# SECTION TRANSAXLE & TRANSMISSION

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### < PRECAUTION > PRECAUTION PRECAUTIONS

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. 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

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#### 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.

#### TM-12

#### PRECAUTIONS

#### **OPERATION PROCEDURE**

- Connect both battery cables.
   NOTE: Supply power using jumper cables if battery is discharged.
- 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

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

#### **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 <u>CL-27</u>, "<u>Removal and Installation</u>".
- 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.

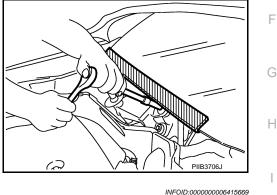
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#### PREPARATION

#### Special Service Tools

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Tool number Tool name		Description
<ul> <li>KV32500QAA</li> <li>(Renault SST: B.vi 1666)</li> <li>Drift set</li> <li>1. — <ul> <li>(Stamping number: B.vi 1666-A)</li> <li>Drift</li> <li>a: 54.3 mm (2.138 in) dia.</li> <li>b: 45 mm (1.77 in) dia.</li> <li>c: 26.6 mm (1.047 in) dia.</li> </ul> </li> <li>2. — <ul> <li>(Stamping number: B.vi 1666-B)</li> <li>Drift</li> <li>d: 54 mm (2.13 in) dia.</li> <li>e: 48.6 mm (1.913 in) dia.</li> <li>f: 26.6 mm (1.047 in) dia.</li> </ul> </li> </ul>	a b c t d e f	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.	a b ZZA0969D	Removing differential side bearing
KV40104920 Drift a: 21.7 mm (0.854 in) dia. b: 44.7 mm (1.760 in) dia.	a a b zzaoged	Installing differential side bearing

#### PREPARATION

#### < PREPARATION >

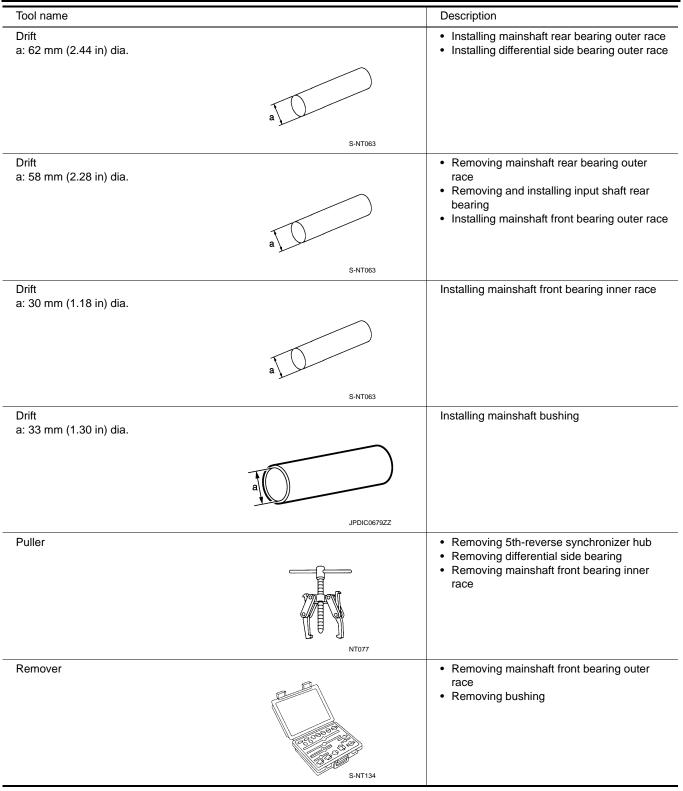
#### [5MT: RS5F92R]

Tool number Tool name		Description
KV32300QAN (Renault SST: B.vi 1161) Dummy shim set 1. —		Adjusting preload of mainshaft rear bearing.
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.		
. — Dummy shim d: 1.60 mm (0.0630 in) e: 45 mm (1.77 in) dia. f: 25 mm (0.98 in) dia.	JPDIC0684ZZ	
(V32300QAP Renault SST: B.vi 1527)	$\sim$	Adjusting preload of mainshaft rear bearing.
Adjusting plate a: 65 mm (2.56 in) dia. b: 58 mm (2.28 in) dia.		
c: 23 mm (0.91 in) dia.		
	JPDIC0683ZZ	
ommercial Service Tools	JPDICU68322	INFOID:00000006415671
ommercial Service Tools	JPDICU68322	
Tool name	JPDICU68322	Description
Tool name Socket a: 8 mm (0.31 in)	b	
Tool name Socket a: 8 mm (0.31 in)		Description
Tool name Socket a: 8 mm (0.31 in)		Description
Fool name Socket a: 8 mm (0.31 in) b: 5 mm (0.20 in) Drift	a	Description
Tool name Socket a: 8 mm (0.31 in) b: 5 mm (0.20 in) Drift	a	Description Removing and installing drain plug
Tool name Socket a: 8 mm (0.31 in) b: 5 mm (0.20 in) Drift	A CIB1776E	Description Removing and installing drain plug
Tool name Socket a: 8 mm (0.31 in) b: 5 mm (0.20 in) Drift a: 14.5 mm (0.571 in) dia.	a	Description Removing and installing drain plug
Tool name         Socket         a: 8 mm (0.31 in)         b: 5 mm (0.20 in)         Drift         a: 14.5 mm (0.571 in) dia.         Drift         a: 38 mm (1.50 in) dia.	A CIB1776E	Description         Removing and installing drain plug         Installing bushing         Removing and installing input shaft front bear-

#### PREPARATION

#### < PREPARATION >

#### [5MT: RS5F92R]



## < SYSTEM DESCRIPTION > SYSTEM DESCRIPTION COMPONENT PARTS

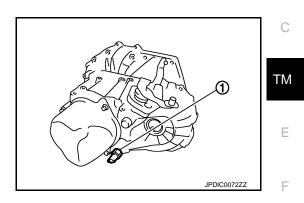
**Component Parts Location** 

POSITION SWITCH

1 : Position switch

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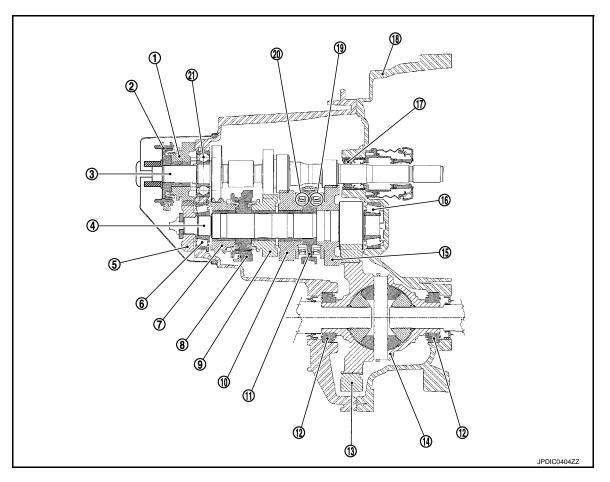
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#### < SYSTEM DESCRIPTION >

#### STRUCTURE AND OPERATION

#### Sectional View

INFOID:000000006415673



- 1. 5th input gear
- 4. Mainshaft
- 7. 4th main gear
- 10. 2nd main gear
- 13. Final gear
- 16. Mainshaft front bearing
- 19. 1st double-cone synchronizer

#### System Description

#### 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

- 2. 5th-reverse synchronizer hub assembly
- 5. 5th main gear

Differential

17. Input shaft front bearing

20. 2nd double-cone synchronizer

11.

14.

- 8. 3rd-4th synchronizer hub assembly
  - 1st-2nd synchronizer hub assembly 12. Differential side bearing

3.

6.

9.

15. 1st main gear

Input shaft

18. Clutch housing

3rd main gear

21. Input shaft rear bearing

Mainshaft rear bearing

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#### STRUCTURE AND OPERATION

#### < SYSTEM DESCRIPTION >

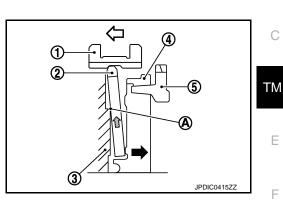
#### REVERSE GEAR NOISE PREVENTION FUNCTION (REVERSE BRAKE)

#### 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.



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#### DTC/CIRCUIT DIAGNOSIS **POSITION SWITCH**

#### **BACK-UP LAMP SWITCH**

#### **BACK-UP LAMP SWITCH : Component Inspection**

INFOID:000000006415675

#### **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	1 2	Reverse gear position		Existed	
	2	Except reverse gear position	Not existed		

#### Is the inspection result normal?

YES >> INSPECTION END

>> Replace position switch. Refer to TM-24, "Removal and NO Installation".

