—	U1117	LOST COMM (ABS)	1	—	TM-391
—	U1119	LOST COMM (MLTI DISP)	1	—	TM-392

*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.

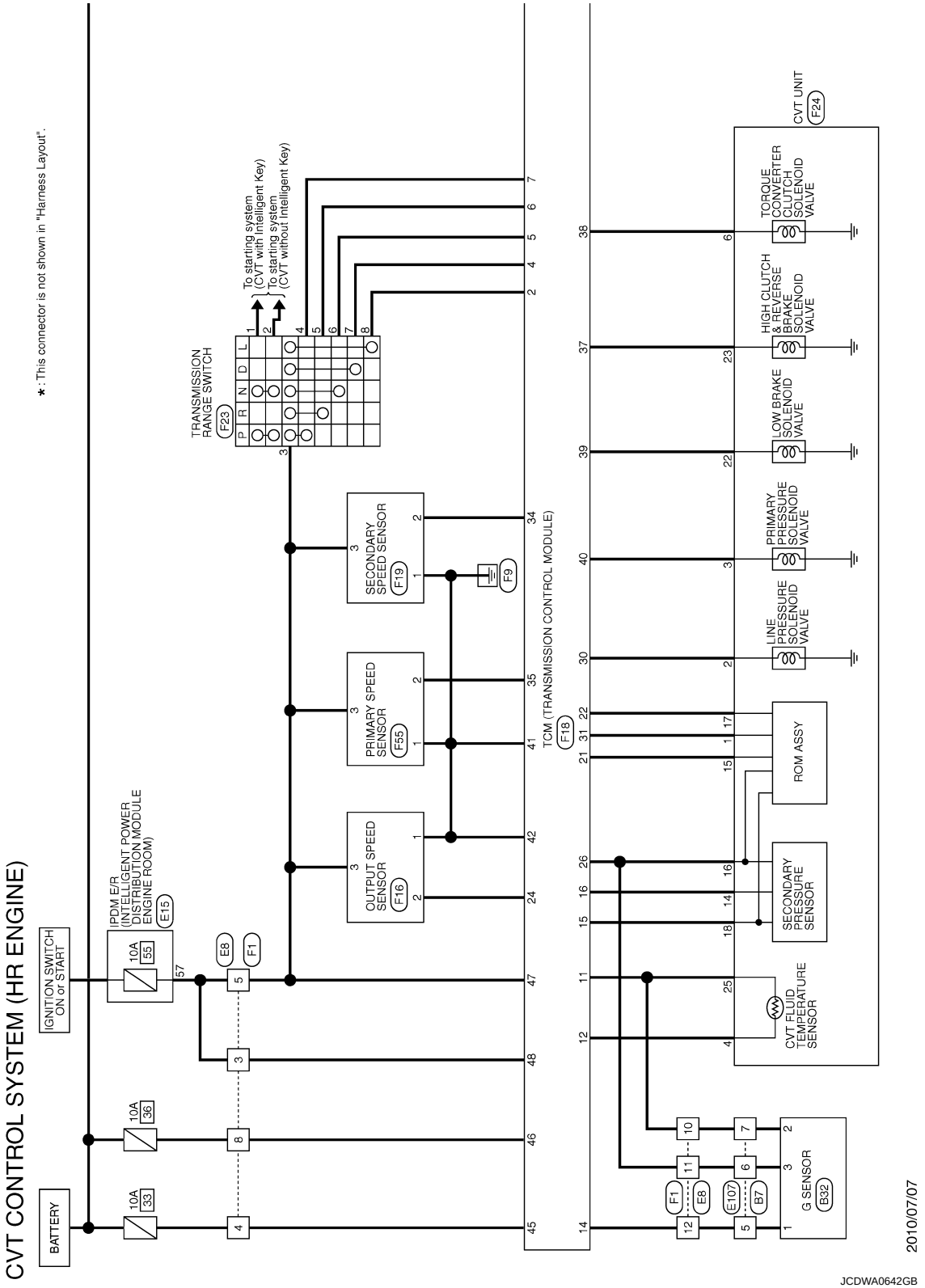
WIRING DIAGRAM

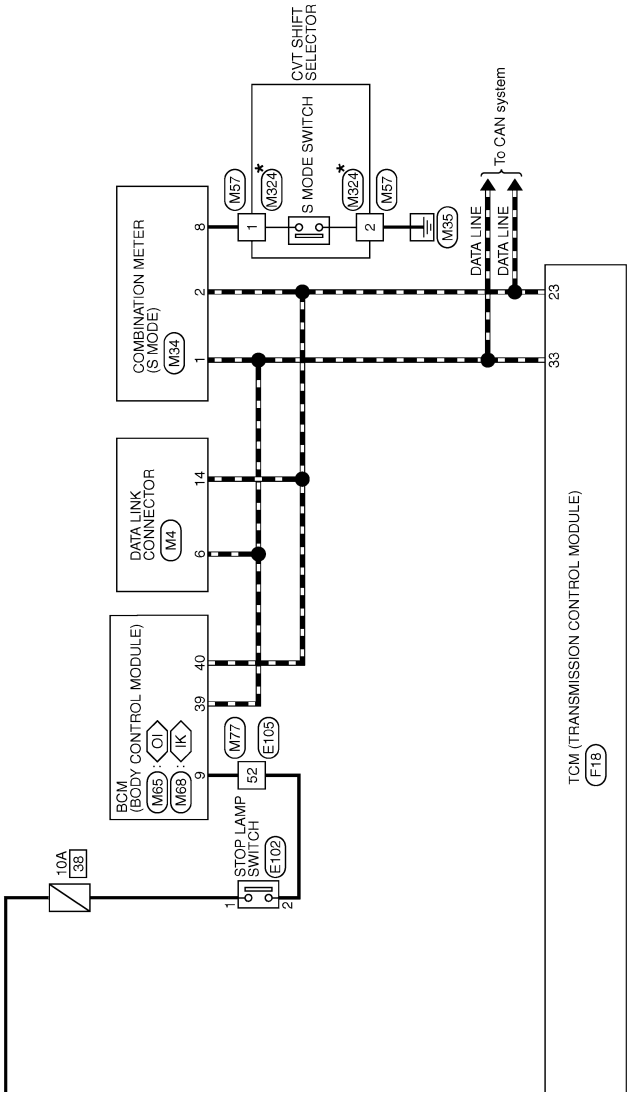
CVT CONTROL SYSTEM

Wiring diagram

INFOID:0000000006487599

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information/Explanation of Option Abbreviation".



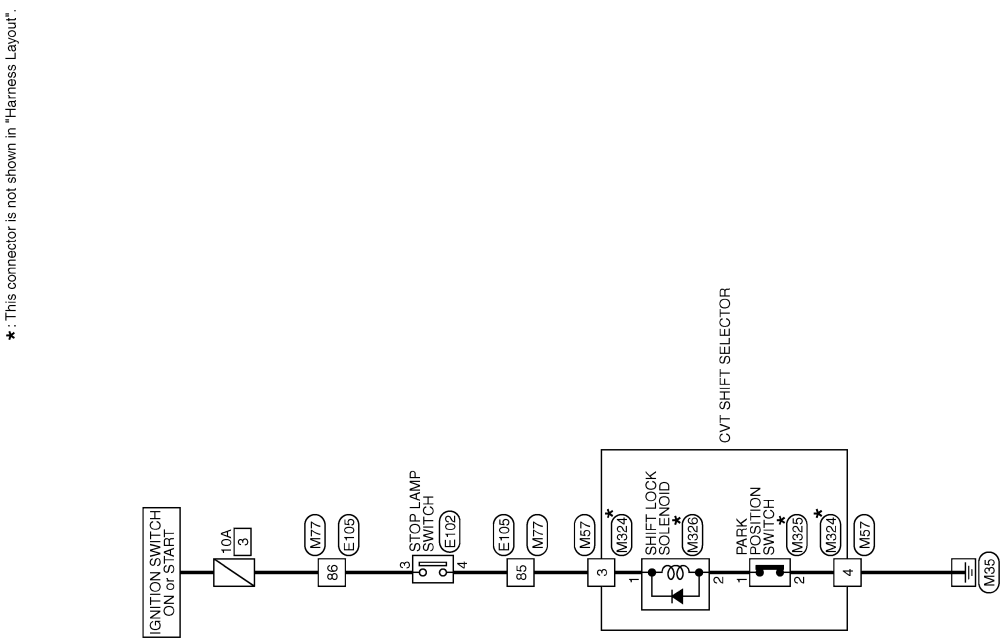

CVT SHIFT SELECTOR
S MODE SWITCH
M57
M324
M324
M57
M35
To CAN system
DATA LINE
DATA LINE
COMBINATION METER (S MODE)
M34
DATA LINK CONNECTOR
M4
BCM (BODY CONTROL MODULE)
M65
M68
OI
IK
M77
E105
STOP LAMP SWITCH
E102
10A
38
TCM (TRANSMISSION CONTROL MODULE)
F18
JCDWA0643GB

CVT SHIFT LOCK SYSTEM

Wiring diagram

INFOID:0000000006487600

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information/Explanation of Option Abbreviation".



SHIFT LOCK SYSTEM

2010/07/07

JCDWA0645GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Flowchart of Trouble Diagnosis

INFOID:0000000006487601

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

1.OBTAIN INFORMATION ABOUT SYMPTOM

1. Refer to TM-372, "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.
2. Check the following:

- Service history
- Malfunction of harness and connector. GI-42, "Intermittent Incident".

>> 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-III 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-475, "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-362, "Fail-Safe".
Interview sheet can be used effectively when reproduce malfunction conditions. Refer to TM-372, "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-362, "Fail-Safe".
Interview sheet can be used effectively when reproduce malfunction conditions.TM-372, "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-365, "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-42, "Intermittent Incident" to check.

6.IDENTIFY MALFUNCTIONING SYSTEM WITH “DIAGNOSIS CHART BY SYMPTOM”

Use TM-475, "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:0000000006487602

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

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
  ( )

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
First occurrence		☐ Recently (as from month of year)			
Frequency of occurrence		☐ Always ☐ Under certain conditions ☐ Sometimes (time(s)/day)			
Climate conditions		Irrelevant			
	Weather	☐ Clear ☐ Cloud ☐ Rain ☐ Snow ☐ Others)			
	Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold ☐ Temperature (Approx. °C)			
	Relative humidity	☐ High ☐ Moderate ☐ Low			
Transaxle condition		☐ In cold-start ☐ During warm-up (approx. °C) ☐ 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:0000000006487603

Always perform the following items when the TCM is replaced.

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.

G sensor calibration
- 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 "G sensor calibration".

Procedure

INFOID:0000000006487604

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 G SENSOR CALIBRATION

Refer to TM-377, "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 G SENSOR CALIBRATION

Refer to TM-377, "Procedure".

>> Perform “ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY" after "G SENSOR CALIBRATION". Refer to TM-375, "Procedure".

ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

Description

INFOID:0000000006487605

Perform the following work after the transaxle assembly is replaced.

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:0000000006487606

1. INITIALIZE TCM

With CONSULT-III
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-III
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. DETECTION OF MALFUNCTION 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-III
1. Select “WORK SUPPORT” in “TRANSMISSION”.
2. Select “CONFORM CVTF DETERIORTN”.
3. Touch “Clear”.

>> WORK END

G SENSOR CALIBRATION

Description

INFOID:0000000006487607

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:0000000006487608

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-9, "Tire Air Pressure".

>> GO TO 2.

2. PERFORM CALIBRATION

With CONSULT-III
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. PERFORM THE SELF-DIAGNOSIS

With CONSULT-III
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-366, "DTC Index".
NO >> Calibration end

CVT FLUID

Replacement

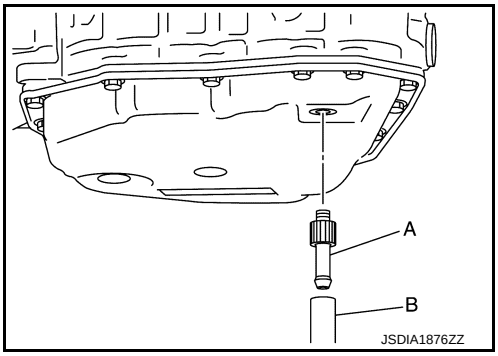
INFOID:0000000006487611

CVT fluid	**: Refer to TM-512, "General Specification".**
Fluid capacity	**: Refer to TM-512, "General Specification".**

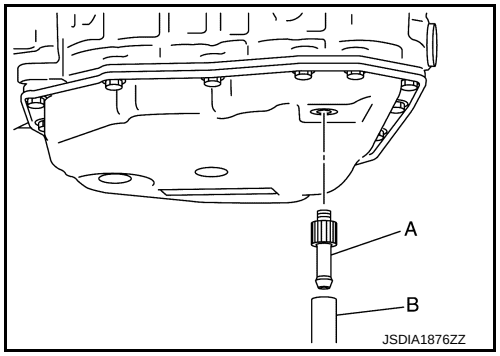
CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-2. Using transmission fluid other than Genuine NISSAN CVT Fluid NS-2 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-III.
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-493, "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 (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-III “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-493, "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 (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-III “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-493, "Exploded View".
CAUTION:
Never reuse drain plug gasket.
30. Lift down the vehicle.
31. Select “Data Monitor” in “TRANSMISSION” using CONSULT-III.
32. Select “CONFORM CVTF DETERIORTN”.
33. Select “Erase”.
34. Stop the engine.

Adjustment

INFOID:0000000006487612

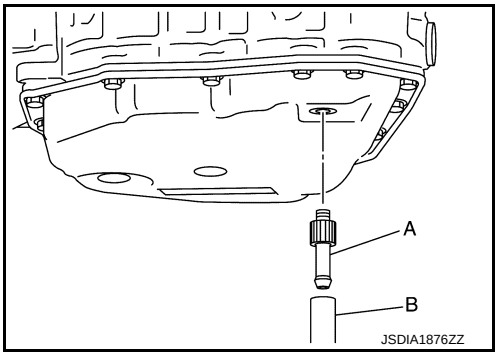
CVT fluid	**: Refer to TM-512, "General Specification".**
Fluid capacity	**: Refer to TM-512, "General Specification".**

CAUTION:
- **Use only Genuine NISSAN CVT Fluid NS-2. Using transmission fluid other than Genuine NISSAN CVT Fluid NS-2 will damage the CVT, which is not covered by the (NISSAN new vehicle limited) warranty.**
- **During adjustment of the CVT fluid level, check CONSULT-III 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-III 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-493, "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 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-493, "Exploded View".
    CAUTION:
    Never reuse drain plug gasket.
14. Lift down the vehicle.
15. Stop the engine.

STALL TEST

Work Procedure

INFOID:0000000006487613

INSPECTION

1. Check the engine oil level. Replenish if necessary. Refer to LU-25, "Inspection".
2. Check for leak of the CVT fluid. Refer to TM-480, "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-512, "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:0000000006626144

INSPECTION

1. Check the engine oil level. Replenish if necessary. LU-25, "Inspection".
2. Check for leak of the CVT fluid. Refer to TM-480, "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-513, "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.

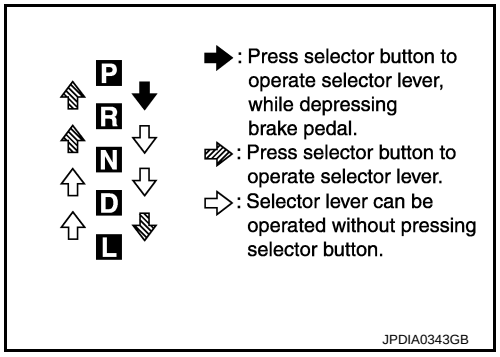
CVT POSITION

Inspection and Adjustment

INFOID:0000000006487614

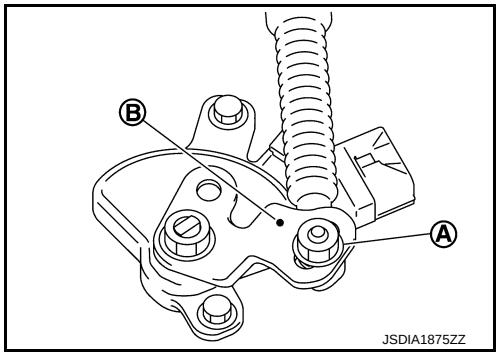
INSPECTION

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

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:
   Do not apply force to the manual lever.
3. Tighten nuts to the specified torque. Refer to TM-485, "Exploded View".
   CAUTION:
   In tightening, fix the manual lever.



DTC/CIRCUIT DIAGNOSIS

U0073 COMMUNICATION BUS A OFF

Description

INFOID:0000000006487615

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:0000000006487616

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U0073	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

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

Is “U0073” detected?

YES >> Go to TM-384, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487617

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

U0100 LOST COMMUNICATION (ECM A)

Description

INFOID:0000000006628112

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:0000000006487619

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U0100	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 first trip DTC.

Is “U0100” detected?

YES >> Go to TM-385, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487620

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

U0140 LOST COMMUNICATION (BCM)

Description

INFOID:0000000006628113

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:0000000006487622

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U0140	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-III
1. Start the engine and wait for at least 5 seconds.
2. Check the DTC.

Is “U0140” detected?

YES >> Go to TM-392, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487623

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

U0141 LOST COMMUNICATION (BCM A)

Description

INFOID:0000000006628114

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:0000000006487625

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U0141	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-III
1. Start the engine and wait for at least 5 seconds.
2. Check the DTC.

Is “U0141” detected?

YES >> Go to TM-384, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487626

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

U0155 LOST COMMUNICATION (IPC)

Description

INFOID:0000000006628115

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:0000000006487628

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U0155	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-III
1. Start the engine and wait for at least 5 seconds.
2. Check the DTC.

Is “U0155” detected?

YES >> Go to TM-388, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487629

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

U0300 CAN COMMUNICATION DATA

Description

INFOID:0000000006628116

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:0000000006487631

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U0300	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-III
1. Start the engine and wait for 5 seconds or more.
2. Check the DTC.

Is “U0300” detected?

YES >> Go to TM-389, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487632

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-III
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:0000000006628117

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:0000000006487634

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U1000	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-III
1. Start the engine and wait for at least 5 seconds.
2. Check the DTC.

Is “U1000” detected?

YES >> Go to TM-390, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487635

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

U1117 LOST COMMUNICATION (ABS)

Description

INFOID:0000000006628118

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:0000000006487640

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U1117	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-III
1. Start the engine and wait for 5 seconds or more.
2. Check the DTC.

Is “U1117” detected?

YES >> Go to TM-384, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487641

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

U1119 LOST COMM (MULTI-DISPLAY)

Description

INFOID:0000000006628119

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:0000000006487646

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U1119	Lost Communication With MDU	When the ignition switch is ON, TCM is unable to receive the CAN communications signal from MDU continuously for 2 seconds or more.	• MDU • 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-III
1. Start the engine and wait for 5 seconds or more.
2. Check the DTC.

Is “U1119” detected?

YES >> Go to TM-392, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487647

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

P062F EEPROM

DTC Logic

INFOID:0000000006487648

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P062F	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 first trip DTC.

Is “P062F” detected?

YES >> Go to TM-393, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487649

1.CHECK INTERMITTENT INCIDNT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the TCM. Refer to TM-490, "Removal and Installation".
NO >> Repair or replace the malfunctioning parts.

P0705 TRANSMISSION RANGE SWITCH A

DTC Logic

INFOID:0000000006487650

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0705	Transmission Range Sensor A Circuit (PRNDL Input)	Tow 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: 10 V ≤ TCM power supply voltage ≤ 16 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-394, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487651

1.CHECK TCM INPUT SIGNALS

With CONSULT-III

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 the selector lever through entire positions from “P” to “L” and check ON/OFF of each monitor item.

Monitor item	Test 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-III.

1. Turn the ignition switch OFF.
2. Disconnect the TCM connector.
3. Turn ignition switch ON.
4. Shift the selector lever from “P” to “L” and check the voltage between the TCM harness connector terminal and the ground.

TCM harness connector		Ground	Test condition	Voltage
Connector	Terminal			
F18	2	Ground	Selector lever: “ L” position	Battery voltage
			Other than the above	Approx. 0 V
	4		Selector lever: “D” position	Battery voltage
			Other than the above	Approx. 0 V
	5		Selector lever: “N” position	Battery voltage
			Other than the above	Approx. 0 V
	6		Selector lever: “R” position	Battery voltage
			Other than the above	Approx. 0 V
	7		Selector lever: “P” position	Battery voltage
			Other than the above	Approx. 0 V

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-42, "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 the ignition switch OFF.
2. Disconnect the TCM connector.
3. Check the continuity between the TCM harness connector terminals.