#### PARK/NEUTRAL POSITION (PNP) SWITCH

#### PARK/NEUTRAL POSITION (PNP) SWITCH : Component Inspection

INFOID:00000006415676

1. CHECK PARK/NEUTRAL POSITION (PNP) SWITCH

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

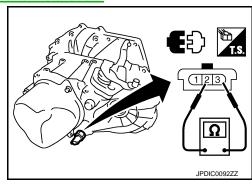
2. Check continuity between position switch terminals.

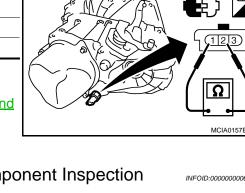
Term	Terminals Condition		Continuity
2	3	Neutral gear position	Existed
2	5	Except neutral gear position	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace position switch. Refer to TM-24, "Removal and Installation".





#### NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING < SYMPTOM DIAGNOSIS > [5MT: RS5F92R]

#### SYMPTOM DIAGNOSIS

#### NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

#### NVH Troubleshooting Chart

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.

		- i												
														TM
SUSPECTED I (Possible caus	-	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)	F G H
Reference			TM-22			TM-33		<u>TM-27</u>	TM-33		CC MT	00-1011	1	J
Quantana	Noise	1	2							3	3			
	Oil leakage		3	1	2	2	2							-
Symptoms	Hard to shift or will not shift		1	1				2				3	3	Κ
	Jumps out of gear							1	2	2				-

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#### PERIODIC MAINTENANCE **GEAR OIL**

#### Inspection

#### **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.

Set a gasket on filler plug and then install it to transaxle case. 3 **CAUTION:** 

#### Never reuse gasket.

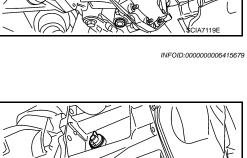
4. Tighten filler plug to the specified torque. Refer to TM-33, "Exploded View".

#### Draining

- Start engine and let it run to warm up transaxle. 1.
- Stop engine. Remove drain plug (1) and gasket, using a socket 2. [Commercial service tool] and then drain gear oil.
- Set a gasket on drain plug and install it to clutch housing, using 3. a socket [Commercial service tool]. **CAUTION:**

#### Never reuse gasket.

4. Tighten drain plug to the specified torque. Refer to TM-33. "Exploded View".



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PCIB1504



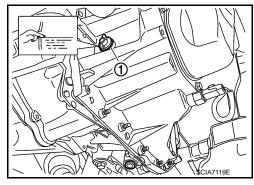
- 1. Remove filler plug (1) and gasket from transaxle case.
- 2. Fill with new gear oil until oil level reaches the specified limit at filler plug mounting hole as shown in the figure.

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

tions".

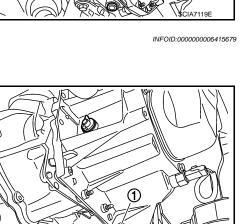
- After refilling gear oil, check the oil level. Refer to TM-22. 3. "Inspection".
- 4. Set a gasket on filler plug and then install it to transaxle case. **CAUTION:** Never reuse gasket.

#### 5. Tighten filler plug to the specified torque. Refer to TM-33, "Exploded View".



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#### < REMOVAL AND INSTALLATION >

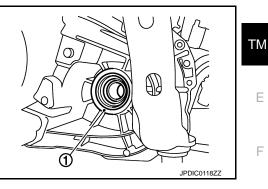
#### **REMOVAL AND INSTALLATION** SIDE OIL SEAL

**Removal and Installation** 

#### 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].
  - В : Transaxle case side
  - С : 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

**INSPECTION AFTER INSTALLATION** Check the oil level and oil leakage. Refer to TM-22, "Inspection". INFOID:000000006415681

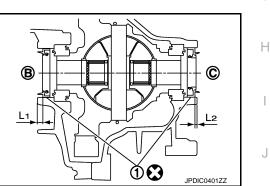
[5MT: RS5F92R]

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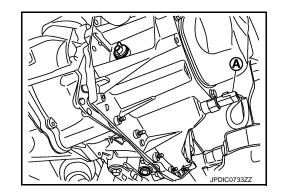
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#### POSITION SWITCH

#### Removal and Installation

#### REMOVAL

- 1. Drain gear oil. Refer to TM-22, "Draining".
- 2. Disconnect position switch connector (A).
- 3. Remove position switch from transaxle case.



#### INSTALLATION

- 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:000000006415684

#### INSPECTION AFTER INSTALLATION

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

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#### **CONTROL LINKAGE**

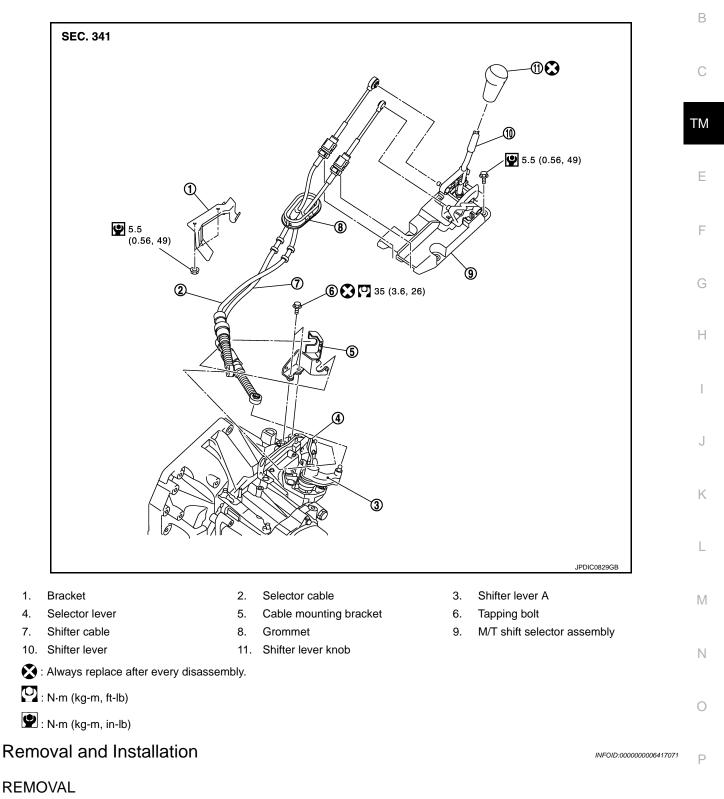
#### < REMOVAL AND INSTALLATION >

#### CONTROL LINKAGE

#### **Exploded View**

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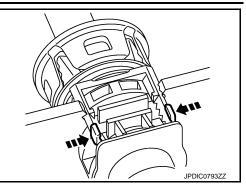
- 1. Shift the shifter lever to the neutral position.
- 2. Remove air cleaner case. Refer to EM-161, "Removal and Installation".
- 3. Pull out and disconnect the each cable from the shifter lever A and the selector lever, using a suitable remover.

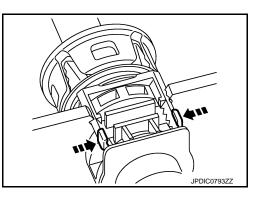
#### [5MT: RS5F92R]

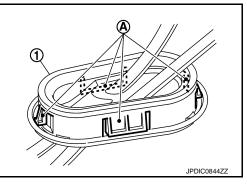
#### **CONTROL LINKAGE**

#### < REMOVAL AND INSTALLATION >

- 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 <u>IP-23</u>, "Removal and <u>Installation"</u>.
- 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 <u>EX-12</u>, <u>"Removal and Installation"</u>.
- 14. Remove the bracket from the vehicle.
- 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.







#### 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.

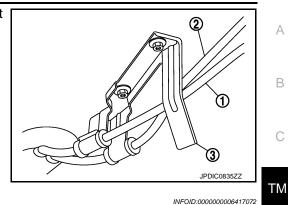
#### [5MT: RS5F92R]

#### **CONTROL LINKAGE**

#### < REMOVAL AND INSTALLATION >

#### [5MT: RS5F92R]

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



Inspection

#### 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.

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#### **AIR BREATHER HOSE**

#### < REMOVAL AND INSTALLATION >

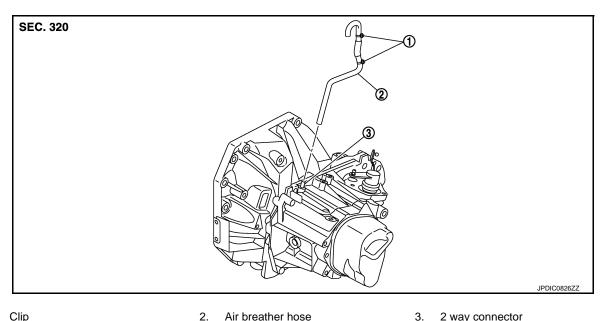
#### **AIR BREATHER HOSE**

#### **Exploded View**

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[5MT: RS5F92R]



1. Clip

#### Removal and Installation

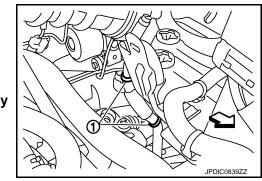
#### REMOVAL

Remove clips (1). 1.

> $\triangleleft$ : Vehicle front

Remove air breather hose from the 2 way connector. 2. **CAUTION:** 

When removing air breather hose, be sure to hold 2 way connector securely.



3.

2 way connector

#### 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

< REMOVAL AND INSTALLATION > **5TH MAIN GEAR ASSEMBLY** 

#### REMOVAL

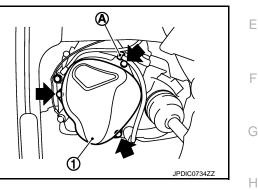
- 1. Shift the shifter lever to the 3rd gear position.
- 2. Disconnect the shifter cable and the selector cable from shifter lever A and selector lever. Refer to TM-25, "Removal and Installation". **CAUTION:**

#### Never move shifter lever A and the selector lever to disconnect each cable.

- Drain gear oil. Refer to <u>TM-22, "Draining"</u>.
- Remove fender protector LH. Refer to <u>EXT-22, "Removal and Installation".</u>
- 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

#### **INSPECTION AFTER INSTALLATION**

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

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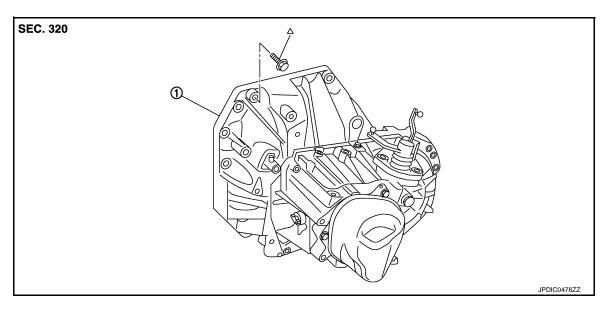
#### < UNIT REMOVAL AND INSTALLATION >

[5MT: RS5F92R]

#### UNIT REMOVAL AND INSTALLATION TRANSAXLE ASSEMBLY

Exploded View

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1. Transaxle assembly

 $\Delta$ : Refer to "INSTALLATION" in <u>TM-30</u>, "Removal and Installation" for the locations and tightening torque.

#### **Removal and Installation**

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#### CAUTION:

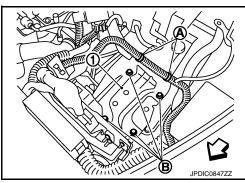
Never reuse CSC (Concentric Slave Cylinder). Because CSC slides back to the original position every time when removing transaxle assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage. Refer to <u>CL-27, "Removal and Installation"</u>.

#### 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 <u>TM-28</u>, "<u>Removal and</u> <u>Installation</u>".



#### TRANSAXLE ASSEMBLY

#### < UNIT REMOVAL AND INSTALLATION >

7. Remove bracket (1).

- 8. Disconnect selector cable and shifter cable from transaxle assembly. Refer to <u>TM-25</u>, "Removal and Installation".
- Remove crankshaft position sensor. Refer to <u>EM-228</u>, "Disassembly and Assembly".
- Remove clutch tube from CSC (Concentric Slave Cylinder) and then temporarily secure it to a position where it will not inhibit work. Refer to <u>CL-25, "Removal and Installation"</u>. 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 <u>FAX-53</u>, "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).
- Release clutch damper (1) from bracket. Refer to <u>CL-25</u>. <u>"Removal and Installation"</u>.
- c. Remove bolt (B).
- d. Remove engine mounting frame support (LH) mounting bolts from vehicle. Refer to <u>EM-215, "Removal and Installation"</u>.
- 20. Remove rear engine mounting bracket and rear torque rod. Refer to <u>EM-215, "Removal and Installation"</u>.
- 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.
- Remove engine mounting bracket (LH) (TBD) and engine mounting frame support (LH) (TBD) from transaxle assembly. Refer to <u>EM-215, "Removal and Installation"</u>.
- 24. Remove CSC. Refer to CL-27, "Removal and Installation".

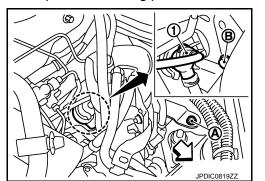
#### INSTALLATION

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

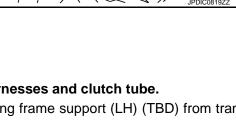
#### CAUTION:

- 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.

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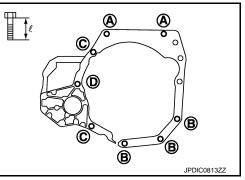
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#### TRANSAXLE ASSEMBLY

#### < UNIT REMOVAL AND INSTALLATION >

- 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.

Bolt symbol	A	В	С	D		
Insertion direction	Transaxle to engine	Engine to transaxle				
Quantity	2 3		2	1		
Bolt length " $\ell$ " 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:000000006415696

#### 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 >

#### UNIT DISASSEMBLY AND ASSEMBLY TRANSAXLE ASSEMBLY

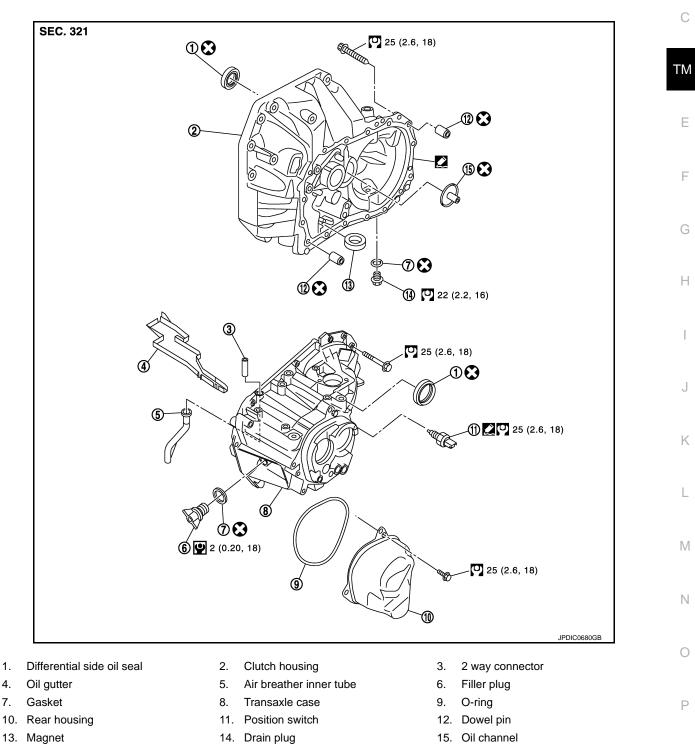
**Exploded View** 

CASE AND HOUSING

[5MT: RS5F92R]

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13. Magnet

Reply Genuine Liquid Gasket, Three Bond 1215 or an equivalent.

🗱 : Always replace after every disassembly.

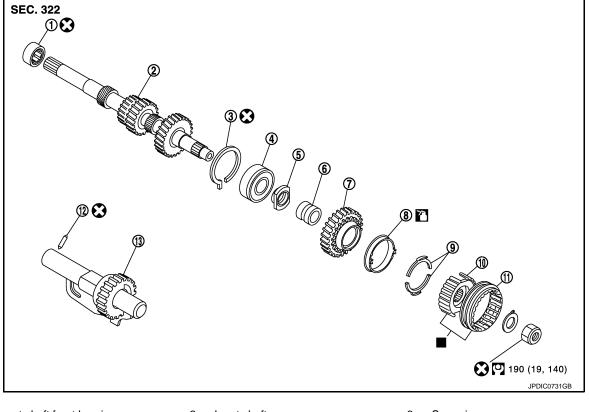
- 15. Oil channel

#### < UNIT DISASSEMBLY AND ASSEMBLY >

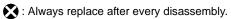
: N·m (kg-m, ft-lb)

**P** : N·m (kg-m, in-lb)

#### SHAFT AND GEAR



- 1. Input shaft front bearing
- 4. Input shaft rear bearing
- 7. 5th input gear
- 10. 5th-reverse synchronizer hub
- 13. Reverse gear
- : Apply gear oil.
- : Replace the parts as a set.