TCM harness connector			Continuity
Connector	Terminal		
F18	4	2	Not existed
		5	
		6	
		7	

Is the check result normal?

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

3.CHECK D POSITION SW CIRCUIT (PART 2)

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

TCM harness connector		Ground	Voltage
Connector	Terminal		
F18	4	Ground	Approx. 0 V

Is the check result normal?

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

4.CHECK N POSITION SW CIRCUIT (PART 1)

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

TCM harness connector			Continuity
Connector	Terminal		
F18	5	2	Not existed
		4	
		6	
		7	

Is the check result normal?

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

5.CHECK N POSITION SW CIRCUIT (PART 2)

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

TCM harness connector		Ground	Voltage
Connector	Terminal		
F18	5	Ground	Approx. 0 V

Is the check result normal?

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

6.CHECK P POSITION SW CIRCUIT (PART 1)

1. Turn the ignition switch OFF.

2. Disconnect the TCM connector.
3. Check the continuity between the TCM harness connector terminals.

TCM harness connector			Continuity
Connector	Terminal		
F18	7	2	Not existed
		4	
		5	
		6	

Is the check result normal?

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

7. CHECK P POSITION SW CIRCUIT (PART 2)

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

TCM harness connector		Ground	Voltage
Connector	Terminal		
F18	7	Ground	Approx. 0 V

Is the check result normal?

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

8. CHECK R POSITION SW CIRCUIT (PART1)

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

TCM harness connector			Continuity
Connector	Terminal		
F18	6	2	Not existed
		4	
		5	
		7	

Is the check result normal?

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

9. CHECK R POSITION SW CIRCUIT (PART 2)

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

TCM harness connector		Ground	Voltage
Connector	Terminal		
F18	6	Ground	Approx. 0 V

Is the check result normal?

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

10. CHECK 1: L POSITION SWITCH CIRCUIT (PART 1)

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

TCM harness connector			Continuity
Connector	Terminal		
F18	2	4	Not existed
		5	
		6	
		7	

Is the check result normal?

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

11. CHECK 2: L POSITION SWITCH CIRCUIT (PART 2)

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

TCM harness connector		Ground	Voltage
Connector	Terminal		
F18	2	Ground	Approx. 0 V

Is the check result normal?

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

12. CHECK TRANSMISSION RANGE SWITCH

Check the transmission range switch. Refer to TM-398, "Component Inspection (Transmission Range Switch)".

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (Transmission Range Switch)

INFOID:0000000006514123

1. CHECK TRANSMISSION RANGE SWITCH

Check the continuity between the transmission range switch connector terminals.

Transmission range switch		Condition	Continuity
Terminal			
1	2	Manual lever: “P” and “N” positions	Existed
		Other than the above	Not existed

Transmission range switch Terminal		Condition	Continuity
3	4	Manual lever: “P” position	Existed
		Other than the above	Not existed
	5	Manual lever: “R” position	Existed
		Other than the above	Not existed
	6	Manual lever: “N position	Existed
		Other than the above	Not existed
	7	Manual lever: “D” position	Existed
		Other than the above	Not existed
	8	Manual lever: “L” position	Existed
		Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the transmission range switch. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0706 TRANSMISSION RANGE SENSOR A

DTC Logic

INFOID:0000000006487653

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0706	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: 10 V ≤ TCM power supply voltage ≤ 16 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-400, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487654

1.ADJUSTMENT OF CONTROL CABLE

Adjust the control cable. Refer to TM-383, "Inspection and Adjustment".

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT-III
1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “TRANSMISSION”.
3. Touch “Erase”.
4. Perform "DTC CONFIRMATION PROCEDURE". Refer to TM-400, "DTC Logic".

Is “P0706” detected?

YES >> GO TO 3.

NO >> INSPECTION END

3. CHECK POWER CIRCUIT

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

Transmission range switch harness connector		Ground	Voltage
Connector	Terminal		
F23	3	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 the ignition switch OFF.
2. Disconnect the TCM connector.
3. Check the continuity between the transmission range switch harness connector and the TCM harness connector.

Transmission range switch harness connector		TCM harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	4	F18	7	Existed
	5		6	
	6		5	
	7		4	
	8		2	

Is the check result normal?

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

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

Check the continuity between the transmission range switch harness connector and the TCM harness connector.

Transmission range switch harness connector		Ground	Continuity
Connector	Terminal		
F23	4	Ground	Not existed
	5		
	6		
	7		
	8		

Is the check result normal?

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

6. CHECK TRANSMISSION RANGE SWITCH

Check the transmission range switch. Refer to TM-402, "Component Inspection (Transmission Range Switch)".

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

7. CHECK CIRCUIT BETWEEN IPDM E/R AND TRANSMISSION RANGE SWITCH (PART 1)

1. Disconnect the IPDM E/R connector.
2. Check the continuity between the IPDM E/R vehicle-side harness connector and the transmission range switch.

IPDM E/R harness connector		Transmission range switch harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E15	57	F23	3	Existed

Is the check result normal?

YES >> GO TO 8.
NO >> Repair or replace the malfunctioning parts.

8. CHECK CIRCUIT BETWEEN IPDM E/R AND TRANSMISSION RANGE SWITCH (PART 2)

Check the continuity between the IPDM E/R vehicle-side harness connector and the transmission range switch.

IPDM E/R harness connector		Ground	Continuity
Connector	Terminal		
E15	57	Ground	Not existed

Is the check result normal?

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

9. DETECTION OF MALFUNCTION ITEMS

Check the following items:

- Harness open circuit or short circuit between the ignition switch and IPDM E/R. Refer to PG-15, "Wiring Diagram - IGNITION POWER SUPPLY -".
- 10A fuse (No. 55, IPDM E/R). Refer to PG-25, "Fuse, Connector and Terminal Arrangement".
- IPDM E/R

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (Transmission Range Switch)

INFOID:0000000006514124

1. CHECK TRANSMISSION RANGE SWITCH

Check the continuity between the transmission range switch connector terminals.

Transmission range switch		Condition	Continuity
Terminal			
1	2	Manual lever: “P” and “N” positions	Existed
		Other than the above	Not existed

Transmission range switch		Condition	Continuity
Terminal			
3	4	Manual lever: “P” position	Existed
		Other than the above	Not existed
	5	Manual lever: “R” position	Existed
		Other than the above	Not existed
	6	Manual lever: “N position	Existed
		Other than the above	Not existed
	7	Manual lever: “D” position	Existed
		Other than the above	Not existed
	8	Manual lever: “L” position	Existed
		Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the transmission range switch. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

INFOID:0000000006487656

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0711	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: 10 V ≤ TCM power supply voltage ≤ 16 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

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-419, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487657

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-405, "Component Inspection (CVT Fluid Temperature Sensor)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (CVT Fluid Temperature Sensor)

INFOID:0000000006487658

1. CHECK CVT FLUID TEMPERATURE SENSOR

Check resistance between the CVT unit connector terminals.

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

Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of the CVT fluid temperature sensor. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

INFOID:0000000006487659

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0712	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: 10 V ≤ TCM power supply voltage ≤ 16 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-406, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487660

1.CHECK CIRCUIT BETWEEN TCM AND THE CVT UNIT

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

TCM harness connector		Ground	Continuity
Connector	Terminal		
F18	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 the CVT fluid temperature sensor. Refer to TM-406, "Component Inspection (CVT Fluid Temperature Sensor)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (CVT Fluid Temperature Sensor)

INFOID:0000000006626145

1.CHECK CVT FLUID TEMPERATURE SENSOR

Check resistance between the CVT unit connector terminals.

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

Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of the CVT fluid temperature sensor. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

INFOID:0000000006487662

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0713	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: 10 V ≤ TCM power supply voltage ≤ 16 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-406, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487663

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

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

TCM harness connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F18	12	F24	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 the voltage between the TCM harness connector terminal and ground.

TCM harness connector		Ground	Voltage
Connector	Terminal		
F18	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 the CVT fluid temperature sensor. Refer to TM-409, "Component Inspection (CVT Fluid Temperature Sensor)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (CVT Fluid Temperature Sensor)

INFOID:0000000006626146

1. CHECK CVT FLUID TEMPERATURE SENSOR

Check resistance between the CVT unit connector terminals.

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the CVT fluid temperature sensor. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0715 INPUT SPEED SENSOR A

DTC Logic

INFOID:0000000006487665

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0715	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: 10 V ≤ TCM power supply voltage ≤ 16 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: 10 V ≤ TCM power supply voltage ≤ 16 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-410, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487666

1.CHECK PRIMARY SPEED SENSOR POWER CIRCUIT

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

Primary speed sensor harness connector		Ground	Voltage
Connector	Terminal		
F55	3	Ground	10 – 16 V

Is the check result normal?

YES >> GO TO 6.

NO >> GO TO 2.

2.CHECK PRIMARY SPEED SENSOR GROUND CIRCUIT

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

Primary speed sensor harness connector		Ground	Continuity
Connector	Terminal		
F55	1	Ground	Existed

Is the check result normal?

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

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

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

Primary speed sensor harness connector		TCM harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F55	2	F18	35	Existed

Is the check result normal?

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

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

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

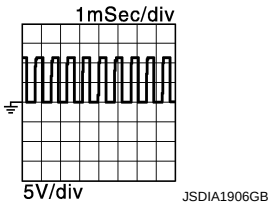
Primary speed sensor harness connector		Ground	Continuity
Connector	Terminal		
F55	2	Ground	Not existed

Is the check result normal?

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

5.CHECK TCM INPUT SIGNALS

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

TCM connector		Ground	Condition	Data
Connector	Terminal			
F18	35	Ground	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	Approx. 1,100 Hz  JSDIA1906GB

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the primary speed sensor. TM-495, "Removal and Installation".

6. CHECK CIRCUIT BETWEEN IPDM E/R AND PRIMARY SPEED SENSOR (PART 1)

1. Disconnect the IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector terminal and primary speed sensor harness connector terminal.

IPDM E/R harness connector		Primary speed sensor harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E15	57	F55	3	Existed

Is the check result normal?

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

7. CHECK CIRCUIT BETWEEN IPDM E/R AND PRIMARY SPEED SENSOR (PART 2)

Check continuity between IPDM E/R harness connector terminal and ground.

IPDM E/R harness connector		Ground	Continuity
Connector	Terminal		
E15	57	Ground	Not existed

Is the check result normal?

YES >> GO TO 8.
NO >> Repair or replace the malfunctioning parts.

8. DETECTION OF MALFUNCTION ITEMS

Check the following items:
- Harness open circuit or short circuit between the ignition switch and IPDM E/R. Refer to PG-15, "Wiring Diagram - IGNITION POWER SUPPLY -".
- 10A fuse (No.55, IPDM E/R). Refer to PG-25, "Fuse, Connector and Terminal Arrangement".
- IPDM E/R

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

P0720 OUTPUT SPEED SENSOR

DTC Logic

INFOID:0000000006487667

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0720	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: 10 V ≤ TCM power supply voltage ≤ 16 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: 10 V ≤ TCM power supply voltage ≤ 16 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-413, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487668

1.CHECK OUTPUT SPEED SENSOR POWER CIRCUIT

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

Output speed sensor harness connector		Ground	Voltage
Connector	Terminal		
F16	3	Ground	10 – 16 V

Is the check result normal?

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

2.CHECK OUTPUT SPEED SENSOR GROUND CIRCUIT

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

Output speed sensor harness connector		Ground	Continuity
Connector	Terminal		
F16	1	Ground	Existed

Is the check result normal?

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

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

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

Output speed sensor harness connector		TCM harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	2	F18	24	Existed

Is the check result normal?

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

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

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

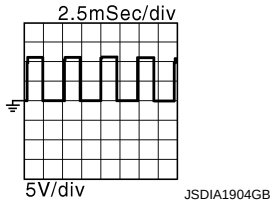
Output speed sensor harness connector		Ground	Continuity
Connector	Terminal		
F16	2	Ground	Not existed

Is the check result normal?

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

5.CHECK TCM INPUT SIGNALS

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

TCM connector		Ground	Condition	Data
Connector	Terminal			
F18	24	Ground	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	Approx. 200 Hz  JSDIA1904GB

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the output speed sensor. Refer to TM-497, "Exploded View".

6. CHECK CIRCUIT BETWEEN IPDM E/R AND OUTPUT SPEED SENSOR (PART 1)

1. Disconnect the IPDM E/R connector.
2. Check the continuity between the IPDM E/R harness connector terminal and the output speed sensor harness connector terminal.

IPDM E/R harness connector		Output speed sensor harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E15	57	F16	3	Existed

Is the check result normal?

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

7. CHECK CIRCUIT BETWEEN IPDM E/R AND OUTPUT SPEED SENSOR (PART 2)

Check the continuity between the IPDM E/R vehicle-side harness connector terminal and ground.

IPDM E/R harness connector		Ground	Continuity
Connector	Terminal		
E15	57	Ground	Not existed

Is the check result normal?

YES >> GO TO 8.
NO >> Repair or replace the malfunctioning parts.

8. DETECTION OF MALFUNCTION ITEMS

Check the following items:
- Harness open circuit or short circuit between the ignition switch and IPDM E/R. Refer to PG-15, "Wiring Diagram - IGNITION POWER SUPPLY -".
- 10A fuse (No.55, IPDM E/R). Refer to PG-25, "Fuse, Connector and Terminal Arrangement".
- IPDM E/R

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

P0740 TORQUE CONVERTER

DTC Logic

INFOID:0000000006487669

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0740	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: 10 V ≤ TCM power supply voltage ≤ 16 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-III

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-417, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487670

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TCM harness connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F18	38	F24	6	Existed

Is the check result normal?

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

2.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check the torque converter clutch solenoid valve. Refer to TM-417, "Component Inspection (Torque Converter Clutch Solenoid Valve)".

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (Torque Converter Clutch Solenoid Valve)

INFOID:0000000006487671

1.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

CVT unit connector	Ground	Condition	Resistance
Terminal			
6	Ground	CVT fluid temperature: 20°C (68°F)	Approx. 27 Ω
		CVT fluid temperature: 50°C (122°F)	Approx. 31 Ω
		CVT fluid temperature: 80°C (176°F)	Approx. 35 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0743 TORQUE CONVERTER

DTC Logic

INFOID:0000000006487672

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0743	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: 10 V ≤ TCM power supply voltage ≤ 16 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-III

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 (58°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 (58°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-419, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487673

1.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TCM harness connector		Ground	Continuity
Connector	Terminal		
F18	38	Ground	Not existed

Is the check result normal?

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

2.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check the torque converter clutch solenoid valve. Refer to TM-419, "Component Inspection (Torque Converter Clutch Solenoid Valve)".

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (Torque Converter Clutch Solenoid Valve)

INFOID:0000000006628363

1.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

CVT unit connector	Ground	Condition	Resistance
Terminal			
6	Ground	CVT fluid temperature: 20°C (68°F)	Approx. 27 Ω
		CVT fluid temperature: 50°C (122°F)	Approx. 31 Ω
		CVT fluid temperature: 80°C (176°F)	Approx. 35 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0744 TORQUE CONVERTER

DTC Logic

INFOID:0000000006487676

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0744	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) ≤ CVT fluid temperature ≤ 180°C (356°F) - Lockup command is being given (except for slip lockup). - LU PRS: More than 0.2 MPa - TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 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-III

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-421, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487677

1.CHECK LINE PRESSURE

Perform the line pressure test. Refer to TM-382, "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 the CVT unit connector.
3. Check the torque converter clutch solenoid valve. Refer to TM-421, "Component Inspection (Torque Converter Clutch Solenoid Valve)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunction items.

Component Inspection (Torque Converter Clutch Solenoid Valve)

INFOID:0000000006628364

1.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

CVT unit connector / Terminal	Ground	Condition	Resistance
6	Ground	CVT fluid temperature: 20°C (68°F)	Approx. 27 Ω
		CVT fluid temperature: 50°C (122°F)	Approx. 31 Ω
		CVT fluid temperature: 80°C (176°F)	Approx. 35 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0746 PRESSURE CONTROL SOLENOID A

DTC Logic

INFOID:0000000006628109

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0746	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-423, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006628110

1.CHECK LINE PRESSURE SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect the CVT unit connector.
3. Check the line pressure solenoid valve. Refer to TM-423, "Component Inspection (Line Pressure Solenoid Valve)"

Is the inspection result normal?

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

2.CHECK LINE PRESSURE

Perform the line pressure test. Refer to TM-382, "Work Procedure".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunction items.

Component Inspection (Line Pressure Solenoid Valve)

INFOID:0000000006628111

1.CHECK LINE PRESSURE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the line pressure solenoid valve. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0846 TRANSMISSION FLUID PRESSURE SEN/SW B

DTC Logic

INFOID:0000000006628366

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0846	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 - TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V - Solenoid valve output current: 750 mA or more - GND short diagnosis of the solenoid valve circuit is not satisfied. - TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 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-425, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006628367

1. CHECK TCM INPUT SIGNAL

1. Start the engine.
2. Check the voltage between TCM connector terminal and ground.

TCM connector		Ground	Condition	Voltage
Connector	Terminal			
F18	16	Ground	• Selector lever: “N” position • Idle speed	Approx. 0.88 – 0.92 V

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> There is a malfunction of the secondary pressure sensor value. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0847 TRANSMISSION FLUID PRESSURE SEN/SW B

DTC Logic

INFOID:0000000006487681

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0847	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: –20°C (–4°F) or more - TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 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-III
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-426, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487682

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

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

TCM harness connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F18	15	F24	18	Existed
	16		14	
	26		16	

Is the inspection result normal?

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

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

Check the continuity between the TCM harness connector terminals and ground.

TCM harness connector		Ground	Continuity
Connector	Terminal		
F18	15	Ground	Not existed
	16		

Is the inspection result normal?

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

3. CHECK TCM INPUT SIGNALS

1. Connect all connectors removed.
2. Start the engine.
3. Check the voltage between TCM connector terminal and ground.

TCM connector		Ground	Condition	Voltage
Connector	Terminal			
F18	16	Ground	• Selector lever: “N” position • Idle speed	Approx. 0.88 – 0.92 V

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

DTC Logic

INFOID:0000000006487683

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0848	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: –20°C (–4°F) or more - Secondary pressure target value: 5.7 MPa or less - TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 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-III
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-428, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487684

1.CHECK SECONDARY PRESSURE SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect the CVT unit connector.
3. Turn ignition switch ON.
4. Check the voltage between CVT unit harness connector terminal and ground.

TCM harness connector		Ground	Voltage
Connector	Terminal		
F24	16	Ground	Approx. 5.0 V

Is the inspection result normal?

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

2.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TCM harness connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F18	26	F24	14	Not existed

Is the inspection result normal?

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

3.CHECK TCM INPUT SIGNALS

1. Connect all connectors removed.
2. Start the engine.
3. Check the voltage between TCM connector terminal and ground.

TCM connector		Ground	Condition	Voltage
Connector	Terminal			
F18	16	Ground	• Selector lever: “N” position • Idle speed	Approx. 0.88 – 0.92 V

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> There is a malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0863 TCM COMMUNICATION

DTC Logic

INFOID:0000000006487686

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0863	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

With CONSULT-III
1. Turn ignition switch ON.
2. Check the DTC.

Is “P0863” detected?

YES >> Go to TM-430, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487687

1.CHECK INTERMITTENT INCIDNT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the TCM. Refer to TM-490, "Removal and Installation".
NO >> Repair or replace the malfunctioning parts.

P0962 PRESSURE CONTROL SOLENOID A

DTC Logic

INFOID:0000000006487688

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0962	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: 10 V ≤ TCM power supply voltage ≤ 16 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-431, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487689

1.CHECK CIRCUIT BETWEEN TCM AND THE CVT UNIT

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

TCM harness connector		Ground	Continuity
Connector	Terminal		
F18	30	Ground	Not existed

Is the inspection result normal?