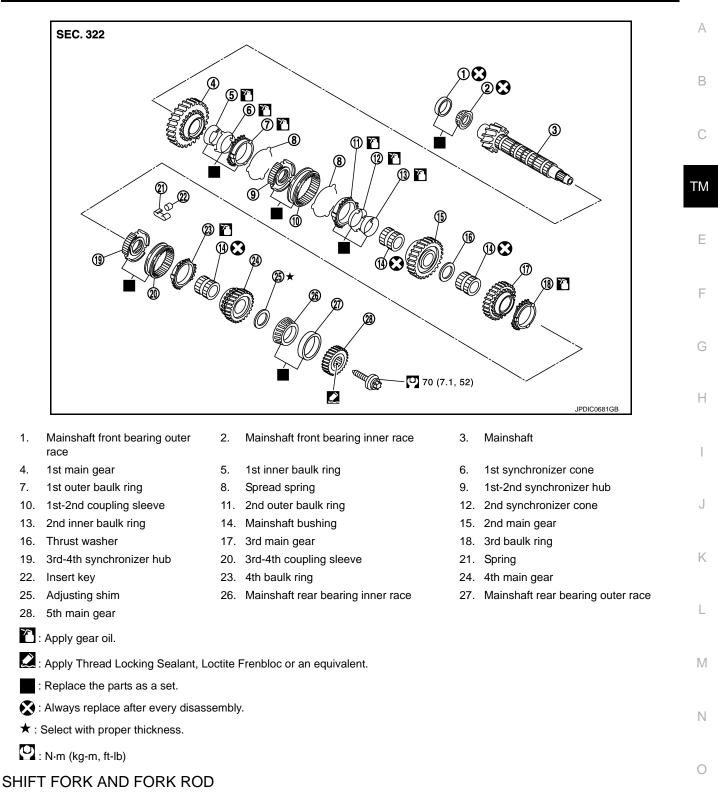
: N·m (kg-m, ft-lb)

- 2. Input shaft
- 5. Adapter plate
- 8. 5th-reverse baulk ring
- 11. 5th-reverse coupling sleeve
- 3. Snap ring
- 6. Bushing
- 9. Synchronizer lever
- 12. Retaining pin

#### TRANSAXLE ASSEMBLY

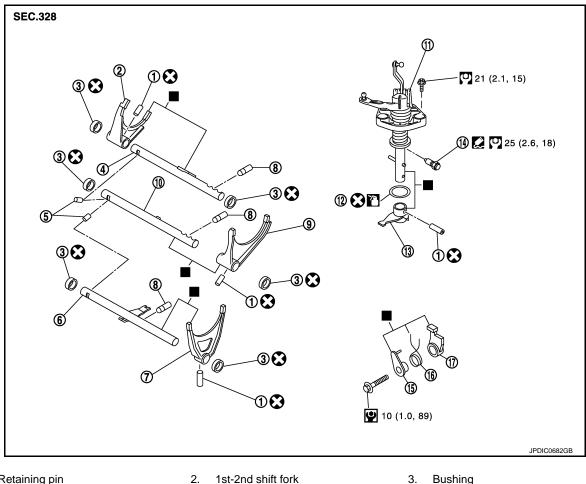
#### < UNIT DISASSEMBLY AND ASSEMBLY >

[5MT: RS5F92R]



#### **TRANSAXLE ASSEMBLY**

#### < UNIT DISASSEMBLY AND ASSEMBLY >



#### Retaining pin 1.

- 1st-2nd fork rod 4.
- 7. 5th-reverse shift fork
- 10. 3rd-4th fork rod
- 13. Selector
- 16. Spring
- Apply gear oil.

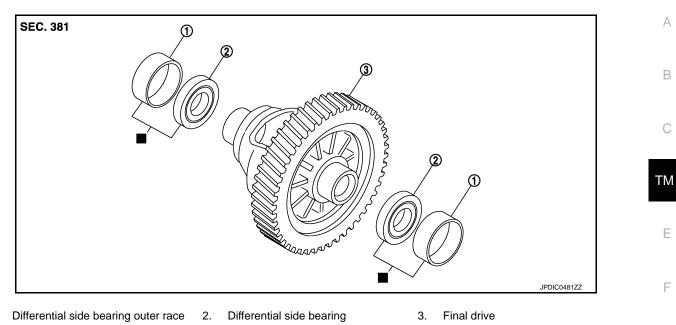
- 5. Lock pin 8. Check ball
- 11. Control shaft
- 14. Check ball plug
- 17. Gear catch

- Bushing 3.
- 5th-reverse fork rod 6.
- 9. 3rd-4th shift fork
- 12. O-ring
- 15. Bushing

- 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)



#### < UNIT DISASSEMBLY AND ASSEMBLY >



: Replace the parts as a set.

# Disassembly

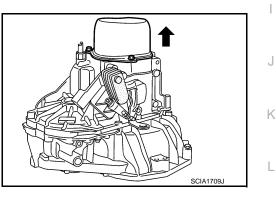
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- 1. Remove drain plug and gasket from clutch housing, using a socket [Commercial service tool] and drain gear oil.
- 2. Remove filler plug and gasket from transaxle case.
- Remove rear housing and O-ring. CAUTION:

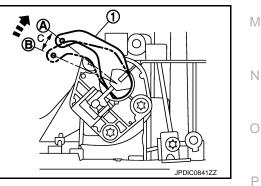
Remove to axial direction of input shaft (←) because rear housing oil channel is inserted to input shaft center hole.



- 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.

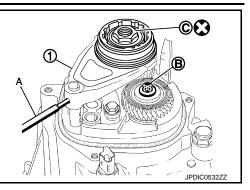


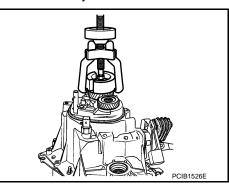
# < UNIT DISASSEMBLY AND ASSEMBLY >

- 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).
- 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.
- 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 set-

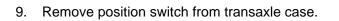
ting the puller in 5th-reverse synchronizer hub.

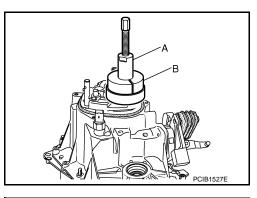
7. Remove synchronizer levers, 5th-reverse baulk ring, 5th input gear, bushing, and adapter plate from input shaft.

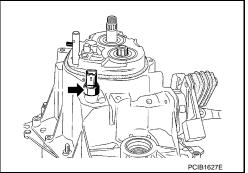




- 8. Remove 5th main gear from mainshaft, using the pullers.
  - A : Puller [SST: KV32300QAC]
  - B : Puller [SST: KV32300QAD]







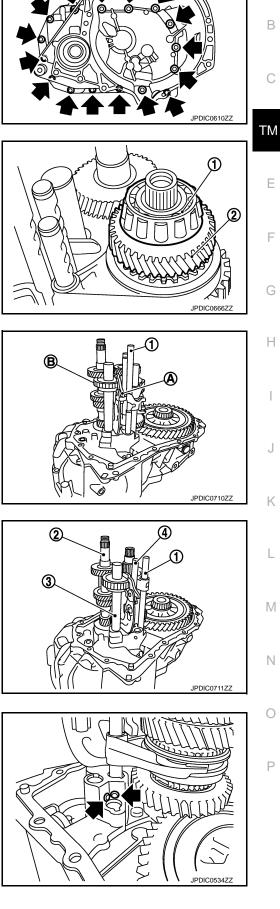
[5MT: RS5F92R]

# < UNIT DISASSEMBLY AND ASSEMBLY >

- 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.
- Pull 5th-reverse fork rod up until it contacts claw (A) of reverse a. 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.
- Pull gear of reverse gear (3) up. b.
- Pull 1st-2nd fork rod (4) up, and then maintain the neutral posi-C. tion.
- Remove 3rd-4th fork rod assembly, 3rd-4th coupling sleeve, and d. 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.



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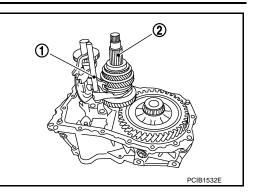
# < UNIT DISASSEMBLY AND ASSEMBLY >

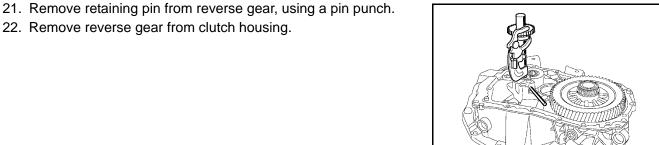
# [5MT: RS5F92R]

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- 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.





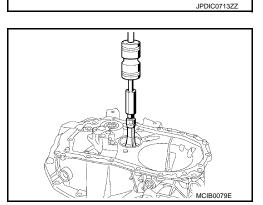
23. Remove final drive (1) from clutch housing.

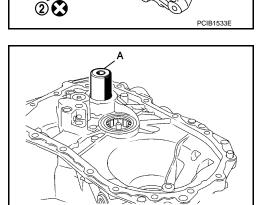
22. Remove reverse gear from clutch housing.

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.





# < UNIT DISASSEMBLY AND ASSEMBLY >

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

30. Remove differential side oil seals (1) from clutch housing and

31. Remove differential side bearing outer races (1) from clutch

housing and transaxle case, using a brass rod.

33. Remove air breather inner tube from transaxle case.

34. Remove oil gutter from transaxle case.

Never damage transaxle case and clutch housing.

Never damage transaxle case and clutch housing.

transaxle case, using an oil seal remover.

**CAUTION:** 

**CAUTION:** 

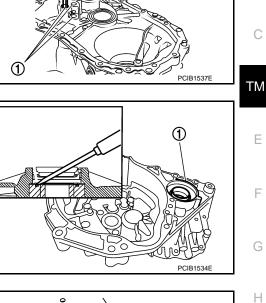
inner tube (2).

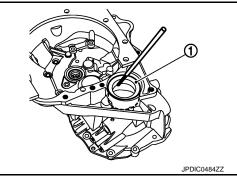
- 35. Remove retaining pin (1) from selector, using a pin punch.

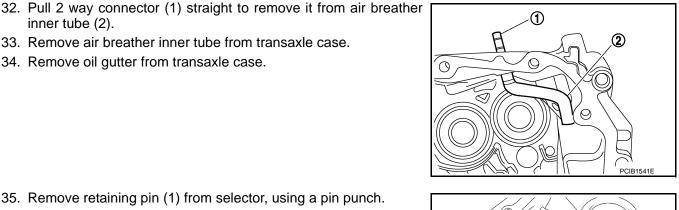
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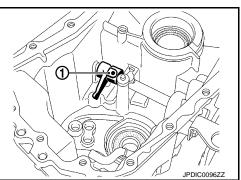
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# < UNIT DISASSEMBLY AND ASSEMBLY >

#### 36. Remove mounting bolt (**(**), and then remove bushing, spring, and gear catch from transaxle case.

37. Remove check ball plug from transaxle case.

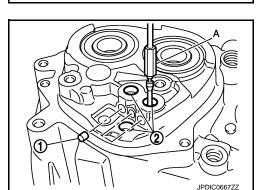
**TM-42** 

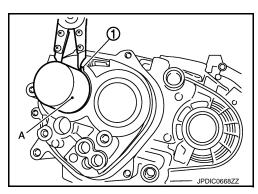
- JPDIC0533ZZ
- 38. Remove mounting bolts ( $\Leftarrow$ ), and then remove control shaft (1) and selector from transaxle case.
- 39. Remove O-ring from control shaft.

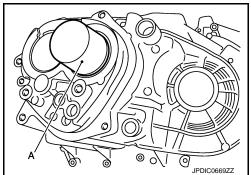
- 40. Remove check balls (1) from transaxle case.
- 41. Remove bushings (2) from transaxle case, using a remover (A) [Commercial service tool].

- 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.

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

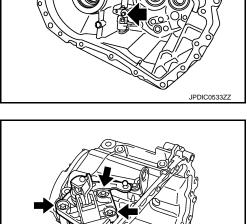








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#### < UNIT DISASSEMBLY AND ASSEMBLY >

#### Assembly

1. Install mainshaft rear bearing outer race to transaxle case, using a drift [Commercial service tool]. **CAUTION:** 

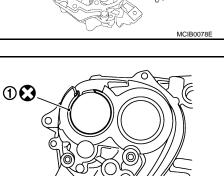
Replace mainshaft rear bearing outer race and mainshaft rear bearing inner race as a set.

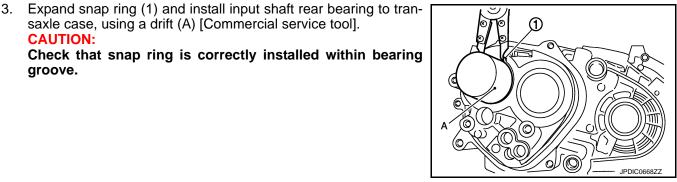
Install snap ring (1) along transaxle case groove so that notch 2. mates with housing as shown in the figure. **CAUTION:** 

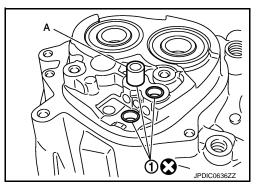
Check snap ring installing direction. Never misassemble.

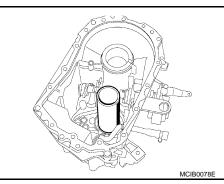
saxle case, using a drift (A) [Commercial service tool]. **CAUTION:** Check that snap ring is correctly installed within bearing groove.

- 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.









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# < UNIT DISASSEMBLY AND ASSEMBLY >

- - 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.

 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:

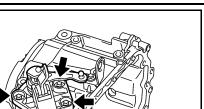
It is easier to install when air breather inner tube end is wrapped and narrowed by tape. Remove tape after installation.

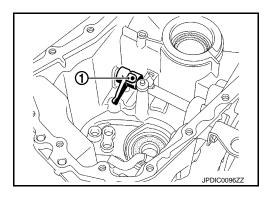
Insert 2 way connector (1) straight, and then install it to air breather inner tube.
 CAUTION:

Check air breather inner tube for twists after installing.

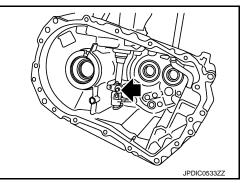
 Install differential side bearing outer races until they reach clutch housing and transaxle case, using a drift (A) [Commercial service tool].
 CAUTION:

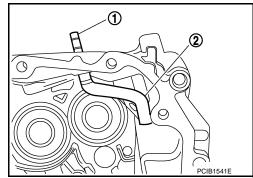
Replace differential side bearing outer race and differential side bearing as a set.

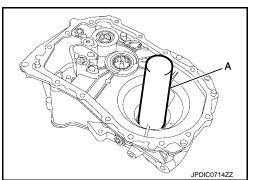




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# [5MT: RS5F92R]

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#### < UNIT DISASSEMBLY AND ASSEMBLY >

- 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].
  - В : Transaxle case side
  - С : 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:**

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:**

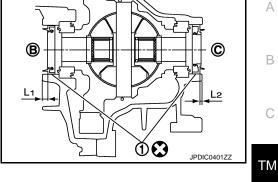
Never reuse oil channel.

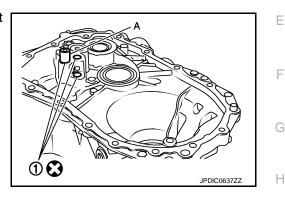
17. Install mainshaft front bearing outer race until they reach clutch housing, using a drift [Commercial service tool]. **CAUTION:** 

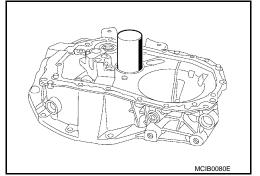
housing surface, using a drift (A) [Commercial service tool].

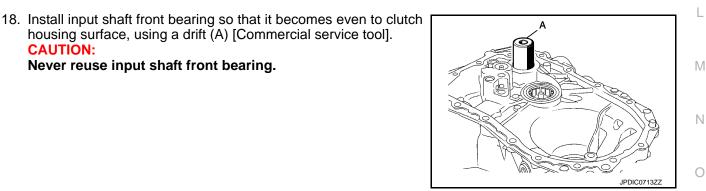
Never reuse input shaft front bearing.