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

2.CHECK LINE PRESSURE SOLENOID VALVE

Check the line pressure solenoid valve. Refer to TM-431, "Component Inspection (Line Pressure Solenoid Valve)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (Line Pressure Solenoid Valve)

INFOID:0000000006628249

1.CHECK LINE PRESSURE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the line pressure solenoid valve. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P0963 PRESSURE CONTROL SOLENOID A

DTC Logic

INFOID:0000000006487690

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0963	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: 10 V ≤ TCM power supply voltage ≤ 16 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-433, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487691

1.CHECK CIRCUIT BETWEEN TCM AND THE CVT UNIT

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

TCM harness connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F18	30	F24	2	Existed

Is the inspection result normal?

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

2.CHECK LINE PRESSURE SOLENOID VALVE

Check the line pressure solenoid valve. Refer to TM-434, "Component Inspection (Line Pressure Solenoid Valve)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (Line Pressure Solenoid Valve)

INFOID:0000000006628250

1. CHECK LINE PRESSURE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the line pressure solenoid valve. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P1586 G SENSOR

DTC Logic

INFOID:0000000006487692

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P1586	G Sensor Circuit Electrical	The G sensor detection voltage is 0.7 V or less continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - While driving - TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V	• Harness or connector (G sensor circuit) • G sensor
		The G sensor detection voltage is 3.2 V or more continuously for 5 seconds or more under the following diagnosis conditions: • Diagnosis conditions - While driving - TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 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

With CONSULT-III

1. Start the engine.
2. Drive the vehicle for 10 seconds or more.
3. Stop the vehicle.
4. Check the DTC.

Is “P1586” detected?

YES >> Go to TM-435, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487693

1.CHECK G SENSOR SIGNAL

With CONSULT-III

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.G SENSOR CALIBRATION (PART 1)

With CONSULT-III
1. Select “Self Diagnostic Results” in “TRANSMISSION”.
2. Touch “Erase”.

>> Perform "G SENSOR CALIBRATION". Refer to TM-377, "Procedure".

3.CHECK SENSOR POWER SUPPLY

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

G sensor harness connector		Ground	Voltage
Connector	Terminal		
B32	3	Ground	Approx. 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 the TCM connector.
3. Check continuity between TCM harness connector terminals and G sensor harness connector terminals.

TCM harness connector		G sensor harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F18	11	B32	2	Existed
	14		1	

Is the inspection result normal?

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

5.CHECK CIRCUIT BETWEEN TCM AND G SENSOR (PART 2)

Check the continuity between TCM harness connector terminals and ground.

TCM harness connector		Ground	Continuity
Connector	Terminal		
F18	11	Ground	Not existed
	16		

Is the inspection result normal?

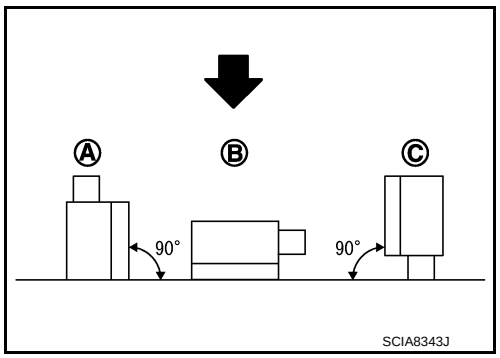
YES >> GO TO 6.
NO >> Repair or replace the malfunctioning parts.

6.CHECK G SENSOR

1. Remove the G sensor. TM-492, "Removal and Installation".
2. Connect the all connectors.
3. Turn ignition switch ON.

4. Check the voltage between TCM connector terminal and ground.

⬅ : Direction of gravitational force



TCM connector		Ground	Test condition	Voltage
Connector	Terminal			
F18	14	Ground	Vertical (–1G) (A)	Approx. 1.17 V
			Horizontal (B)	Approx.2.5 V
			Vertical (1G) (C)	Approx.3.83 V

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace G sensor.TM-492, "Removal and Installation".

7.G SENSOR CALIBRATION (PART 2)

With CONSULT-III
1. Install G sensor. TM-492, "Removal and Installation".
2. Select “Self Diagnostic Results” in “TRANSMISSION”.
3. Touch “Erase”.

>> Perform "G SENSOR CALIBRATION". Refer to TM-377, "Procedure".

8.CHECK SENSOR POWER SUPPLY CIRCUIT (PART 1)

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

TCM harness connector		G sensor harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F18	26	B32	3	Existed

Is the inspection result normal?

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

9.CHECK SENSOR POWER SUPPLY CIRCUIT (PART 2)

Check the continuity between TCM harness connector terminal and ground.

TCM harness connector		Ground	Continuity
Connector	Terminal		
F18	26	Ground	Not existed

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

P1588 G SENSOR

DTC Logic

INFOID:0000000006487694

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P1588	G Sensor Circuit Range/Performance	The rate of change in acceleration/deceleration stays +0.0273 G or more/–0.0273 or less at least for 4 seconds with the following diagnosis conditions satisfied and maintained: • Diagnosis condition (1 second or more) - The rate of change in G sensor detection value (mV): Between –15 and +15 inclusive	G sensor

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-III

1. Start the engine.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Select “G SPEED”.
4. Drive the vehicle.
5. Maintain the following conditions for 5 seconds or more.

Selector lever	: “D” position
G SPEED	: 0.05 G or more

6. Stop the vehicle.
7. Check the DTC.

Is “P1588” detected?

YES >> Go to TM-438, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487695

1.CHECK G SENSOR SIGNAL

With CONSULT-III

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. G SENSOR CALIBRATION (PART 1)

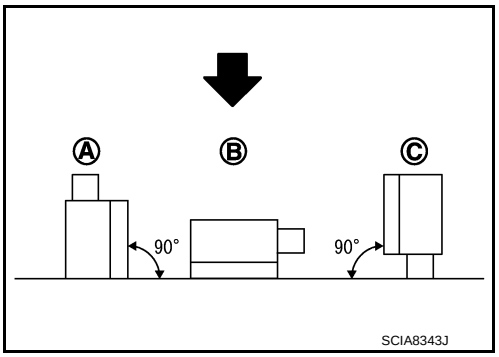
With CONSULT-III
1. Select “Self Diagnostic Results” in “TRANSMISSION”.
2. Touch “Erase”.

>> Perform "G SENSOR CALIBRATION". Refer to TM-377, "Procedure".

3. CHECK G SENSOR

1. Remove the G sensor. TM-492, "Removal and Installation".
2. Connect the all connectors.
3. Turn ignition switch ON.
4. Check the voltage between TCM connector terminal and ground.

: Direction of gravitational force



TCM connector		Ground	Test condition	Voltage
Connector	Terminal			
F18	14	Ground	Vertical (–1G) (A)	Approx. 1.17 V
			Horizontal (B)	Approx.2.5 V
			Vertical (1G) (C)	Approx.3.83 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace G sensor.TM-492, "Removal and Installation".

4. G SENSOR CALIBRATION (PART 2)

With CONSULT-III
1. Install G sensor. TM-492, "Removal and Installation".
2. Select “Self Diagnostic Results” in “TRANSMISSION”.
3. Touch “Erase”.

>> Perform "G SENSOR CALIBRATION". Refer to TM-377, "Procedure".

P1701 TCM

DTC Logic

INFOID:0000000006487697

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P1701	Power Supply Circuit	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.)

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 “P1701” detected?

YES >> Go to TM-440, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487698

1.CHECK TCM POWER SUPPLY (BACK-UP) CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect the TCM connector.
3. Check the voltage between the TCM harness connector terminals and ground.

TCM harness connector		Ground	Voltage
Connector	Terminal		
F18	45	Ground	10 – 16 V
	46		

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> GO TO 2.

2.DETECTION OF MALFUNCTION ITEMS

Check the following items:

- Open or short circuit of the harness between battery positive terminal and TCM connectors terminals 45 and 46. Refer to PG-10, "Wiring Diagram - BATTERY POWER SUPPLY -".
- 10A fuse (No.33, fuse and fusible link block). Refer to PG-23, "Fuse and Fusible Link Arrangement".
- 10A fuse (No.36, fuse and fusible link block). Refer to PG-23, "Fuse and Fusible Link Arrangement".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

P1739 1GR INCORRECT RATIO

DTC Logic

INFOID:0000000006487699

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P1739	1GR Incorrect Ratio	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: 10 V ≤ TCM power supply voltage ≤ 16 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: 10 V ≤ TCM power supply voltage ≤ 16 V	

DTC CONFIRMATION PROCEDURE

CAUTION:

- **Be sure to perform “TM-442, "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 “P1739” detected?

YES >> Go to TM-442, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487700

1.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".
NO >> Repair or replace the malfunctioning parts.

P173A 2GR INCORRECT RATIO

DTC Logic

INFOID:0000000006487704

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P173A	2GR Incorrect Ratio	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: 10 V ≤ TCM power supply voltage ≤ 16 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: 10 V ≤ TCM power supply voltage ≤ 16 V	

DTC COFIRMATION PROCEDURE

CAUTION:

- **Be sure to perform "TM-444, "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 “P173A” detected?

YES >> Go to TM-444, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487705

1.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".
NO >> Repair or replace the malfunctioning parts.

P173B 1GR INCORRECT RATIO

DTC Logic

INFOID:0000000006487706

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P173B	1GR Incorrect Ratio	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: 10 V ≤ TCM power supply voltage ≤ 16 V	• Low brake solenoid valve • Control valve assembly

DTC CONFIRMATION PROCEDURE

CAUTION:

- **Be sure to perform “TM-445, "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 “P173B” detected?

YES >> Go to TM-445, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487707

1.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

NO >> Repair or replace the malfunctioning parts.

P173C 2GR INCORRECT RATIO

DTC Logic

INFOID:0000000006487708

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P173C	2GR Incorrect Ratio	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: 10 V ≤ TCM power supply voltage ≤ 16 V	• High clutch & reverse brake solenoid valve • Control valve assembly

DTC CONFIRMATION PROCEDURE

CAUTION:

- **Be sure to perform “TM-447, "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 “P173C” detected?

YES >> Go to TM-447, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487709

1. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

NO >> Repair or replace the malfunctioning parts.

P17B4 LOW BRAKE SOLENOID

DTC Logic

INFOID:0000000006487710

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P17B4	Low Brake Solenoid 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: 10 V ≤ TCM power supply voltage ≤ 16 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 “P17B4” detected?

YES >> Go to TM-449, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487711

1.CHECK CIRCUIT BETWEEN TCM AND THE CVT UNIT

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

TCM harness connector		Ground	Continuity
Connector	Terminal		
F18	39	Ground	Not existed

Is the inspection result normal?

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

2.CHECK LOW BRAKE SOLENOID VALVE

Check the low brake solenoid valve. Refer to TM-450, "Component Inspection (Low Brake Solenoid Valve)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (Low Brake Solenoid Valve)

INFOID:0000000006628252

1. CHECK LOW BRAKE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the low brake solenoid valve. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P17B5 LOW BRAKE SOLENOID

DTC Logic

INFOID:0000000006487712

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P17B5	Low Brake Solenoid 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: 10 V ≤ TCM power supply voltage ≤ 16 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 “P17B5” detected?

YES >> Go to TM-451, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487713

1.CHECK CIRCUIT BETWEEN TCM AND THE CVT UNIT

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

TCM harness connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F18	39	F24	22	Existed

Is the inspection result normal?

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

2.CHECK LOW BRAKE SOLENOID VALVE

Check the low brake solenoid valve. Refer to TM-452, "Component Inspection (Low Brake Solenoid Valve)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (Low Brake Solenoid Valve)

INFOID:0000000006628253

1. CHECK LOW BRAKE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the low brake solenoid valve. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P17B7 HIGH CLUTCH SOLENOID

DTC Logic

INFOID:0000000006487714

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P17B7	High Clutch & Reverse Brake Solenoid 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: 10 V ≤ TCM power supply voltage ≤ 16 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 “P17B7” detected?

YES >> Go to TM-453, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487715

1.CHECK CIRCUIT BETWEEN TCM AND THE CVT UNIT

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

TCM harness connector		Ground	Continuity
Connector	Terminal		
F18	37	Ground	Not existed

Is the inspection result normal?

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

2.CHECK HIGH CLUTCH & REVERSE BRAKE SOLENOID VALVE

Check the high clutch & reverse brake solenoid valve. Refer to TM-454, "Component Inspection (High Clutch & Reverse Brake Solenoid Valve)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (High Clutch & Reverse Brake Solenoid Valve)

INFOID:0000000006628254

1. CHECK HIGH CLUTCH & REVERSE BRAKE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

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

Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of the high & reverse brake solenoid valve. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P17B8 HIGH CLUTCH SOLENOID

DTC Logic

INFOID:0000000006487716

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P17B8	High Clutch & Reverse Brake Solenoid 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: 10 V ≤ TCM power supply voltage ≤ 16 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 “P17B8” detected?

YES >> Go to TM-455, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487717

1.CHECK CIRCUIT BETWEEN TCM AND THE CVT UNIT

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

TCM harness connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F18	37	F24	23	Existed

Is the inspection result normal?

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

2.CHECK HIGH CLUTCH & REVERSE BRAKE SOLENOID VALVE

Check the high clutch & reverse brake solenoid valve. Refer to TM-456, "Component Inspection (High Clutch & Reverse Brake Solenoid Valve)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (High Clutch & Reverse Brake Solenoid Valve)

INFOID:0000000006628255

1. CHECK HIGH CLUTCH & REVERSE BRAKE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

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

Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of the high & reverse brake solenoid valve. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P17BA PRIMARY PRESSURE SOLENOID

DTC Logic

INFOID:0000000006487718

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P17BA	Primary Pressure Solenoid 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: 10 V ≤ TCM power supply voltage ≤ 16 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 “P17BA” detected?

YES >> Go to TM-457, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487719

1.CHECK CIRCUIT BETWEEN TCM AND THE CVT UNIT

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

TCM harness connector		Ground	Continuity
Connector	Terminal		
F18	40	Ground	Not existed

Is the inspection result normal?

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

2.CHECK PRIMARY PRESSURE SOLENOID VALVE

Check the primary pressure solenoid valve. Refer to TM-458, "Component Inspection (Primary Pressure Solenoid Valve)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (Primary Pressure Solenoid Valve)

INFOID:0000000006628256

1. CHECK PRIMARY PRESSURE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the primary pressure solenoid valve. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P17BB PRIMARY PRESSURE SOLENOID

DTC Logic

INFOID:0000000006487720

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P17BB	Primary Pressure Solenoid 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: 10 V ≤ TCM power supply voltage ≤ 16 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 “P17BB” detected?

YES >> Go to TM-459, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487721

1.CHECK CIRCUIT BETWEEN TCM AND THE CVT UNIT

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

TCM harness connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F18	40	F24	3	Existed

Is the inspection result normal?

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

2.CHECK PRIMARY PRESSURE SOLENOID VALVE

Check the primary pressure solenoid valve. Refer to TM-460, "Component Inspection (Primary Pressure Solenoid Valve)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

Component Inspection (Primary Pressure Solenoid Valve)

INFOID:0000000006628257

1. CHECK PRIMARY PRESSURE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

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

Is the inspection result normal?

YES >> INSPECTION END
NO >> There is a malfunction of the primary pressure solenoid valve. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

P2765 CLUTCH B SPEED SENSOR

DTC Logic

INFOID:0000000006487729

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P2765	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: 10 V ≤ TCM power supply voltage ≤ 16 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: 10 V ≤ TCM power supply voltage ≤ 16 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-461, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006487730

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 the voltage between the secondary speed sensor harness connector terminal and ground.

Secondary speed sensor harness connector		Ground	Voltage
Connector	Terminal		
F19	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 the primary speed sensor harness connector terminal and ground.

Secondary speed sensor harness connector		Ground	Continuity
Connector	Terminal		
F19	1	Ground	Existed

Is the inspection result normal?

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

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

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

Secondary speed sensor harness connector		TCM harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F19	2	F18	34	Existed

Is the inspection result normal?

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

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

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

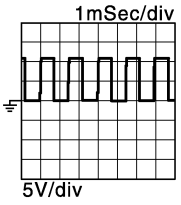
Secondary speed sensor harness connector		Ground	Continuity
Connector	Terminal		
F19	2	Ground	Not existed

Is the inspection result normal?

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

5.CHECK TCM INPUT SIGNALS

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

TCM connector		Ground	Condition	Data
Connector	Terminal			
F18	34	Ground	• Selector lever: “L” position • Vehicle speed: 20 km/h (12 MPH)	Approximately 700 Hz  JSDIA1905GB

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace the secondary speed sensor. TM-496, "Removal and Installation".

6. CHECK CIRCUIT BETWEEN IPDM E/R AND SECONDARY SPEED SENSOR (PART 1)

1. Disconnect the IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector terminal and secondary speed sensor harness connector terminal.

IPDM E/R harness connector		Secondary speed sensor harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E15	57	F19	3	Existed

Is the check result normal?

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

7. CHECK CIRCUIT BETWEEN IPDM E/R AND SECONDARY SPEED SENSOR (PART 2)

Check continuity between IPDM E/R harness connector terminal and ground.

IPDM E/R harness connector		Ground	Continuity
Connector	Terminal		
E15	57	Ground	Not existed

Is the check result normal?

YES >> GO TO 8.
NO >> Repair or replace the malfunctioning parts.

8. DETECTION OF MALFUNCTION ITEMS

Check the following items:
- Harness open circuit or short circuit between the ignition switch and IPDM E/R. Refer to PG-15, "Wiring Diagram - IGNITION POWER SUPPLY -".
- 10A fuse (No.55, IPDM E/R). Refer to PG-25, "Fuse, Connector and Terminal Arrangement".
- IPDM E/R

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

MAIN POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000006600485

1.CHECK TCM POWER CIRCUIT 1

1. Turn the ignition switch OFF.
2. Disconnect the TCM connector.
3. Check the voltage between the TCM harness connector terminals and ground.

TCM harness connector		Ground	Voltage
Connector	Terminal		
F18	45	Ground	10 – 16 V
	46		

Is the inspection result normal?

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

2.CHECK TCM POWER CIRCUIT 2

Check the voltage between the TCM harness connector terminals and ground.

TCM harness connector		Ground	Condition	Voltage
Connector	Terminal			
F18	47	Ground	Ignition switch ON	10 – 16 V
			Ignition switch OFF	Approx. 0 V
	48		Ignition switch ON	10 – 16 V
			Ignition switch OFF	Approx. 0 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 5.

3.CHECK TCM GROUND CIRCUIT

Check the continuity between TCM harness connector terminals and ground.

TCM harness connector		Ground	Continuity
Connector	Terminal		
F18	41	Ground	Existed
	42		

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

4.DETECT MALFUNCTION ITEMS (PART 1)

Check the following items:

- Open or short circuit of the harness between battery positive terminal and TCM connectors terminals 45 and 46. Refer to PG-10, "Wiring Diagram - BATTERY POWER SUPPLY -".
- 10A fuse (No.33, fuse and fusible link block). Refer to PG-23, "Fuse and Fusible Link Arrangement".
- 10A fuse (No.36, fuse and fusible link block). Refer to PG-23, "Fuse and Fusible Link Arrangement".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

5.CHECK CIRCUIT BETWEEN IPDM E/R AND TCM (PART 1)

1. Turn ignition switch OFF.
2. Disconnect the IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector terminal and TCM harness connector terminals.

IPDM E/R harness connector		TCM harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E15	57	F18	47	Existed
			48	

Is the check result normal?

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

6. CHECK CIRCUIT BETWEEN IPDM E/R AND TCM (PART 2)

Check continuity between IPDM E/R harness connector terminal and ground.

IPDM E/R harness connector		Ground	Continuity
Connector	Terminal		
E15	57	Ground	Not existed

Is the check result normal?

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

7. DETECTION OF MALFUNCTION ITEMS (PART 2)

Check the following items:

- Harness open circuit or short circuit between the ignition switch and IPDM E/R. Refer to PG-15, "Wiring Diagram - IGNITION POWER SUPPLY -".
- 10A fuse (No.55, IPDM E/R). Refer to PG-25, "Fuse, Connector and Terminal Arrangement".
- IPDM E/R

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

S MODE SWITCH

Component Function Check

INFOID:0000000006600467

1.CHECK S MODE INDICATOR FUNCTION

Check S mode indicator turns ON for approx. 2 seconds when ignition switch turns ON.

Is the inspection results normal?

YES >> GO TO 2.
NO >> Go to TM-469, "Diagnosis Procedure".

2.CHECK S MODE SWITCH FUNCTION

1. Shift the selector lever to “D” position.
2. Check that S mode indicator turns ON/OFF when S mode switch is operated.

Is the inspection results normal?

YES >> INSPECTION END
NO >> Go to TM-466, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006600468

1.CHECK S MODE SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect CVT shift selector connector.
3. Turn ignition switch ON.
4. Check the voltage between CVT shift selector harness connector terminals.

CVT shift selector harness connector			Voltage
Connector	Terminal		
	+	–	
M57	1	2	Approx. 5 V

Is the inspection result normal?

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

2.CHECK S MODE SWITCH

Check S mode switch. Refer to TM-467, "Component Inspection (S Mode Switch)".

Is the inspection result normal?

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

3.CHECK CVT SHIFT SELECTOR HARNESS

Check CVT shift selector harness. Refer to TM-467, "Component Inspection (CVT Shift Selector Harness)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

4.CHECK GROUND CIRCUIT

Check the continuity between CVT shift selector harness connector terminal and ground.

CVT shift selector harness connector		Ground	Continuity
Connector	Terminal		
M57	2	Ground	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace the 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 the continuity between combination meter harness connector terminal and CVT shift selector harness connector terminal.

Combination meter harness connector		CVT shift selector harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M34	8	M57	1	Existed

Is the inspection result normal?

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

6.CHECK CIRCUIT BETWEEN COMBINATION METER AND CVT SHIFT SELECTOR (PART 2)

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

Combination meter harness connector		Ground	Continuity
Connector	Terminal		
M34	8	Ground	Not existed

Is the inspection result normal?

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

7.CHECK COMBINATION METER INPUT SIGNAL

1. Connect all of the 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 S mode switch is operated. Refer to MWI-28, "Reference Value".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Replace combination meter. Refer to MWI-69, "Removal and Installation".

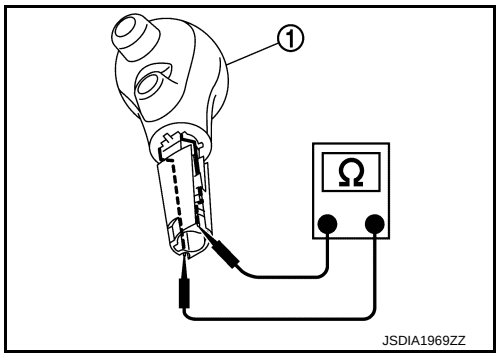
Component Inspection (S Mode Switch)

INFOID:0000000006600469

1.CHECK S MODE SWITCH

Check the continuity between wires of selector lever knob (1)

Condition	Continuity
S mode switch is depressed	Existed
S mode switch is released	Not existed



Is the inspection result normal?

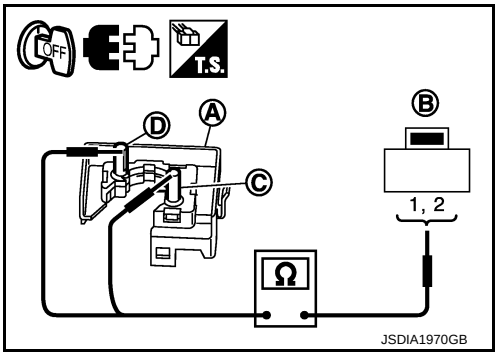
YES >> INSPECTION END
NO >> Replace the selector lever knob. Refer to TM-482, "Disassembly and Assembly".

Component Inspection (CVT Shift Selector Harness)

INFOID:0000000006600470

1.CHECK CVT SHIFT SELECTOR HARNESS

Check the continuity between harness plate (A) and CVT shift selector harness connector (B).



Harness plate	CVT shift selector harness connector	Continuity
	Terminal	
C	1	Existed
D	2	

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace CVT shift selector harness. Refer to TM-482, "Disassembly and Assembly".

S MODE INDICATOR

Component Function Check

INFOID:0000000006600471

1.CHECK S MODE INDICATOR FUNCTION

Check S mode indicator turns ON for approx. 2 seconds when ignition switch turns ON.

Is the inspection results normal?

YES >> INSPECTION END
NO >> Go to TM-469, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006600472

1.CHECK DTC (TCM)

With CONSULT-III
1. Turn ignition switch ON.
2. Check “Self Diagnostic Results” in “TRANSMISSION”.

Is any DTC detected?

YES >> Check DTC detected item. Refer to TM-366, "DTC Index".
NO >> GO TO 2.

2.CHECK DTC (COMBINATION METER)

With CONSULT-III
Check “Self Diagnostic Results” in “METER/M&A”.

Is any DTC detected?

YES >> Check DTC detected item. Refer to MWI-36, "DTC Index".
NO >> GO TO 3.

3.CHECK COMBINATION METER INPUT SIGNAL

With CONSULT-III
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 S mode switch is operated. Refer to MWI-28, "Reference Value".

Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-69, "Removal and Installation".
NO >> GO TO 4.

4.CHECK TCM INPUT/OUTPUT SIGNAL

With CONSULT-III
1. Select “Data Monitor” in “TRANSMISSION”.
2. Select “SPORT MODE SW”.
3. Check that “SPORT MODE SW” turns ON/OFF when S mode switch is operated. Refer to TM-354, "Reference Value".

Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-69, "Removal and Installation".
NO >> Check S mode switch circuit. Refer to TM-466, "Diagnosis Procedure".

SHIFT POSITION INDICATOR CIRCUIT

Component Parts Function Inspection

INFOID:0000000006487733

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-470, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006487734

1.CHECK TCM INPUT/OUTPUT SIGNAL

With CONSULT-III
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-III 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:0000000006600473

1.CHECK SHIFT LOCK OPERATION (PART 1)

1. Turn ignition switch ON.
2. Shift the selector lever to “P” position.
3. Attempt to shift the selector lever to any other than position with the brake pedal released.

Can the selector lever be shifted to any other position?

YES >> Go to TM-471, "Diagnosis Procedure".
NO >> GO TO 2.

2.CHECK SHIFT LOCK OPERATION (PART 2)

Attempt to shift the selector lever to any other than position with the brake pedal depressed.

Can the selector lever be shifted to any other position?

YES >> INSPECTION END
NO >> Go to TM-471, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006600474

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.

Stop lamp switch harness connector		Ground	Voltage
Connector	Terminal		
E102	3	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 9.

2.CHECK STOP LAMP SWITCH (PART 1)

Check stop lamp switch. Refer to TM-474, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 10.

3.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 harness connector		CVT shift selector harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E102	4	M57	5	Existed

Is the inspection result normal?

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

4.CHECK CIRCUIT BETWEEN STOP LAMP SWITCH AND CVT SHIFT SELECTOR (PART 1)

Check the continuity between the stop lamp switch harness connector terminal and ground.

Stop lamp switch harness connector		Ground	Continuity
Connector	Terminal		
E102	4	Ground	Not existed

Is the inspection result normal?

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

5.CHCK GROUND CIRCUIT

Check the continuity between the CVT shift selector harness connector terminal and ground.

CVT shift selector harness connector		Ground	Continuity
Connector	Terminal		
M57	4	Ground	Existed

Is the inspection result normal?

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

6.CHECK PART POSITION SWITCH

1. Disconnect park position switch connector.
2. Check park position switch. Refer to TM-473, "Component Inspection (Park Position Switch)".

Is the inspection result normal?

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

7.CHECK SHIFT LOCK SOLENOID

1. Disconnect shift lock solenoid connector.
2. Check shift lock solenoid. Refer to TM-473, "Component Inspection (Shift Lock Solenoid)".

Is the inspection result normal?

YES >> GO TO 8.
NO >> Repair or replace the malfunctioning parts.

8.CHECK CVT SHIFT SELECTOR HARNESS

Check CVT shift selector harness. Refer to TM-473, "Component Inspection (CVT Shift Selector Harness)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning 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-15, "Wiring Diagram - IGNITION POWER SUPPLY -".
- Ignition switch
- 10A fuse [No.3, fuse block (J/B)]. Refer to PG-22, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace the malfunctioning parts.

10.CHECK INSTALLATION POSITION OF STOP LAMP SWITCH

Adjust stop lamp switch position. Refer to BR-9, "Inspection and Adjustment" (LHD) or BR-77, "Inspection and Adjustment" (RHD).

>> GO TO 11.

11. CHECK STOP LAMP SWITCH (PART 2)

Check stop lamp switch. Refer to TM-474, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace the malfunctioning parts.

Component Inspection (Shift Lock Solenoid)

INFOID:0000000006600475

1. CHECK SHIFT LOCK SOLENOID

Apply voltage to terminals of shift lock solenoid connector and check that shift lock solenoid is activated.

CAUTION:
- **Connect the fuse between the terminals when applying the voltage.**
- **Never cause shorting between terminals.**

Shift lock solenoid connector		Condition	Status
Terminal			
+ (fuse)	–		
1	2	Apply battery voltage between terminals 1 and 2.	Shift lock solenoid operates

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace the shift lock unit. Refer to TM-482, "Disassembly and Assembly".

Component Inspection (Park Position Switch)

INFOID:0000000006600476

1. CHECK PARK POSITION SWITCH

Check the continuity between park position switch connector terminals.

CAUTION:
- **Connect the fuse between the terminals when applying the voltage.**
- **Never cause shorting between terminals.**

Park position switch connector		Condition	Continuity
Terminal			
1	2	Shift the selector lever to “P” position.	Existed
		Other than above	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace the park position switch. Refer to TM-482, "Disassembly and Assembly".

Component Inspection (CVT Shift Selector Harness)

INFOID:0000000006600477

1. CHECK CVT SHIFT SELECTOR HARNESS (PART 1)

Check the continuity between the CVT shift selector harness connector terminal and the shift lock solenoid harness connector terminal.

CVT shift selector harness connector		Shift lock solenoid harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M324	5	M326	1	Existed

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the CVT shift selector harness. Refer to TM-482, "Disassembly and Assembly".

2.CHECK CVT SHIFT SELECTOR HARNESS (PART 2)

Check the continuity between the shift lock solenoid harness connector terminal and the park position switch harness connector terminal.

Shift lock solenoid harness connector		Park position switch harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M326	2	M325	1	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace the CVT shift selector harness. Refer to TM-482, "Disassembly and Assembly".

3.CHECK CVT SHIFT SELECTOR HARNESS (PART 3)

Check the continuity between the park switch harness connector terminal and the CVT shift selector harness connector terminal.

Park switch harness connector		CVT shift selector harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M325	2	M324	6	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the CVT shift selector harness. Refer to TM-482, "Disassembly and Assembly".

4.CHECK CVT SHIFT SELECTOR HARNESS (PART 4)

Check harness cladding CVT shift selector harness for damage.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace the CVT shift selector harness. Refer to TM-482, "Disassembly and Assembly".

Component Inspection (Stop Lamp Switch)

INFOID:0000000006600478

1.CHECK STOP LAMP SWITCH

Check the continuity between the stop lamp switch connector terminals.

Stop lamp switch connector		Condition	Continuity
Terminal			
3	4	Depressed brake pedal	Existed
		Released brake pedal	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace stop lamp switch. Refer to BR-20, "Exploded View" (LHD) or BR-88, "Exploded View" (RHD).

SYMPTOM DIAGNOSIS

CVT CONTROL SYSTEM

Symptom Table

INFOID:0000000006487744

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	S mode 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 (P17BA, P17BB)	Line pressure solenoid valve (P0746, P0962, P0963)	Lock-up solenoid valve (P0740, P0743, P0744)	High clutch &reverse brake solenoid valve (P1739, P173C, P17B7, P17B8)	Low brake solenoid valve (P173A, P173B, P17B4, P17B5)	CVT fluid temperature sensor (P0711, P0712, P0713)
		EC-537	TM-480	TM-382	TM-383	TM-354	TM-466							TM-366					
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	S mode 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 (P17BA, P17BB)	Line pressure solenoid valve (P0746, P0962, P0963)	Lock-up solenoid valve (P0740, P0743, P0744)	High clutch &reverse brake solenoid valve (P1739, P173C, P17B7, P17B8)	Low brake solenoid valve (P173A, P173B, P17B4, P17B5)	CVT fluid temperature sensor (P0711, P0712, P0713)
		EC-537	TM-480	TM-382	TM-383	TM-354	TM-466							TM-366				
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 S mode.					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-508							
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 S mode.													
	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	S mode 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 (P17BA, P17BB)	Line pressure solenoid valve (P0746, P0962, P0963)	Lock-up solenoid valve (P0740, P0743, P0744)	High clutch &reverse brake solenoid valve (P1739, P173C, P17B7, P17B8)	Low brake solenoid valve (P173A, P173B, P17B4, P17B5)	CVT fluid temperature sensor (P0711, P0712, P0713)
		EC-537	TM-480	TM-382	TM-383	TM-354	TM-466							TM-366				
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															
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-508							
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

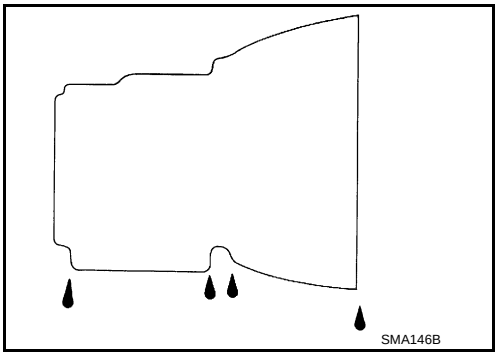
CVT FLUID

Inspection

INFOID:0000000006487745

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-379, "Adjustment".

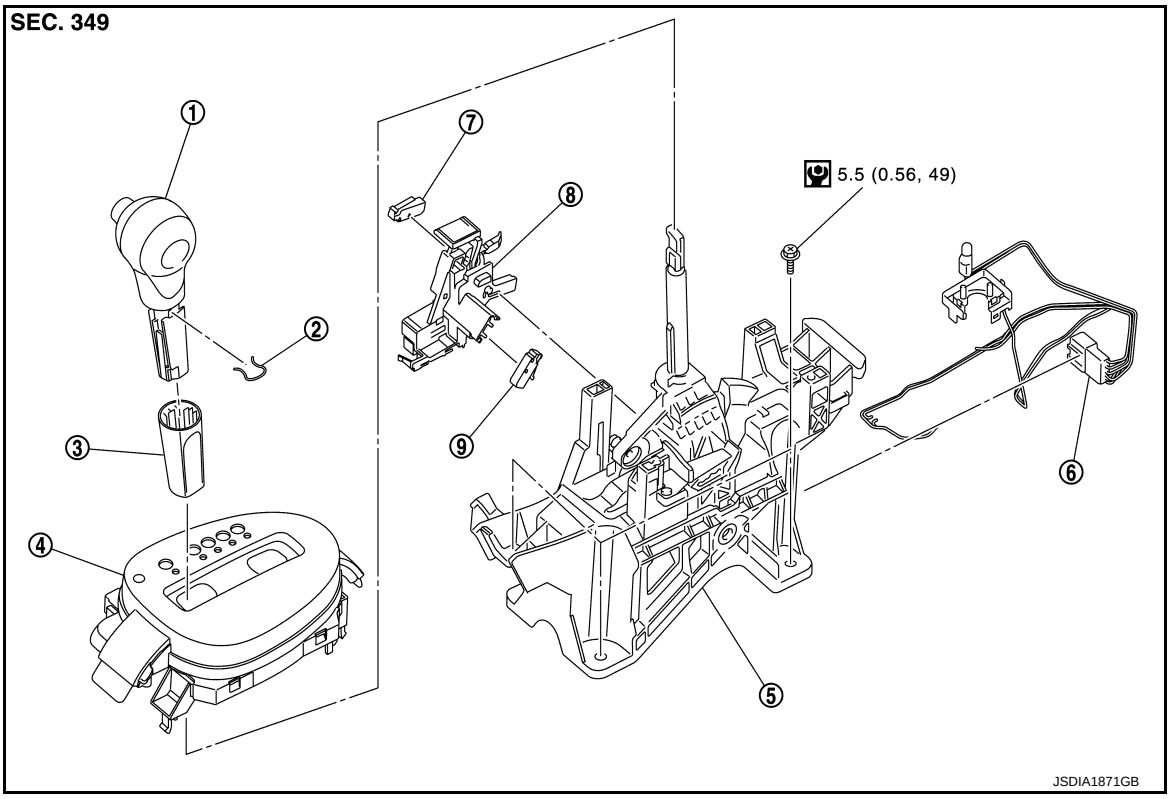


REMOVAL AND INSTALLATION

CVT SHIFT SELECTOR

Exploded View

INFOID:0000000006487746



1.	Selector lever knob	2.	Lock pin	3.	Knob cover
4	Position indication panel	5.	CVT shift selector assembly	6.	CVT shift selector harness assembly
7.	Detent switch*	8.	Shift lock unit	9.	Park position switch

: N·m (kg-m, it-lb)

*: With push engine starter

Removal and Installation

INFOID:0000000006487747

REMOVAL

CAUTION:

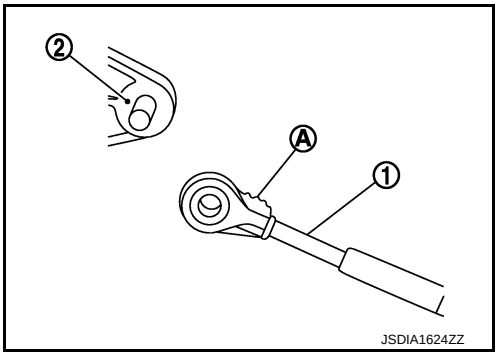
Always apply the parking brake before performing removal and installation.

1. Disconnect battery cable from negative terminal. Refer to PG-124, "Exploded View".
2. Shift the selector lever to “N” position.
3. Remove the center console. Refer to IP-23, "Removal and Installation".
4. Disconnect the CVT shift selector connector.
5. Shift the selector lever to “P” position.
6. Remove the key interlock cable from the CVT shift selector assembly. Refer to TM-488, "Removal and Installation".
7. Remove the control cable from the CVT shift selector assembly. Refer to TM-485, "Exploded View".
8. Remove the CVT shift selector assembly.

INSTALLATION

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

- When connecting the control cable (1) to the CVT shift selector assembly (2), face the grooved surface of the rib (A) up and insert the control cable until it stops.

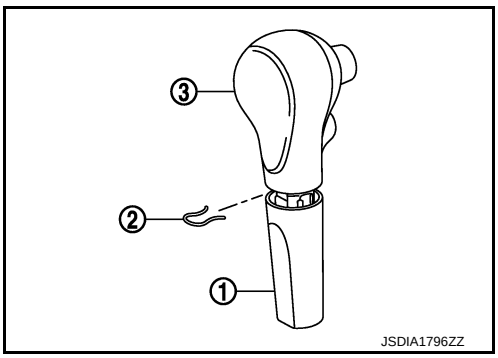


Disassembly and Assembly

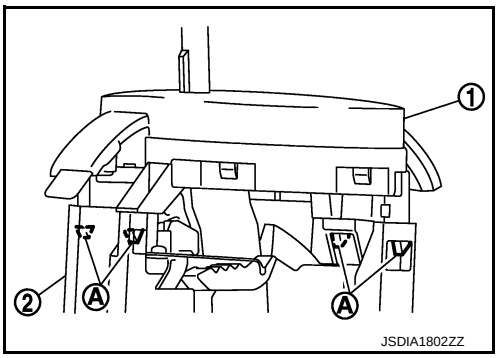
INFOID:0000000006487748

DISASSEMBLY

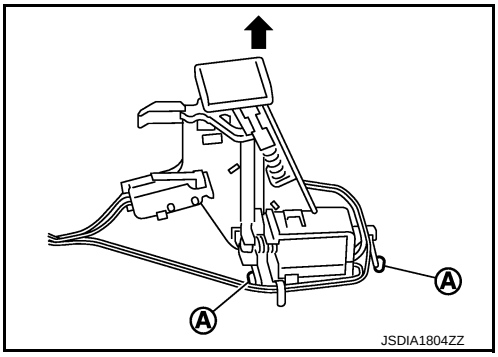
1. Slide the selector lever knob cover (1) down.
   CAUTION:
   Never damage the knob cover.
2. Pull out the lock pin (2).
3. Pull the selector lever knob (3) and knob cover upwards to remove them.
4. Remove the position lamp.