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









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# [5MT: RS5F92R]

# < UNIT DISASSEMBLY AND ASSEMBLY >

# 19. Install final drive (1) to clutch housing.

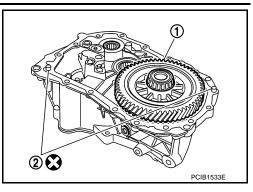
20. Install dowel pins (2) and magnet to clutch housing.

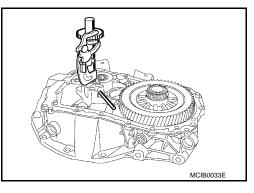
21. Install reverse gear to clutch housing, and then install retaining pin to clutch housing, using a pin punch. CAUTION:

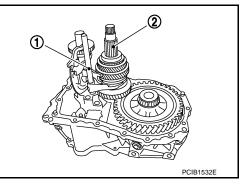
Never reuse retaining pin.

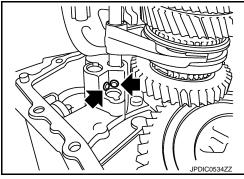
- 22. Install 1st-2nd shift fork to 1st-2nd fork rod, and then install retaining pin to 1st-2nd shift fork. CAUTION:
  - Never reuse retaining pin.
  - Replace 1st-2nd fork rod and 1st-2nd shift fork as a set.
- 23. Set 1st-2nd fork rod assembly (1) onto mainshaft assembly (2), and then install them to clutch housing.

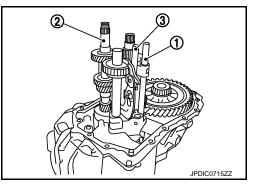
- 24. Install lock pins ( ) to clutch housing.
- 25. Install 3rd-4th shift fork to 3rd-4th fork rod, and then install retaining pin to 3rd-4th shift fork.
  - Never reuse retaining pin.
  - Replace 3rd-4th fork rod and 3rd-4th shift fork as a set.
- 26. Install 3rd-4th fork rod assembly (1), 3rd-4th 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.
- 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.













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CAUTION:

**CAUTION:** 

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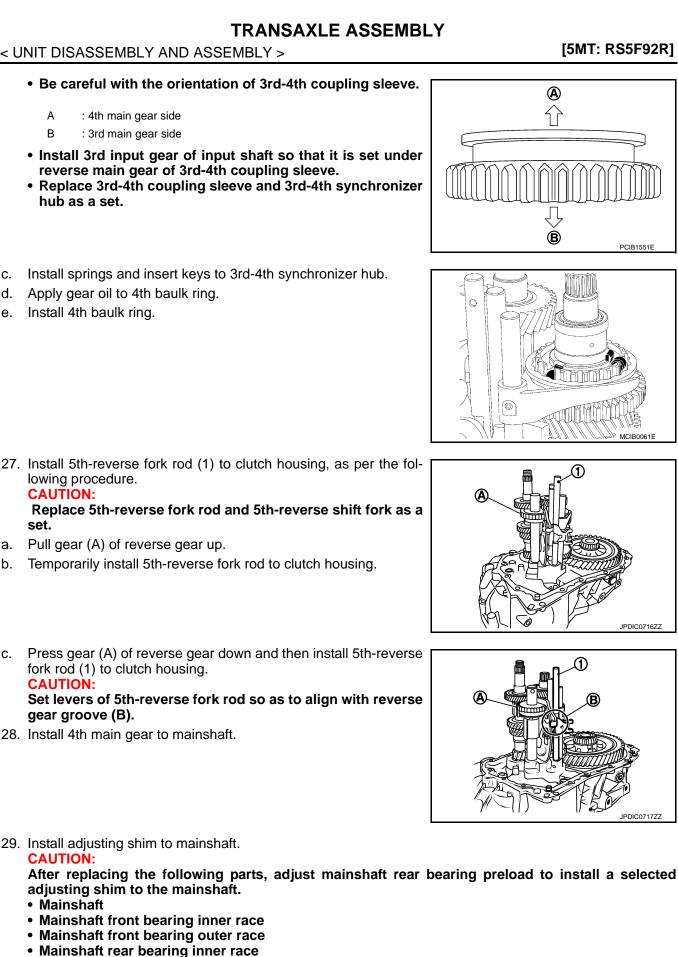
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- Mainshaft rear bearing outer race
- Clutch housing
- Transaxle case

### < UNIT DISASSEMBLY AND ASSEMBLY >

30. Install mainshaft rear bearing inner race to mainshaft.

#### 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

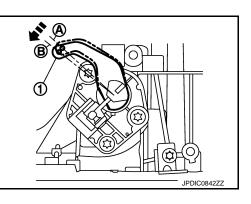
#### **CAUTION:**

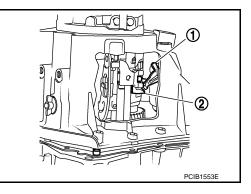
- Never disrupt liquid gasket bead with transaxle case or other objects during installation.
- Be careful to align the lever of 5th-reverse fork rod with reverse gear groove.
- 35. Rotate input shaft so that bearing and shaft fit each other, and then tighten transaxle mounting bolts (←) to the specified 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.

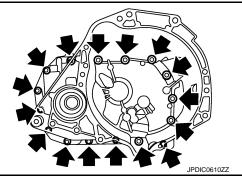
#### **CAUTION:**

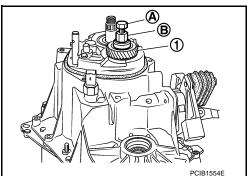
Never allow old liquid gasket, moisture, oil, or foreign matter to remain on thread.

- 37. Apply thread locking sealant to 5th main gear spline.Use Thread Locking Sealant, Loctite Frenbloc or an equivalent.
- Install 5th main gear (1) to mainshaft, using a suitable bolt (A) [M10 x 1.0] and a suitable nut (B).









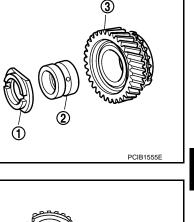
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### < UNIT DISASSEMBLY AND ASSEMBLY >

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

#### **CAUTION:**

Be careful with the orientation of adapter plate.



reverse synchronizer hub (3) to 5th input gear.

40. Apply gear oil to 5th-reverse baulk ring (1).

#### **CAUTION:**

• Be careful with the orientation of 5th-reverse baulk ring.

41. Install 5th-reverse baulk ring, synchronizer levers (2), and 5th-

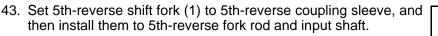
- Replace 5th-reverse synchronizer hub and 5th-reverse coupling sleeve as a set.
- Be careful with the orientation of synchronizer lever.
- Be careful with the orientation of 5th-reverse synchronizer hub.

<□ : 5th input gear side

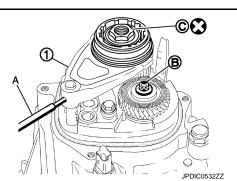
• Never allow synchronizer lever (1) to mount on to 5threverse baulk ring (2) protrusion (A).

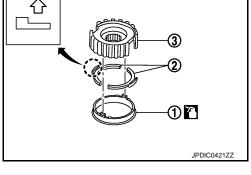
3 : 5th-reverse synchronizer hub

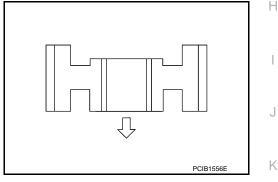
42. Install washer to input shaft.

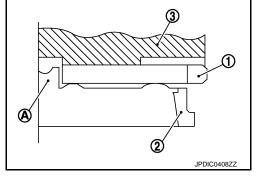


- A : Pin punch
- B : Mounting bolt
- C : Mounting nut









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#### < UNIT DISASSEMBLY AND ASSEMBLY >

#### **CAUTION:**

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

- 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.
- 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.

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

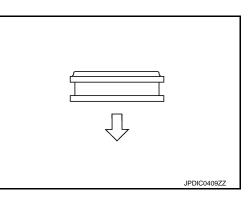
50. Install rear housing to transaxle case, and tighten bolts (+) to the specified torque.
 CAUTION:

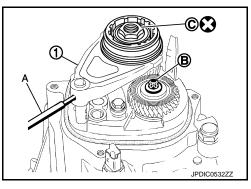
#### Never pinch O-ring when installing rear housing.