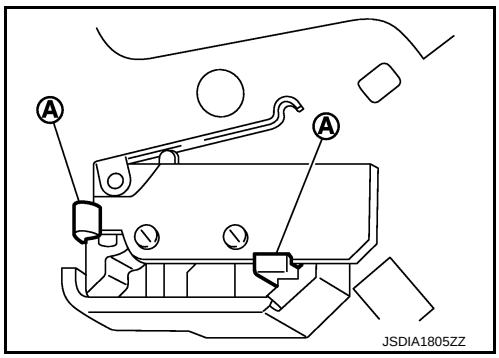
5. Disengage the hooks (A) (4 locations), and lift up the position indication panel (1) to separate it from the CVT shift selector assembly (2).
   CAUTION:
   Never damage the CVT shift selector assembly.



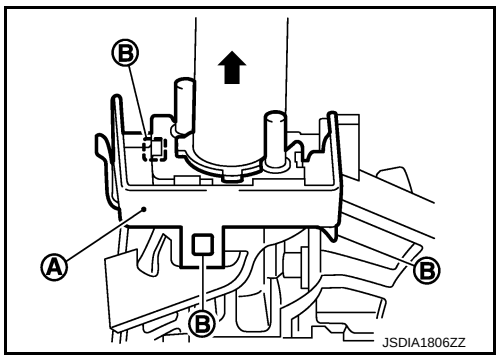
6. Lift up the shift lock unit pawl (A), and pull the unit out in the direction indicated by the arrow (⬅) in the figure to separate it from the CVT shift selector assembly.
7. Disconnect the park position switch connector, detent switch connector, and shift lock solenoid connector from the shift lock unit.
   NOTE:
   Remove the shift lock solenoid before disconnecting the shift lock solenoid connector.



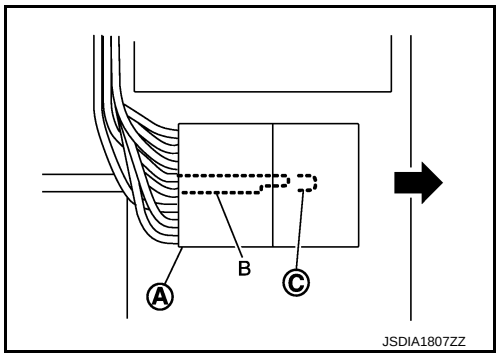
8. Lift up the park position switch and detent switch pawls (A) and pull forward to remove.
9. Remove the key interlock rod.



10. Free any harnesses that are fastened to the CVT shift selector.
11. Lift up the sports mode switch connector (A) pawls (B), and pull in the direction indicated by the arrow (⬅) in the figure to remove.



12. Use a terminal tool or similar instrument (B) and press the pawl (C) on the rear side of the CVT shift selector harness connector (A). Then pull it in the direction of the arrow (⬅) in the figure to remove.
    CAUTION:
    Never damage the CVT shift selector assembly.
13. Disconnect the CVT shift selector harness from the CVT shift selector.

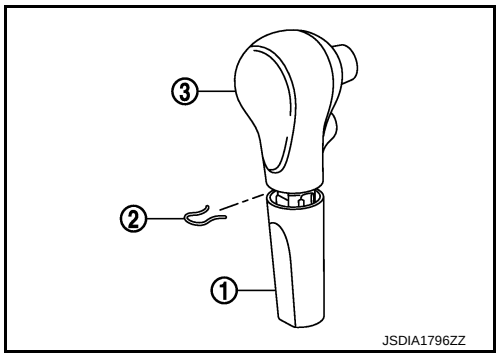


INSTALLATION

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

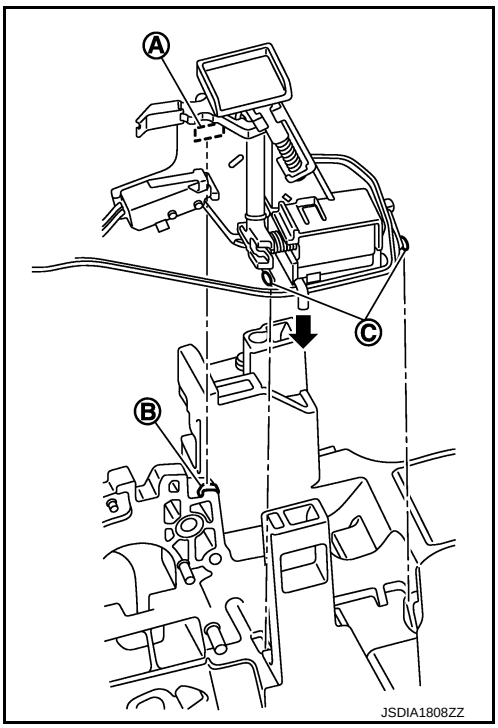
- Follow the procedure below and place the selector knob onto the CVT shift selector.

1. Install the lock pin (2) onto the selector lever knob (3).
2. Install the knob cover (1) onto the selector lever knob.
3. Press the selector lever knob onto the selector lever until it clicks.
   CAUTION:
   - **When pressing the selector lever knob onto the selector lever, never press the selector lever knob button.**
   - **Never strike the selector lever knob to press it into place.**



- Follow the procedure below and press the shift lock unit onto the CVT shift selector.

1. Connect the connectors.
2. Align the indented part (A) of the shift lock unit with the projecting part (B) of the CVT shift selector.
3. Insert the shift lock unit until the pawls (C) make a click sound.



Inspection

INFOID:0000000006487749

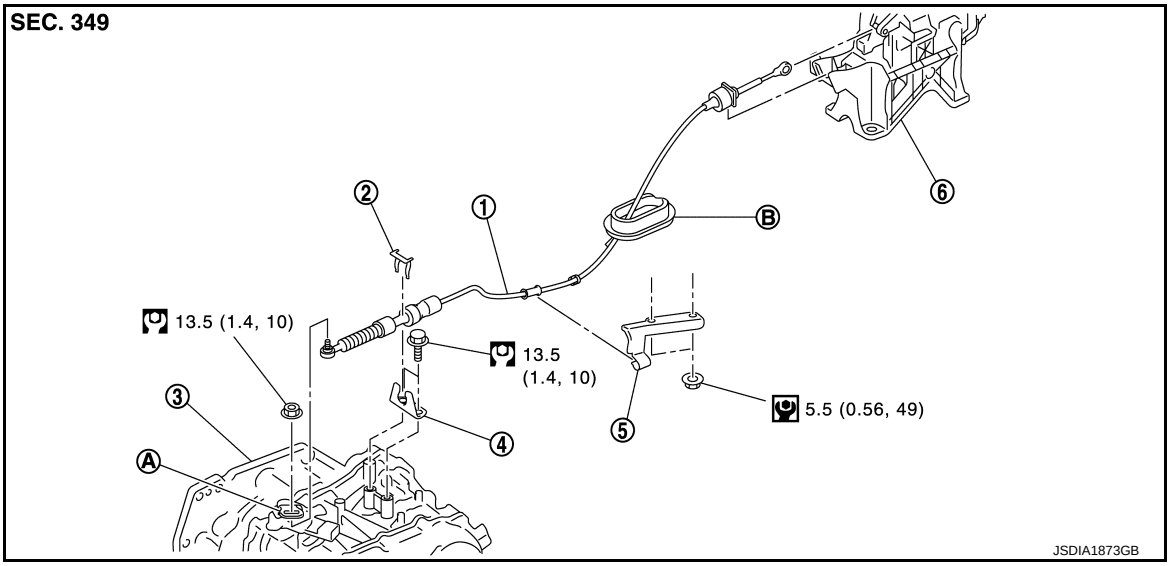
INSPECTION AFTER INSTALLATION

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-383, "Inspection and Adjustment".

CONTROL CABLE

Exploded View

INFOID:0000000006487750



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

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

Removal and Installation

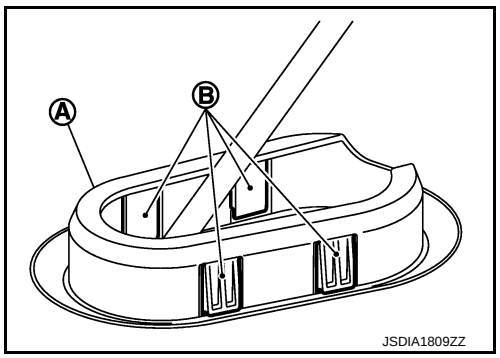
INFOID:0000000006487751

INSTALLATION

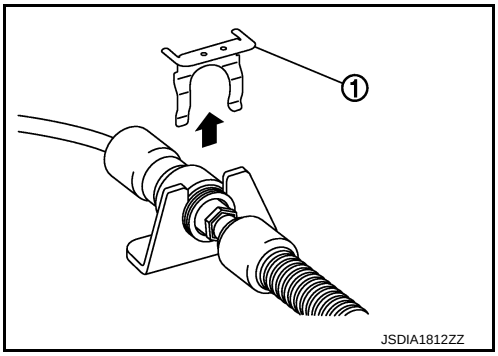
CAUTION:

Always apply the parking brake before performing removal and installation.

1. Remove the battery. Refer to PG-124, "Removal and Installation".
2. Remove the control cable from the CVT shift selector assembly. Refer to TM-481, "Removal and Installation".
3. Disengage the pawls (B) of the grommet (A), and pull downwards to remove.
4. Remove the control cable installation nut from the manual lever.

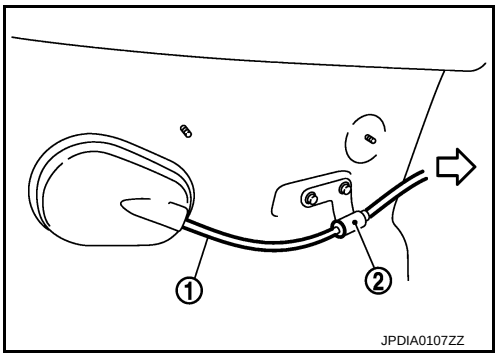


5. Remove the lock plate (1).



6. Remove sub muffler from the mounting rubber and lower the sub muffler downward. Refer to EX-12, "Exploded View".
7. Lift up the heat plate.
8. Remove the control cable (1) from the bracket (2).

⇦ :Vehicle front



9. Remove the control cable from the vehicle.
10. Remove bracket.

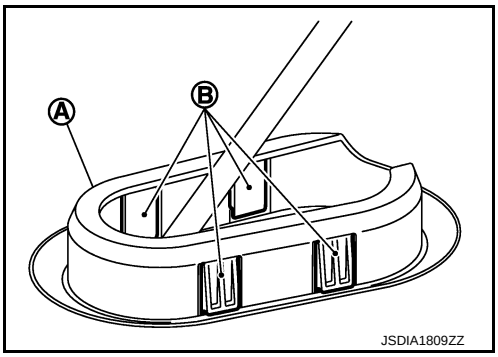
INSTALLATION

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

- From below the vehicle, press the grommet (A) into place until the pawls (B) make a click sound.

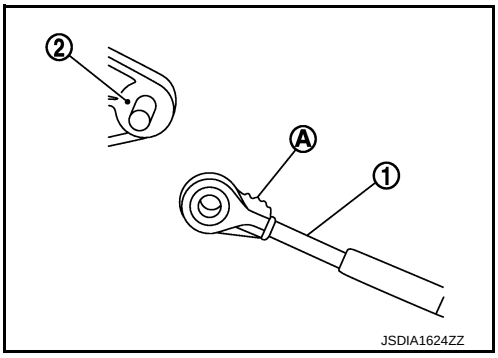
CAUTION:

- **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.**

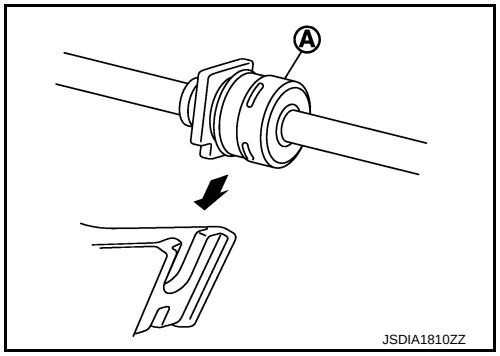


- Pay attention to the following when connecting the control cable to the CVT shift selector.

1. When connecting the control cable (1) to the CVT 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 CVT shift selector.
CAUTION:
- **Place the socket onto the CVT shift lever, then fasten it in place from above.**
- **Check that the pulling on the socket does not disconnect it.**



Inspection

INFOID:0000000006487752

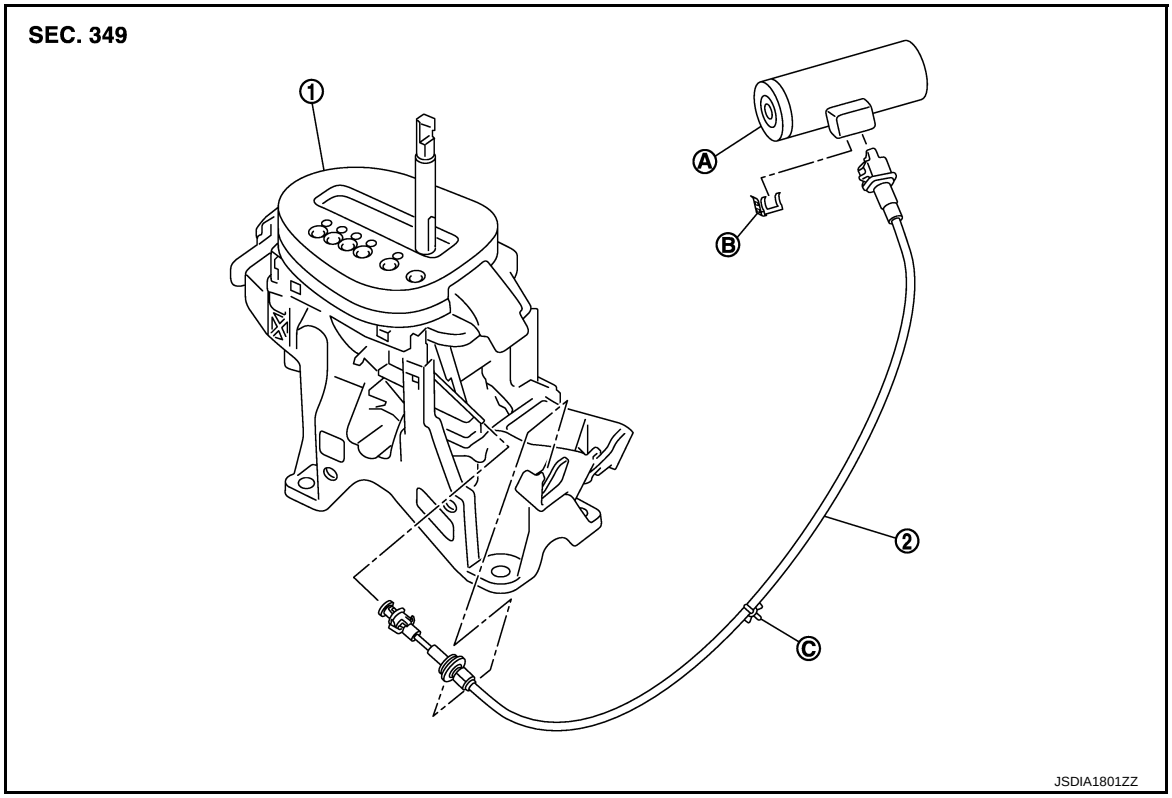
INSPECTION AFTER INSTALLATION

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-383, "Inspection and Adjustment".

KEY INTERLOCK CABLE

Exploded View

INFOID:0000000006487753



1. CVT shift selector assembly
2. Key interlock cable
A: Key cylinder
B: Clip
C: Clip

Removal and Installation

INFOID:0000000006487754

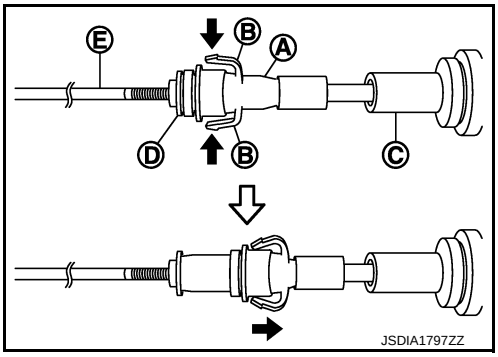
REMOVAL

CAUTION:

Always apply the parking brake before performing removal and installation.

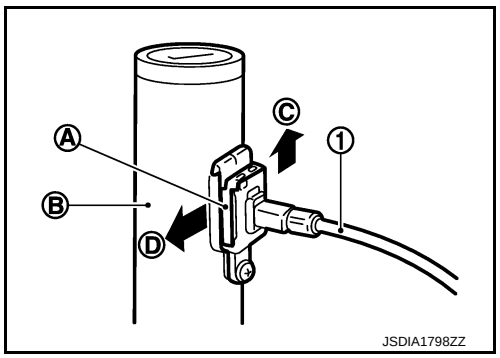
1. Shift the selector lever to the “P” position.
2. Remove the selector lever knob. Refer to TM-482, "Disassembly and Assembly".
3. Remove the center console. Refer to IP-23, "Removal and Installation".
4. Press the pawls (B) of the key interlock cable slider (A) while sliding it in the direction of the casing cap (C), and separate the adjusting holder (D) and slider.

   E :Key interlock rod



5. Remove the key interlock cable from the CVT shift selector.
6. Remove the steering column lower cover and driver instrument lower panel. Refer to IP-13, "Removal and Installation".

7. Lift 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

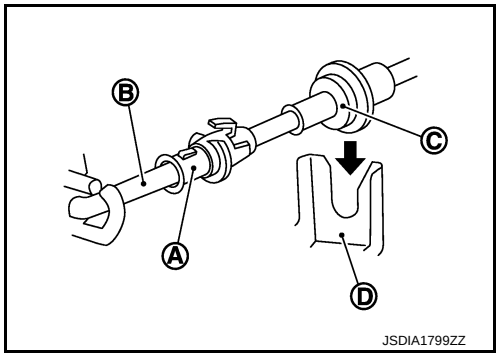
8. Disconnect the key interlock cable from the key cylinder.
9. Disengage the clip and disconnect the key interlock cable from the vehicle.

INSTALLATION

- Install the adjusting holder (A) onto the key interlock rod (B), then install the casing cap (C) onto the CVT shift selector cable bracket (D).

CAUTION:

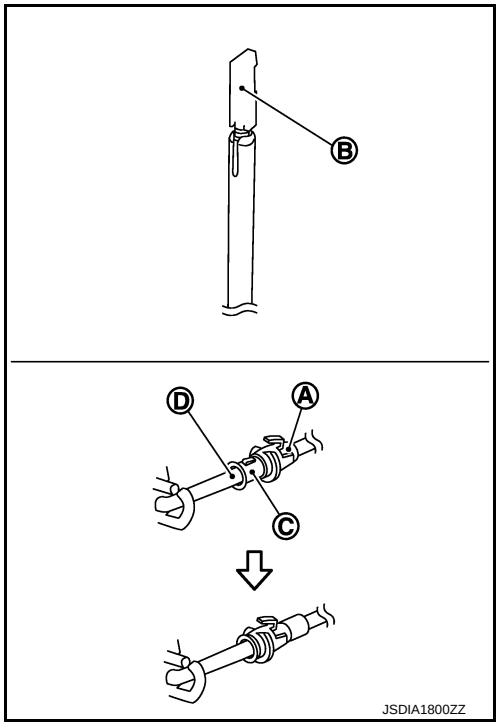
- **When installing the key interlock cable, never bend or twist the cable forcefully.**
- **After connecting the key interlock cable to the CVT shift selector cable bracket, be sure to check that the casing cap is completely fastened to the cable bracket. If the casing cap is easily displaced, replace the key interlock cable.**



- 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:

- **Never squeeze the pawls on the key interlock cable slider when holding the slider.**
- **Never apply force in a perpendicular direction to the key interlock rod when sliding the slider.**



Inspection

INFOID:0000000006487755

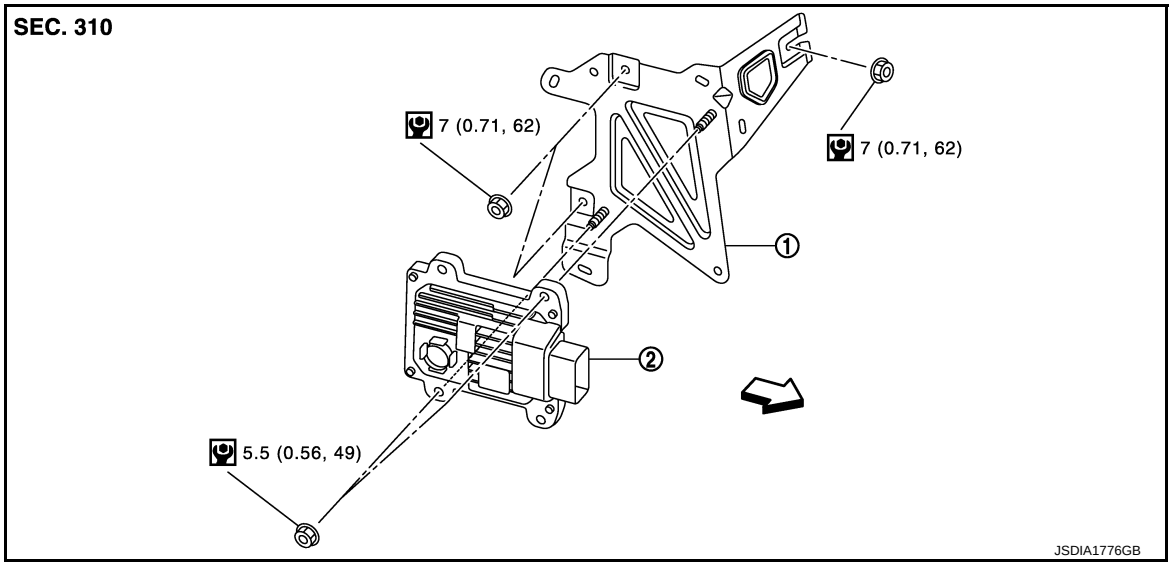
INSPECTION AFTER INSTALLATION

- Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-383, "Inspection and Adjustment".
- The key can be removed only when the selector lever is in the “P” position.
- It must not be possible to turn the ignition switch to LOCK when the selector lever is not in the “P” position.

TCM

Exploded View

INFOID:0000000006487756



1. Bracket
2. TCM

⇦ :Vehicle front

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000006487757

CAUTION:
When replacing TCM, note the “CVTF DETERIORATION DATE” value displayed on CONSULT-III “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-374, "Description".

REMOVAL

1. Remove the battery. Refer to PG-124, "Removal and Installation".
2. Remove the air cleaner case. Refer to EM-161, "Removal and Installation".
3. Disconnect the TCM connector.
4. Remove the TCM.
5. Remove the bracket.

INSTALLATION

Installation is the reverse order of removal.

Adjustment

INFOID:0000000006487758

ADJUSTMENT AFTER INSTALLATION

Perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to TM-374, "Description".

AIR BREATHER HOSE

Removal and Installation

INFOID:0000000006487759

REMOVAL

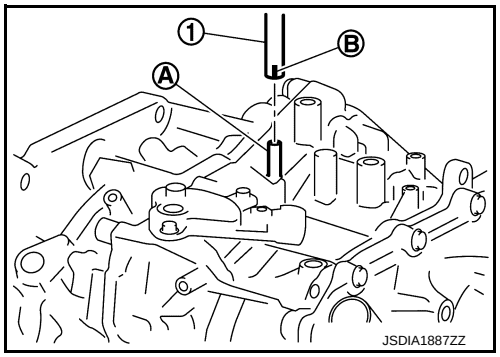
1. Remove clip from bracket.
2. Remove air breather hose from transaxle assembly.

INSTALLATION

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

CAUTION:

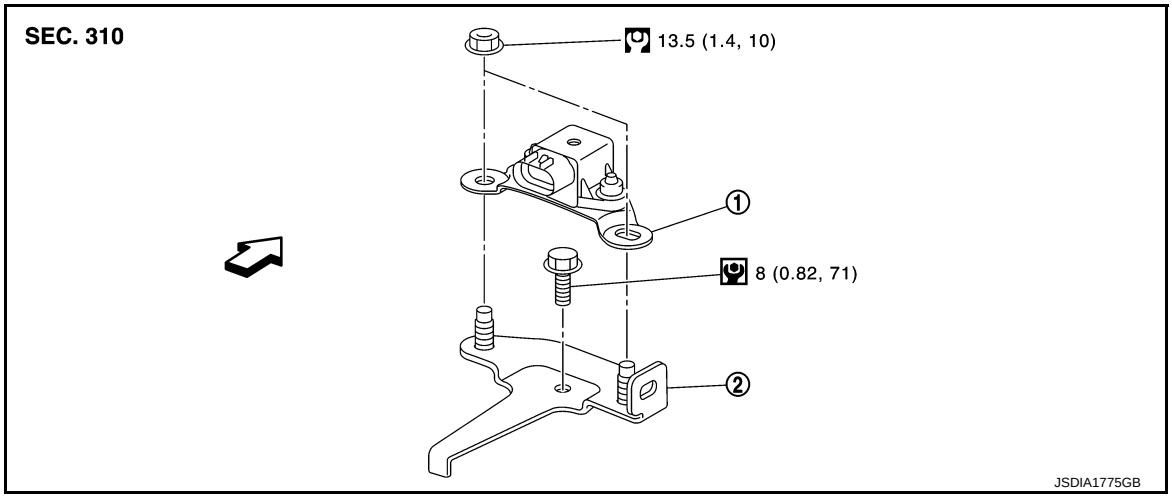
- **Check that air breather hose is not collapsed or blocked due to folding or bending when installed.**
- **Securely install the clip to the bracket.**
- **Be sure to insert it fully until its end reaches the stop when inserting air breather hose (1) to transaxle tube (A).**
- **Install air breather hose to transaxle tube so that the paint mark (B) is facing frontward.**



G SENSOR

Exploded View

INFOID:0000000006487760



1. Bracket
1. G sensor

⇦ : Vehicle front

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000006487761

CAUTION:
- **Never drop or strike G sensor, because it has little tolerance for impact.**
- **Never use a power tool to avoid impact.**

REMOVAL

1. Disconnect the battery cable from the negative terminal. Refer to PG-124, "Removal and Installation".
2. Remove driver seat (LHD) or passenger seat (RHD). Refer to SE-19, "Removal and Installation".
3. Remove center pillar lower garnish (left side) and dash side finisher (left side). Refer to INT-20, "CENTER PILLAR LOWER GARNISH : Removal and Installation" (center pillar lower garnish) and INT-20, "DASH SIDE FINISHER : Removal and Installation" (dash side finisher).
4. Pull up floor carpet. Refer to INT-23, "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:0000000006487762

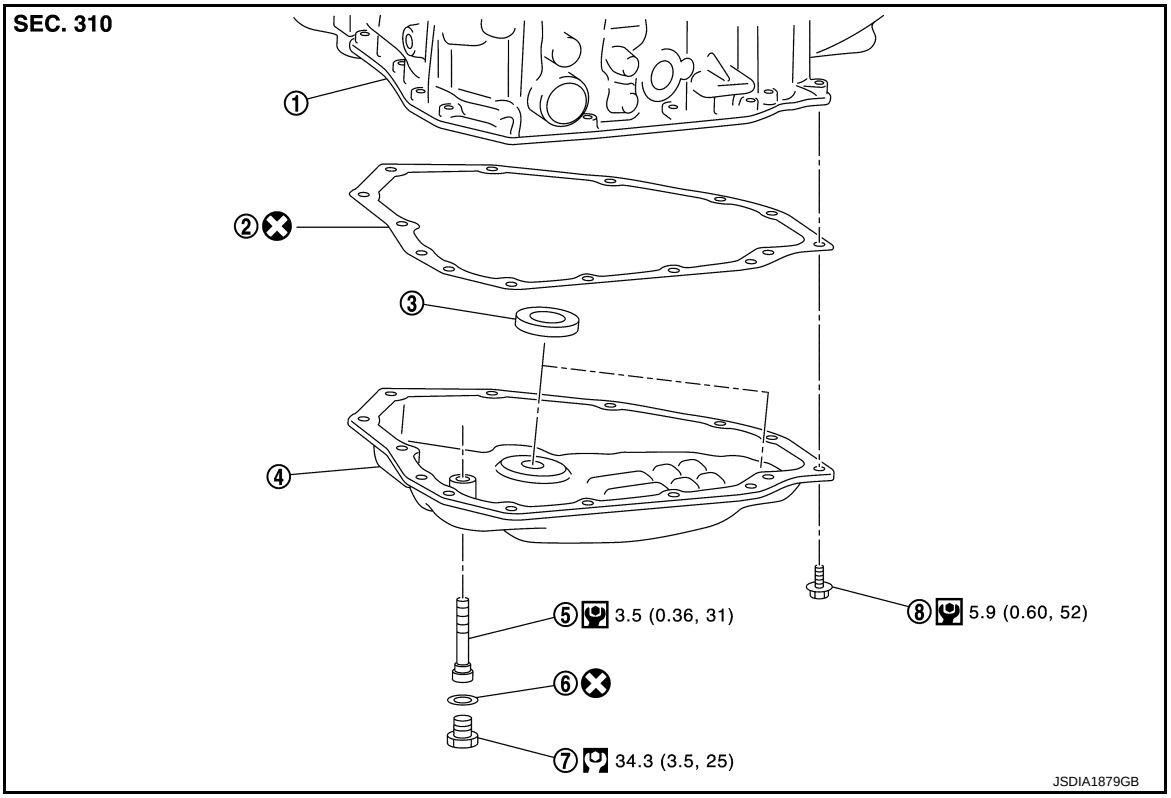
ADJUSTMENT AFTER INSTALLATION

Perform “G SENSOR CALIBRATION”. Refer to TM-377, "Description".

OIL PAN

Exploded View

INFOID:0000000006487763



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)

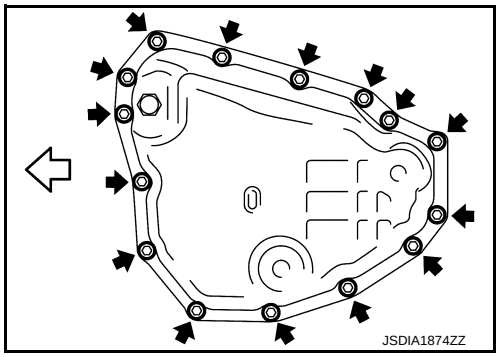
Removal and Installation

INFOID:0000000006487764

REMOVAL

1. Remove the drain plug and overflow tube, and then drain the CVT fluid.
   CAUTION:
   Use caution when looking into the drain hole as there is the risk of fluid entering the eye.
2. Remove the drain plug gasket from the drain plug.
3. Remove the oil pan mounting bolts (⇦), and then remove the oil pan and oil pan gasket.

   ⇦ :Vehicle front



4. Remove the magnets from the oil pan.

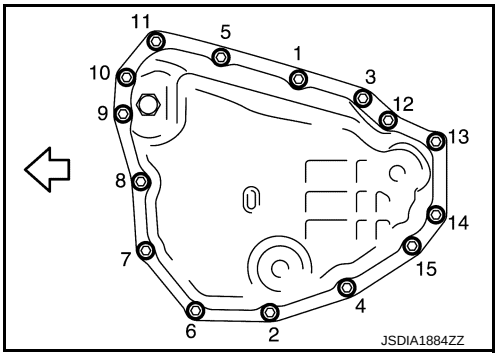
INSTALLATION

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

CAUTION:

- **Never reuse oil pan gasket and drain plug gasket.**
- **When installing the oil pan mounting bolts, be sure to use new bolts.**
- **Completely remove all moisture, oil and old gasket, etc. from the oil pan gasket mounting 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 mounting bolt.

⇦ :Vehicle front



Inspection and Adjustment

INFOID:0000000006487765

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-480, "Inspection".

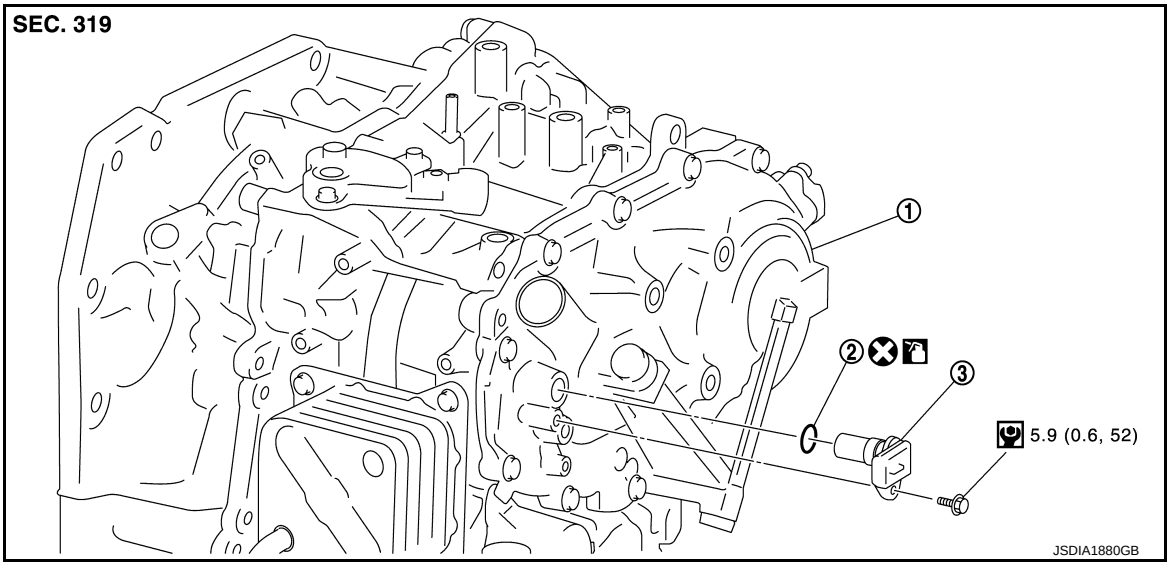
ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level. Refer to TM-379, "Adjustment".

PRIMARY SPEED SENSOR

Exploded View

INFOID:0000000006487766



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-2

Removal and Installation

INFOID:0000000006487767

REMOVAL

1. Remove the battery. Refer to PG-124, "Removal and Installation".
2. Remove the air cleaner case. Refer to EM-161, "Removal and Installation".
3. Remove the ECM and bracket as a set.
4. Disconnect the primary speed sensor connector.
5. Remove the primary speed sensor.
6. Remove the O-ring from the primary speed sensor.

INSTALLATION

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

CAUTION:

- **Never reuse O-ring.**
- **Apply Genuine NISSAN CVT Fluid NS-2 to the O-ring.**

Inspection and Adjustment

INFOID:0000000006487768

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-480, "Inspection".

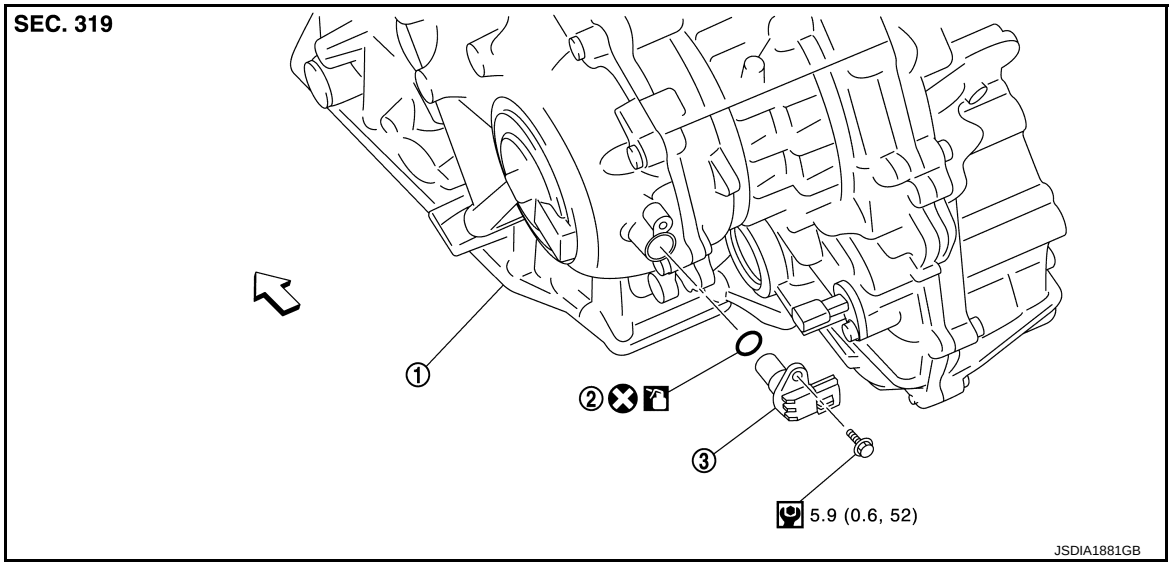
ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level. Refer to TM-379, "Adjustment".

SECONDARY SPEED SENSOR

Exploded View

INFOID:0000000006487769



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-2

Removal and Installation

INFOID:0000000006487770

REMOVAL

1. Disconnect battery cable from negative terminal. Refer to PG-124, "Removal and Installation".
2. Remove the air cleaner case. Refer to EM-161, "Removal and Installation".
3. Disconnect the secondary speed sensor connector.
4. Remove the secondary speed sensor.
5. Remove the O-ring from the secondary speed sensor.

INSTALLATION

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

CAUTION:

- **Never reuse O-ring.**
- **Apply Genuine NISSAN CVT Fluid NS-2 to the O-ring.**

Inspection and Adjustment

INFOID:0000000006487771

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-480, "Inspection".

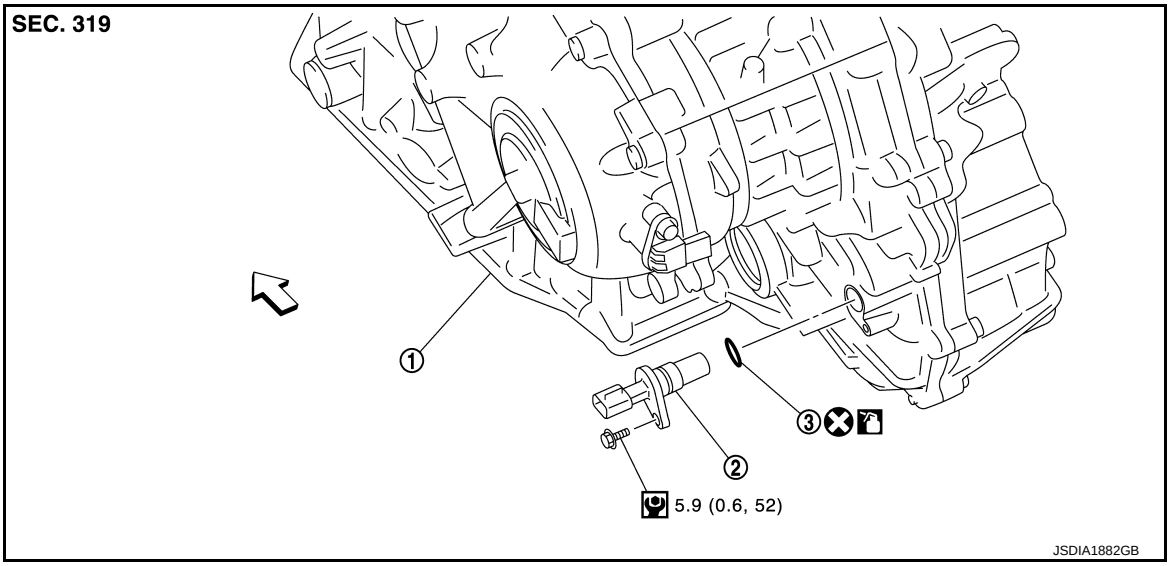
ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level. Refer to TM-379, "Adjustment".

OUTPUT SPEED SENSOR

Exploded View

INFOID:0000000006487772



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-2

Removal and Installation

INFOID:0000000006487773

REMOVAL

1. Disconnect battery cable from negative terminal. Refer to PG-124, "Removal and Installation".
2. Disconnect the output speed sensor connector.
   NOTE:
   Lift up the vehicle and perform the work from rear of the unit.
3. Remove the output speed sensor.
4. Remove the O-ring from the output speed sensor.