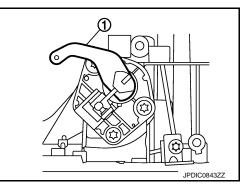
- 51. Install drain plug, as per the following procedure.
- a. Install gasket to drain plug. CAUTION: Never reuse gasket.
- b. Install drain plug to clutch housing, using a socket [Commercial service tool].
- c. Tighten drain plug to the specified torque.
- 52. Install filler plug, as per the following procedure.
- a. Install gasket to filler plug, and then install them to transaxle case. CAUTION:

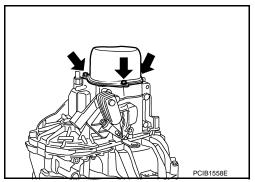
#### Never reuse gasket.

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







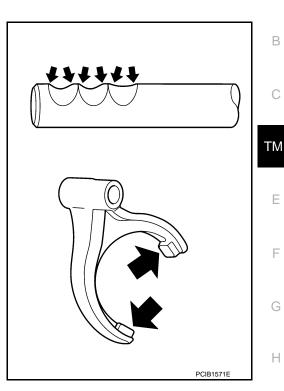


#### < UNIT DISASSEMBLY AND ASSEMBLY >

#### Inspection and Adjustment

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

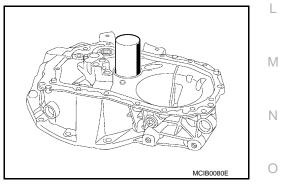
#### NOTE:

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.

- 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.
- 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.



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# < UNIT DISASSEMBLY AND ASSEMBLY >

#### 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:

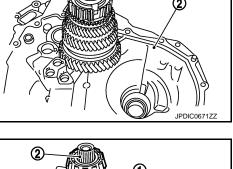
Replace mainshaft rear bearing inner race and mainshaft rear bearing outer race as a set.

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

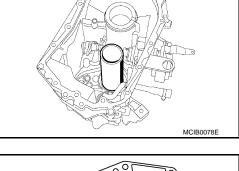
Replace mainshaft rear bearing inner race and mainshaft rear bearing outer race as a set.

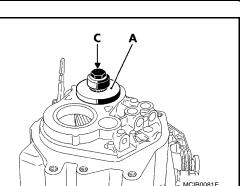
3. Install transaxle case to clutch housing and then tighten mounting bolts (�
) to the specified torque.

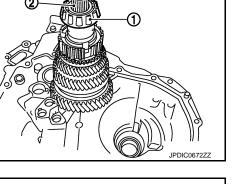
4. Install adjusting plate (A) [SST: KV32300QAP], suitable washer, and suitable bolt (C) [M10 x 1.0] to mainshaft.

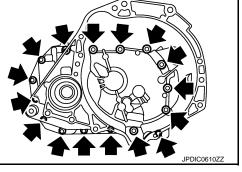


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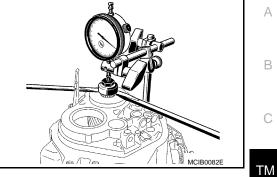


# [5MT: RS5F92R]

### < UNIT DISASSEMBLY AND ASSEMBLY >

#### [5MT: RS5F92R]

- 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.
- Read the meter on the dial indicator. 8.
- 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)	Ŧ	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].



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#### **TM-53**

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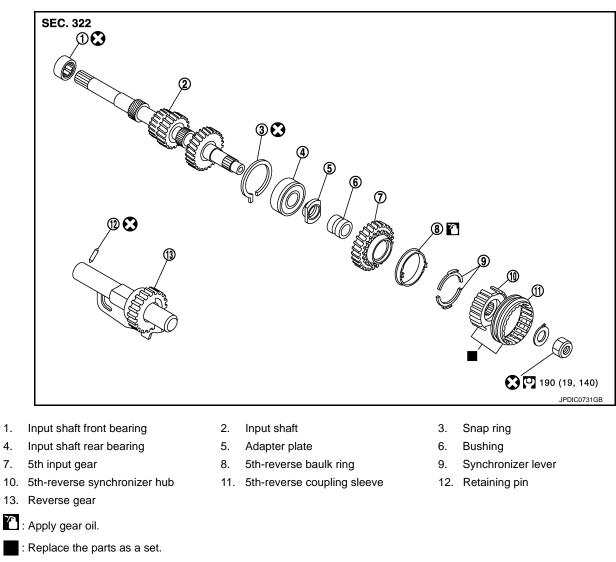
# **INPUT SHAFT AND GEAR**

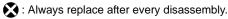
# < UNIT DISASSEMBLY AND ASSEMBLY >

**INPUT SHAFT AND GEAR** 

**Exploded View** 

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C : N·m (kg-m, ft-lb)

# Disassembly

4.

7.

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

# Assembly

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

#### Inspection

#### INSPECTION AFTER DISASSEMBLY

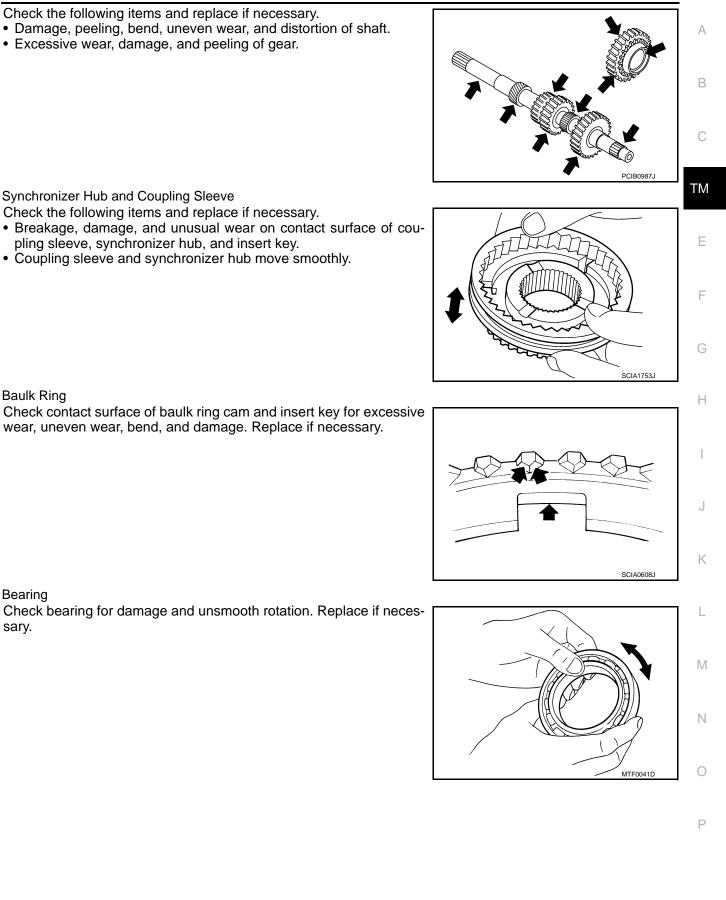
Input Shaft and Gear

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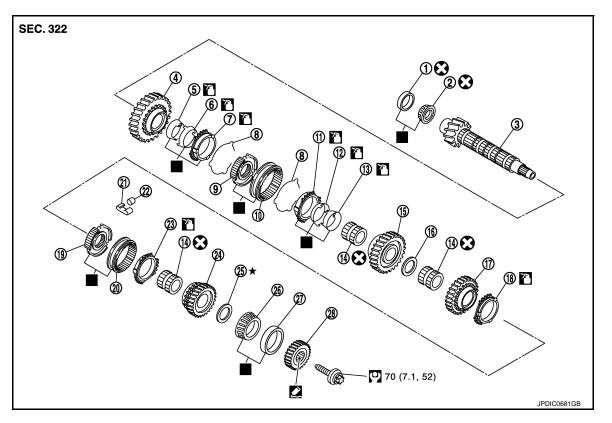
### [5MT: RS5F92R]



# MAINSHAFT AND GEAR

# **Exploded View**

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Mainshaft front bearing inner race

1st inner baulk ring

20. 3rd-4th coupling sleeve

26. Mainshaft rear bearing inner race

Spread spring

11. 2nd outer baulk ring

14. Mainshaft bushing

17. 3rd main gear

23. 4th baulk ring

- 1. Mainshaft front bearing outer race
- 4. 1st main gear
- 7. 1st outer baulk ring
- 10. 1st-2nd coupling sleeve
- 13. 2nd inner baulk ring
- 16. Thrust washer
- 19. 3rd-4th synchronizer hub
- 22. Insert key
- 25. Adjusting shim
- 28. 5th main gear
- : Apply gear oil.
- Apply Thread Locking Sealant, Loctite Frenbloc or an equivalent.