INSTALLATION

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

CAUTION:

- **Never reuse O-ring.**
- **Apply Genuine NISSAN CVT Fluid NS-2 to the O-ring.**

Inspection and Adjustment

INFOID:0000000006487774

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-480, "Inspection".

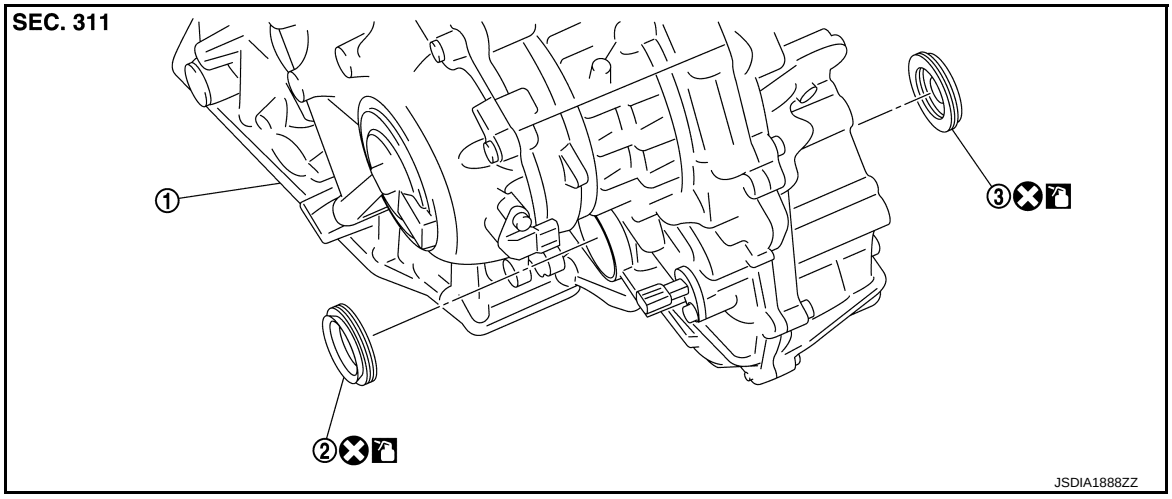
ADJUSTMENT AFTER INSTALLATION

Check the CVT fluid level. Refer to TM-379, "Adjustment".

DIFFERENTIAL SIDE OIL SEAL

Exploded View

INFOID:0000000006487775



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-2

Removal and Installation

INFOID:0000000006487776

REMOVAL

NOTE:

Cap or plug openings to prevent fluid from spilling.

1. Remove the left and right front drive shafts. Refer to FAX-53, "Removal and Installation".
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

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

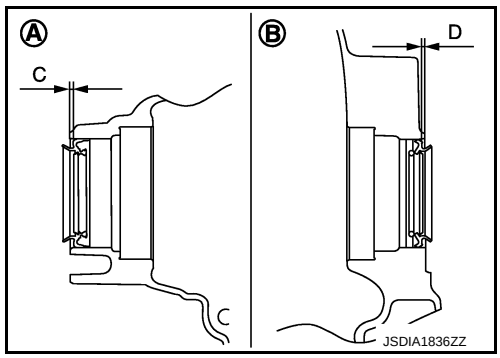
CAUTION:

- **Never reuse differential side oil seal.**
- **Apply Genuine NISSAN CVT Fluid NS-2 to the differential side oil seal lip and around the oil seal.**
- **When inserting the drive shaft, be sure to use a protector (SST: KV38107900). Refer to FAX-53, "Removal and Installation".**

Use a drift (commercial service tool) and drive the differential side oil seal in until the amount of oil seal projection from the case edge matches dimensions (C) and (D).

CAUTION:

Be careful not to scratch the lip of the differential side oil seal when press-fitting it.



A : Differential side oil seal (left side)

B : Differential side oil seal (right side)

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:0000000006487777

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-480, "Inspection".

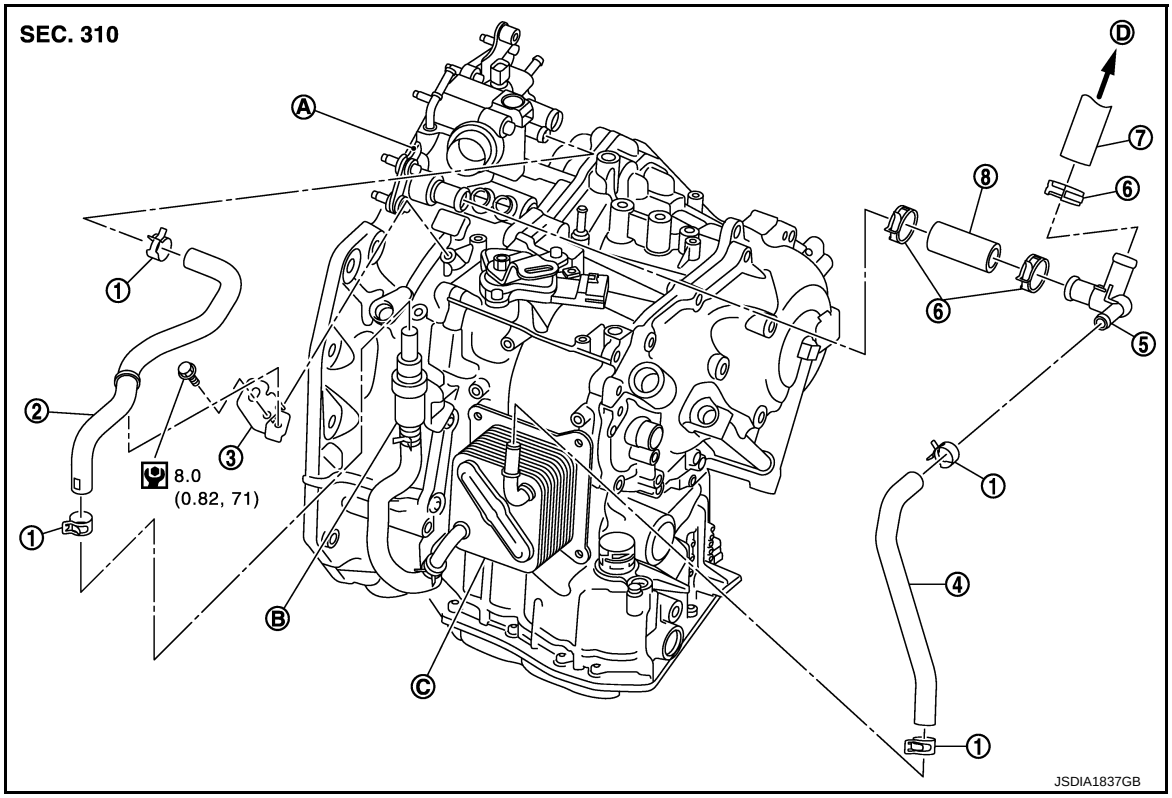
ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level. Refer to TM-379, "Adjustment".

WATER HOSE

Exploded View

INFOID:0000000006487778



1. Hose clamp
2. Water hose A
3. Water hose B
4. Water hose B
5. Water bypass pipe
6. Hose clamp
7. Heater hose
8. Water hose C
A. Water outlet
B. Heater thermostat
C. Oil warmer
D. Heater core

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000006487779

REMOVAL

WARNING:

Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator.

CAUTION:

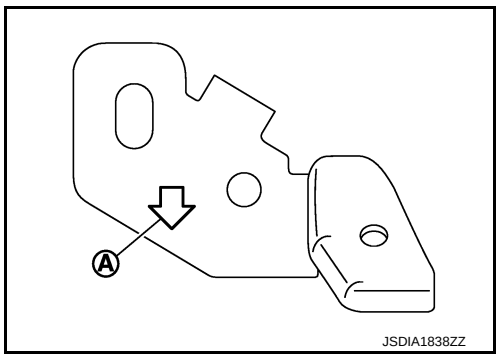
Perform these steps after the coolant temperature has cooled sufficiently.

1. Remove the hose clamp and pull out the water hose A.
2. Remove the hose clamp and pull out the water hose B.
3. Remove the hose clamp and pull out the water hose C.
4. Pull out the heater hose and remove the water bypass pipe. Refer to CO-52, "Exploded View".
5. Remove the bracket.

INSTALLATION

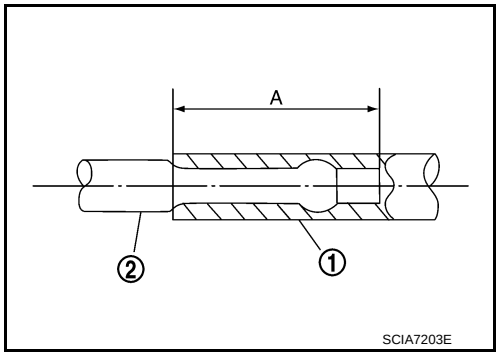
Note the following, and install in the reverse order of removal.

- To install bracket to the CVT assembly, face the from arrow (A) of the bracket ahead of the vehicle.



- When installing water hose (1) to tube (2), refer to insertion length "A" below.

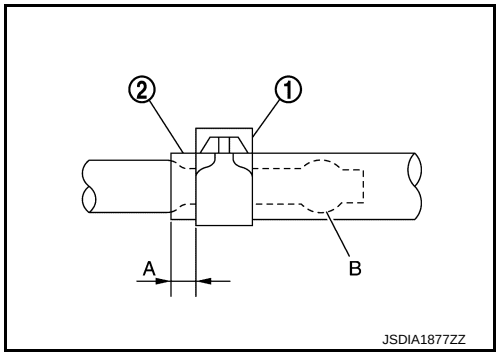
Insertion length "A" : 27 mm (1.06 in)



- When hose clamp (1) is installed on CVT water hose (2), refer to dimension "A" below.

Dimension"A" : 5 – 7 mm (0.20 – 0.28 in)

- The hose clamp should not come on bulge (B).



Water hose	Hose end	Direction of paint mark	Direction of hose clamp tab
Water hose A	Water outlet side	Align with the mark on the water outlet side	Up side of vehicle
	Heater thermostat side	Vehicle front	Vehicle front
Water hose B	Oil warmer side	Vehicle front	Vehicle front
	Water bypass pipe side	Up side of vehicle	Right of vehicle
Water hose C	Water bypass pipe side	Vehicle front	Vehicle front and 45° up side
	Water outlet side	Up side of vehicle	Vehicle front and 45° up side

Inspection

INFOID:0000000006487780

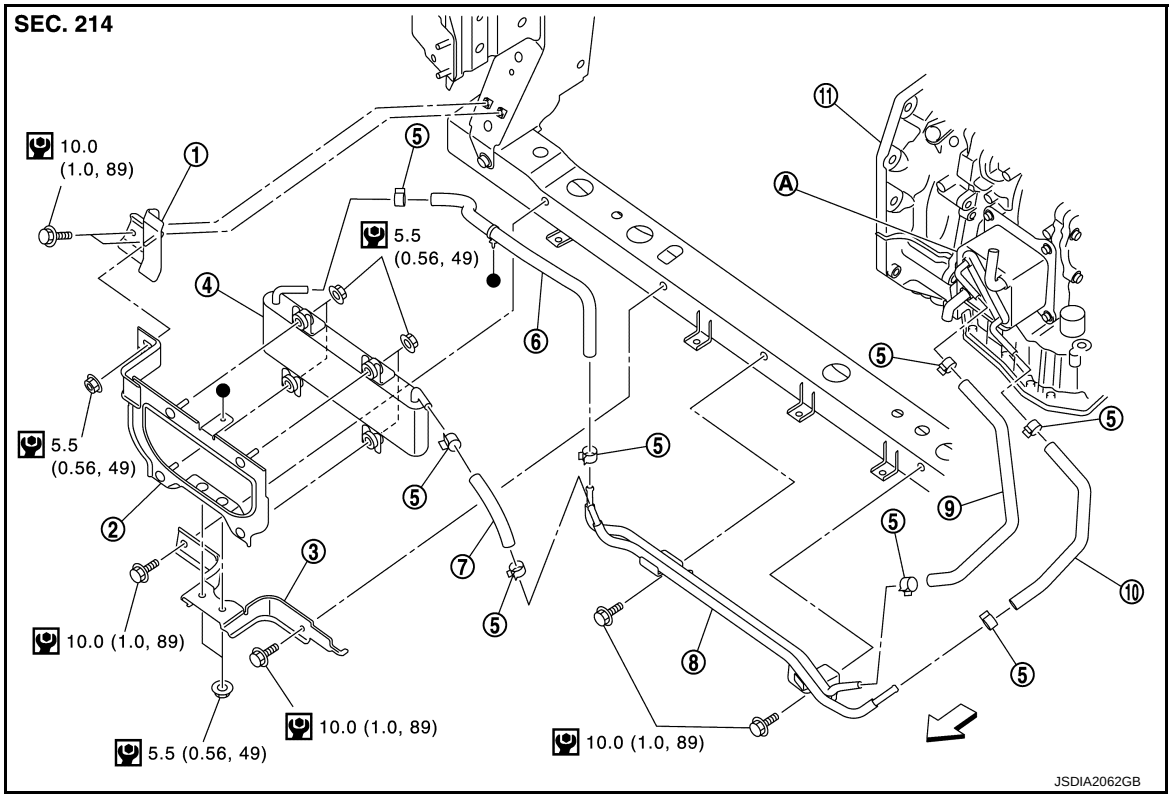
INSPECTION AFTER INSTALLATION

Start the engine, and check the joints for coolant leakage.

FLUID COOLER SYSTEM

Exploded View

INFOID:0000000006598467



1. Bracket
2. Bracket
3. Bracket
4. CVT fluid cooler
5. Clamp
6. CVT fluid cooler hose C
7. CVT fluid cooler hose B
8. CVT fluid cooler tube assembly
9. CVT fluid cooler hose D
10. CVT fluid cooler hose A
11. Transaxle assembly

A. CVT oil warmer

⇦: Vehicle front

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:0000000006598468

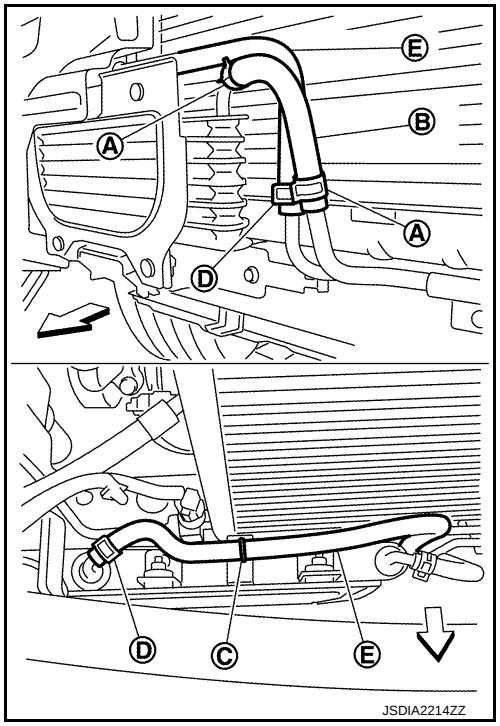
REMOVAL

1. Remove front bumper assembly. Refer to EXT-13, "Removal and Installation".
2. Remove inlet air duct (lower). Refer to EM-161, "Removal and Installation".
3. Remove air guide (LH and RH). Refer to DLK-147, "HR16DE : Exploded View".

4. Remove hose clamps (A) and fluid cooler hose B (B).

⇦ : Vehicle front

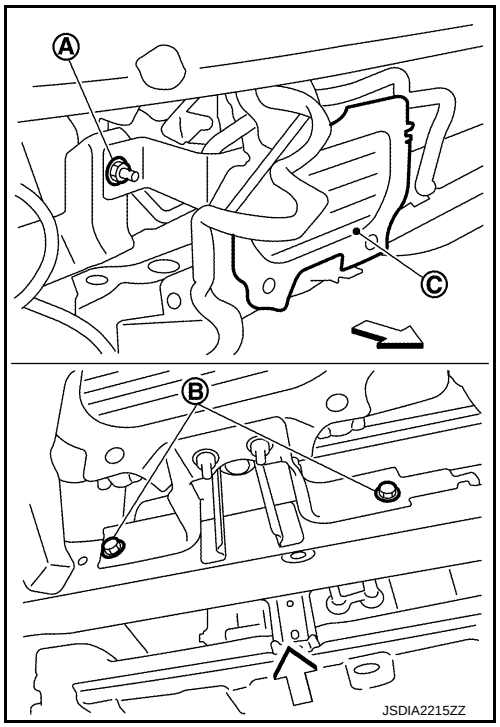
5. Disconnect clip (C) from bracket.
6. Remove hose clamps (D) and fluid cooler hose C (E).



7. Remove nut (A) and bolts (B).

⇦ : Vehicle front

8. Remove CVT fluid cooler (with brackets) (C) from the vehicle.

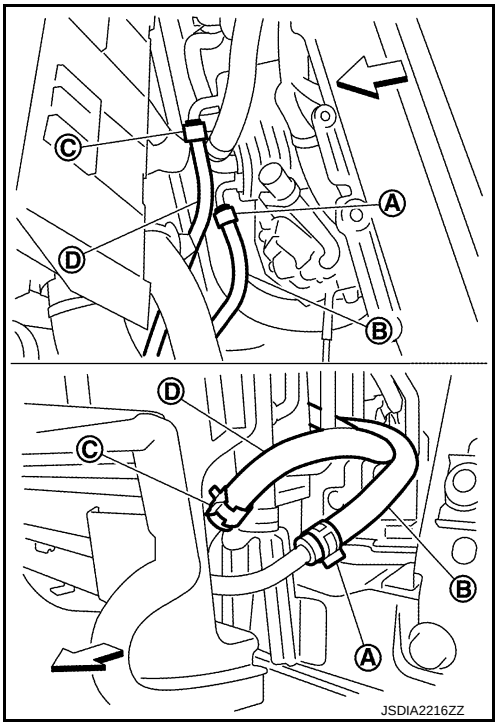


9. Remove clamps (A) and fluid cooler hose A (B).

⇦ : Vehicle front

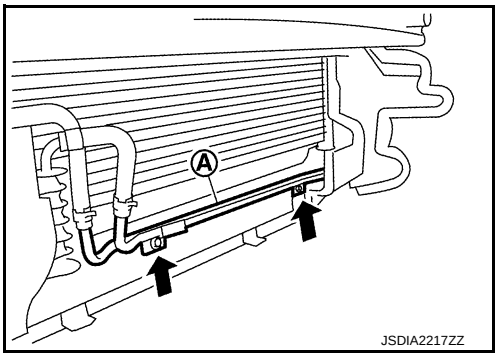
NOTE:
Cap or plug openings to prevent fluid from spilling.

10. Remove clamps (C) and fluid cooler hose A (D).
NOTE:
Cap or plug openings to prevent fluid from spilling.



11. Remove CVT fluid cooler tube assembly (A) from the vehicle.

⬅ : Bolt



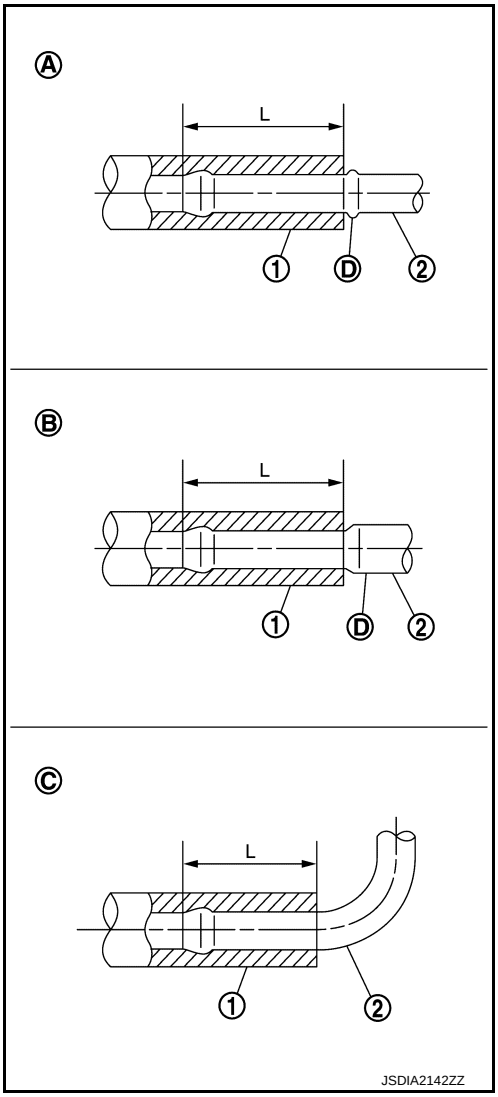
INSTALLATION

Note the following, and Install in the reverse order of removal.
• Refer to the following when installing CVT fluid cooler hoses.

Hose name	Hose end	Direction of paint mark	Direction of hose clamp tab
CVT fluid cooler hose A	CVT oil warmer	Frontward	Frontward
	CVT fluid cooler tube assembly	Leftward	Leftward
CVT fluid cooler hose B	CVT fluid cooler tube assembly	Leftward	Leftward
	CVT fluid cooler	Frontward	Frontward and 26° Upward
CVT fluid cooler hose C	CVT fluid cooler	Upward	Upward
	CVT fluid cooler tube assembly	Frontward	Frontward
CVT fluid cooler hose D	CVT fluid cooler tube assembly	Frontward	Frontward
	CVT oil warmer	Frontward	Frontward

- Insert CVT fluid cooler hose according to dimension “L” described below.

CVT fluid cooler hose (1)	Insertion side tube (2)	Tube type	Dimension “L”
CVT fluid cooler hose A	CVT oil warmer	A	32 mm (1.26 in) [End reaches the 2-stage bulge (D).]
	CVT fluid cooler tube assembly	B	30 mm (1.18 in) [End reaches the 2-stage bulge (D).]
CVT fluid cooler hose B	CVT fluid cooler tube assembly		
	CVT fluid cooler	C	End reaches the tube bend R position
CVT fluid cooler hose C	CVT fluid cooler		
	CVT fluid cooler tube assembly	B	30 mm (1.18 in) [End reaches the 2-stage bulge (D).]
CVT fluid cooler hose D	CVT fluid cooler tube assembly		
	CVT oil warmer	A	32 mm (1.26 in) [End reaches the 2-stage bulge (D).]



- Set hose clamps (1) at the both ends of CVT fluid cooler hoses (2) with dimension “A” from the hose edge.

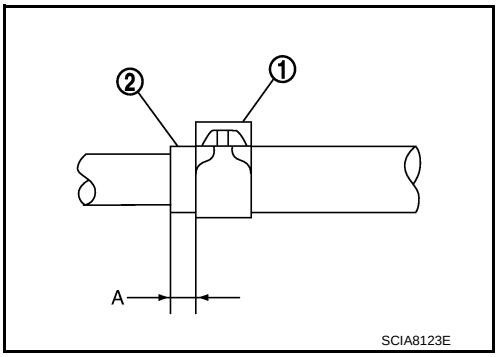
Tube type A, B

Dimension “A” : 5 – 9 mm (0.20 – 0.35 in)

Tube type C

Dimension “A” : 5 mm (0.20 in)

- Hose clamp should not interfere with the bulge of fluid cooler tube.



Inspection and Adjustment

INFOID:0000000006598469

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-480, "Inspection".

ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level. Refer to TM-379, "Adjustment".

PLUG

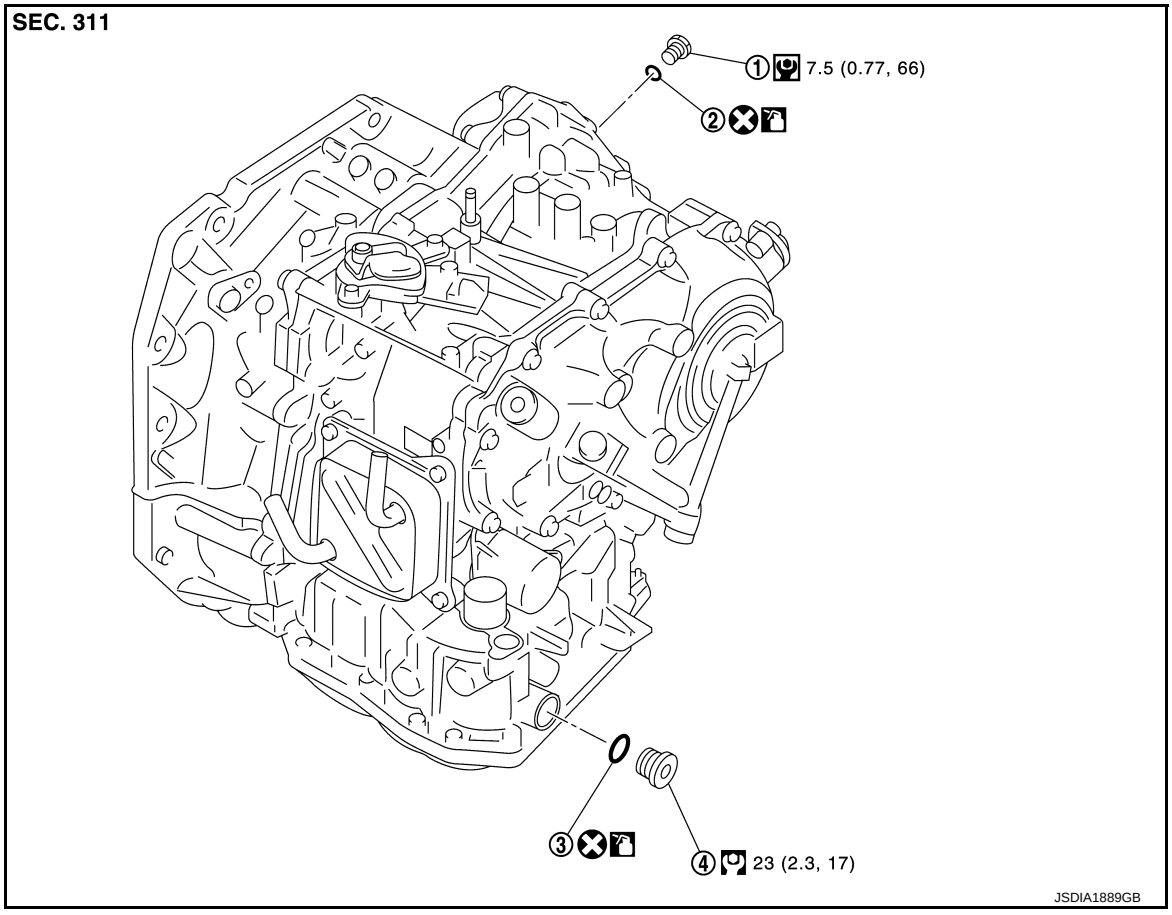
Description

INFOID:0000000006487781

Replace the O-ring if oil leakage or exudes from the plug.

Exploded View

INFOID:0000000006487782



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-2

Removal and Installation

INFOID:0000000006487783

NOTE:
Replace the O-rings if oil leakage or exudes from the plugs.

REMOVAL

Remove the plugs and O-rings.

INSTALLATION

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

CAUTION:

- **Never reuse O-ring.**
- **Apply Genuine NISSAN CVT Fluid NS-2 to O-ring.**

Inspection and Adjustment

INFOID:0000000006487784

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-480, "Inspection".

ADJUSTMENT AFTER INSTALLATION

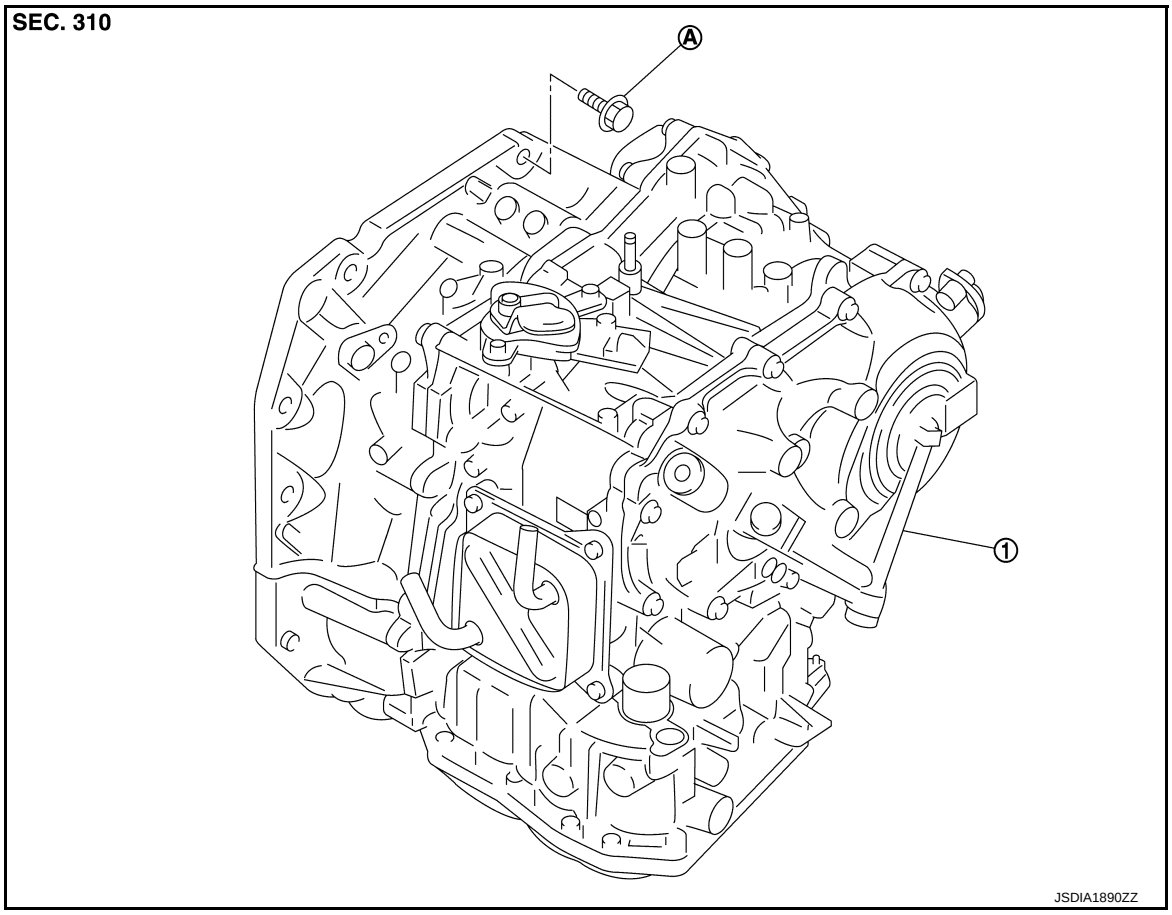
Adjust the CVT fluid level. Refer to TM-379, "Adjustment".

UNIT REMOVAL AND INSTALLATION

TRANSMISSION ASSEMBLY

Exploded View

INFOID:0000000006487785



1. Transaxle assembly

A: : For the tightening torque, refer to TM-508, "Removal and Installation".

Removal and Installation

INFOID:0000000006487786

REMOVAL

WARNING:

Never open the radiator cap or drain plug when the engine is hot. Hot liquid may spray out, causing serious injury.

CAUTION:

Perform these steps after the coolant temperature has cooled sufficiently.

NOTE:

- When replacing the TCM and transaxle assembly as a set, replace the transaxle assembly first and then replace the TCM. Refer to TM-374, "Description".
- Cap or plug openings to prevent fluid from spilling.

1. Remove the battery. Refer to PG-124, "Exploded View".
2. Remove the air cleaner case. Refer to EM-161, "Removal and Installation".
3. Remove the ECM and bracket as a set.
4. Disconnect the connectors and harnesses.
   - For CVT unit connector, refer to TM-311, "Removal and Installation Procedure for CVT Unit Connector".
   - Transmission position switch connector
   - Primary pulley speed sensor connector

- Secondary pulley speed sensor connector
- Output speed sensor connector
- Ground

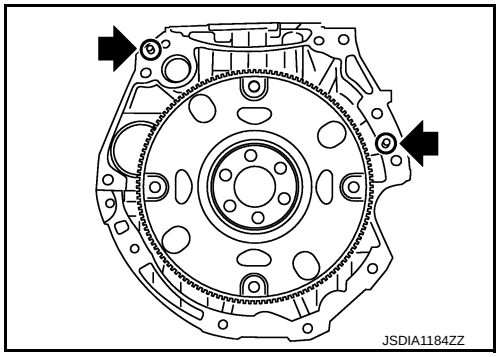
5. Disconnect the control cable from the transaxle assembly. Refer to TM-485, "Removal and Installation".
6. Remove the water hose from the engine side. TM-500, "Removal and Installation".
   NOTE:
   Coolant leaks out. Use a cap, plug, or other means to prevent leakage.
7. Remove starter motor. Refer to STR-22, "HR16DE : Removal and Installation".
8. Remove the left and right fender protector. Refer to EXT-22, "Removal and Installation".
9. 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).
10. Remove the left and right drive shafts. Refer to FAX-53, "Removal and Installation".
11. Remove the front suspention member. Refer to FSU-18, "Removal and Installation".
12. Remove the heat insulator. Refer to EX-12, "Exploded View".
13. Set a transmission jack under the transaxle assembly.
    CAUTION:
    Be careful not to contact the drain plug when setting the transmission jack.
14. Set a transmission jack under the engine assembly.
    CAUTION:
    Be careful not to contact the drain plug when setting the transmission jack.
15. Remove the left engine mounting insulator and left engine mounting bracket as a set. Refer to EM-215, "Exploded View".
16. Remove the bolts that fasten the transaxle assembly and engine assembly.
17. Remove the transaxle assembly from the vehicle.
    CAUTION:
    Never drop the torque converter.

INSTALLATION

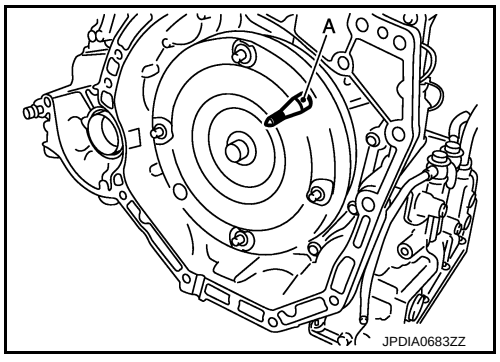
Note the following, and install in the reverse order of removal.

CAUTION:

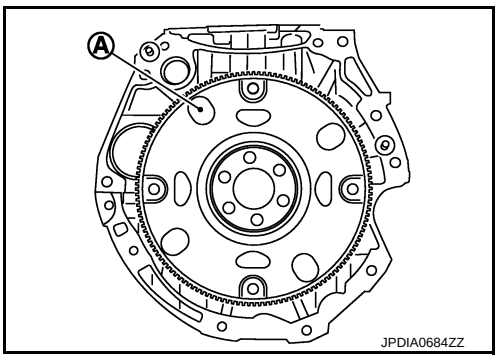
- **Never reuse O-ring.**
- **Apply Vaseline to the O-ring.**
- When installing the transaxle assembly onto the engine assembly, check the engagement of the dowel pin (⬅).



- When using drive plate location guide, install drive plate location guide (Commercial service tool: 31197EU50A) (A) to drive plate location guide mounting part of torque converter.



- Rotate the crankshaft so that the drive plate location guide insert hole (A) of the drive plate is aligned with the drive plate location guide that is installed on the torque converter.



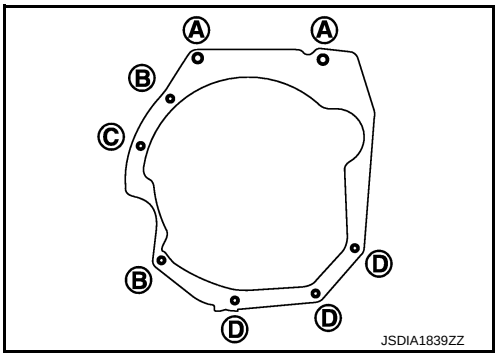
CAUTION:
- **Rotate the crankshaft clockwise (as viewed from the front of the engine).**
- **Be careful that torque converter stud bolt is aligned to drive plate hole position. Otherwise stud bolt contacts drive plate.**

- Temporally tighten drive plate and torque converter connecting nuts and tighten to the specified torque.

Tightening torque : 51 N·m (5.2 kg-m, 38 ft-lb)

CAUTION:
- **Rotate crankshaft clockwise (as viewed from the front of the engine).**
- **Check the tightening torque for the crankshaft pulley mounting bolts after the bolts fastening the drive plate and torque converter have been tightened and the crankshaft pulley mounting bolts have been secured. Refer to EM-182, "Removal and Installation".**

- Install the transaxle assembly and engine assembly mounting bolts according to the following standards.



Bolt position	A	B	C	D
Direction of insertion	Transaxle assembly ⇒ Engine assembly	Engine assembly ⇒ Transaxle assembly		
Quantity	2	2	1	3
Nominal length [mm (in)]	40 (1.57)	44 (1.73)	69 (2.72)	49 (1.93)
Tightening torque N·m (kg-m, ft-lb)	48 (4.9, 35)			

Inspection and Adjustment

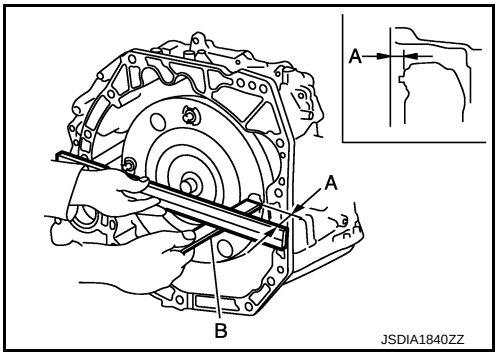
INFOID:0000000006487787

INSPECTION BEFORE INSTALLATION

Check the distance “A”between the converter housing and torque converter.

B : Scale
C : Straightedge

Dimension “A” : TM-513, "Torque Converter"



INSPECTION AFTER INSTALLATION

Check the following items:
- CVT fluid leakage. Refer to TM-480, "Inspection"
- For CVT position, refer to TM-383, "Inspection and Adjustment".

- 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-379, "Adjustment".
- Perform "ADDITIONAL SERVICE WHEN REPLACE TRANSAXLE ASSEMBLY". Refer to TM-375, "Description".

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000006487788

Engine model		HR16DE
Drive type		2WD
Transaxle model		RE0F11A
Transaxle model code number		3JX4B
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		0.967
Final drive		3.882
Recommended fluid		Genuine NISSAN CVT Fluid NS-2*1
Fluid capacity		Approx. 7.1 liter (6-1/4 Imp qt)*2

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-2. Never mix with other fluid.**
- **Use only Genuine NISSAN CVT Fluid NS-2. Using transmission fluid other than Genuine NISSAN CVT Fluid NS-2 will damage the CVT, which is not covered by the warranty.**

*1: Refer to MA-13, "Fluids and Lubricants".

*2: The CVT fluid capacity is the reference value.

Shift Characteristics

INFOID:0000000006487789

Unit: rpm

Throttle position	Shift pattern	Engine speed	
		At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
2/8	“D” position (S mode OFF)	1,300 – 3,100	1,500 – 3,500
	“D” position (S mode ON)	1,500 – 3,100	2,400 – 3,500
	“L” position	2,800 – 3,600	3,800 – 4,600
	ECO mode	1,300 – 2,100	1,500 – 2,300
	SPORT mode	1,500 – 3,100	2,400 – 3,500
8/8	“D” position (S mode OFF)	3,900 – 4,700	4,500 – 5,300
	“D” position (S mode ON)	3,900 – 4,700	4,500 – 5,300
	“L” position	3,900 – 4,700	4,500 – 5,300
	ECO mode	3,900 – 4,700	4,500 – 5,300
	SPORT mode	3,900 – 4,700	4,500 – 5,300

CAUTION:

Lock-up is engaged at the vehicle speed of approximately 10 km/h (11 MPH) to 90 km/h (56 MPH).

Stall Speed

INFOID:0000000006487790

Stall speed	2,510 – 2,940 rpm

Line Pressure

INFOID:0000000006600923

Unit: MPa (bar, kg/cm^2, psi)

Shift selector position	Engine speed	Line pressure
“P” and “N”	At idle	0.50 (5.0, 5.1, 72.5)
“R” and “D”	At idle	0.50 (5.0, 5.1, 72.5) – 1.51 (15.1, 15.4, 219)
	At stall	4.93 (49.3, 50.3, 714.9) – 5.43 (54.3, 55.4, 787.4)

Torque Converter

INFOID:0000000006487791

Distance “A”between the converter housing and torque converter	16.2 mm