2.

5.

8.

- : Replace the parts as a set.
- Example 2 Contract Co
- $\star$  : Select with proper thickness.
- : N·m (kg-m, ft-lb)

# Disassembly

#### CAUTION:

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

- 3. Mainshaft
- 6. 1st synchronizer cone
- 9. 1st-2nd synchronizer hub
- 12. 2nd synchronizer cone
- 15. 2nd main gear
- 18. 3rd baulk ring
- 21. Spring
- 24. 4th main gear
- 27. Mainshaft rear bearing outer race

#### INFOID:000000006415706

TM-56



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].

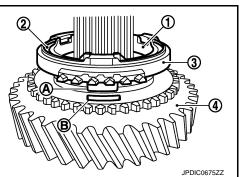
Assembl	v
/ 10001110	

Afte and	UTION: er replacing the following parts, adjust mainshaft rear bearing preload. Refer to <u>TM-51, "Inspection</u> <u>I Adjustment"</u> . ainshaft	K	
• Ma • Ma • Ma	ainshaft front bearing inner race ainshaft front bearing outer race ainshaft rear bearing inner race ainshaft rear bearing outer race	L	
• CI	lutch housing ransaxle case	M	
1.	Install 1st main gear to mainshaft.		
	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.	Ν	
2	Install 1st inner haulk ring (1), 1st synchronizer cone (2), and 1st		

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

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



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# MAINSHAFT AND GEAR

# < UNIT DISASSEMBLY AND ASSEMBLY >

- 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.
- 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.

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

2 : 1st-2nd synchronizer hub

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.

 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.

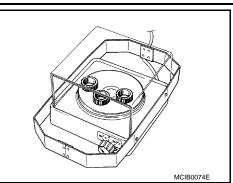
#### Align the pawl of the 2nd synchronizer cone with the groove of the 2nd main gear.

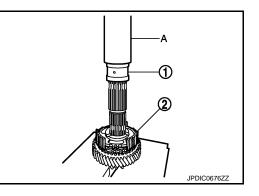
- Heat the mainshaft bushing for 15 minutes at a temperature of 150°C, using a heat plate or an equivalent.
   CAUTION:
  - Never reuse mainshaft bushing.
  - Never touch the mainshaft bushing with bare hands.
- 14. Remove the mainshaft bushing from the heat plate to install to the mainshaft, using pliers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

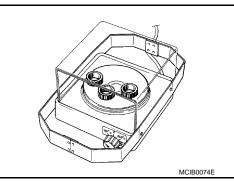
Never touch the mainshaft bushing with bare hands.

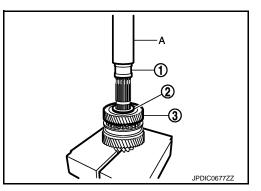
- 15. Install mainshaft bushing (1) to mainshaft, using a drift (A) [Commercial service tool] and a press.
  - 2 : Thrust washer
  - 3 : 2nd main gear
- 16. Install 3rd main gear to mainshaft.
- 17. Apply gear oil to 3rd baulk ring.
- 18. Install 3rd baulk ring to 3rd main gear.
- 19. Install 3rd-4th synchronizer hub to mainshaft.

Replace 3rd-4th synchronizer hub and 3rd-4th coupling sleeve as a set.









# [5MT: RS5F92R]

# MAINSHAFT AND GEAR

# < UNIT DISASSEMBLY AND ASSEMBLY >

- 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.

- 22. Install mainshaft bushing (1) to mainshaft, using a drift (A) [Commercial service tool] and a press.
  - 2 : 3rd-4th synchronizer hub
- 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.

# Inspection

# INSPECTION AFTER DISASSEMBLY

Synchronizer Hub and Coupling Sleeve

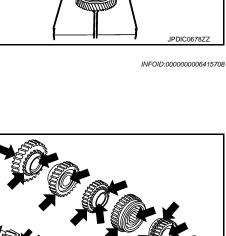
Mainshaft and Gear

Check the following items and replace if necessary.

Check the following items and replace if necessary.

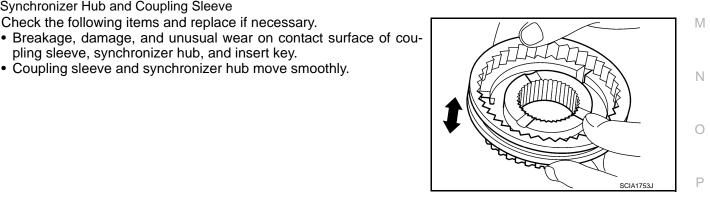
pling sleeve, synchronizer hub, and insert key. Coupling sleeve and synchronizer hub move smoothly.

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



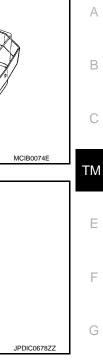
(1)

(2)





# [5MT: RS5F92R]





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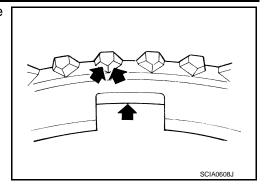
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# MAINSHAFT AND GEAR

# < UNIT DISASSEMBLY AND ASSEMBLY >

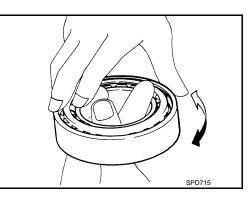
Check contact surface of baulk ring cam and insert key for excessive wear, uneven wear, bend, and damage. Replace if necessary.

[5MT: RS5F92R]



Bearing

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



# **FINAL DRIVE**

#### < UNIT DISASSEMBLY AND ASSEMBLY >

# **FINAL DRIVE**

**Exploded View** 

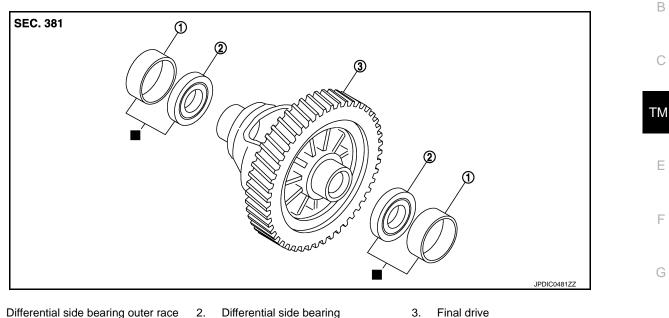
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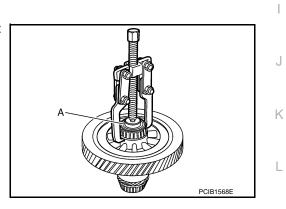


Differential side bearing outer race 2. Differential side bearing 1.

: Replace the parts as a set.

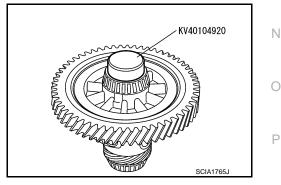
# Disassembly

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



# Assembly

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



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Inspection

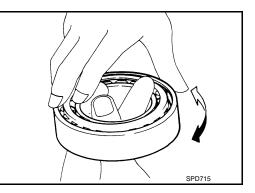
#### INSPECTION AFTER DISASSEMBLY

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)</td> [5MT: RS5F92R] SERVICE DATA AND SPECIFICATIONS (SDS) SERVICE DATA AND SPECIFICATIONS (SDS)

# **General Specifications**

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Transaxle type			RS5F92R		
Engine type			HR16DE		(
Model code number			1KA0A	1KA0C	
Axle type			2W	D	TN
Number of speed			5		
Synchromesh type			Warr	ner	
Shift pattern					E
				5 R SCIA0821E	F
Gear ratio	1st		3.72	73	
	2nd		2.04	76	F
	3rd		1.39	29	
	4th		1.09	68	
	5th		0.89	19	
	Reverse		3.54	55	
	Final gear		4.5000	4.0667	
Number of teeth	Input gear	1st	11		
		2nd	21		
		3rd	28	3	ł
		4th	31		
		5th	37	,	
		Reverse	11		
	Main gear	1st	41		
		2nd	43	3	N
		3rd	39	)	
		4th	34	ŀ	
		5th	33	3	ľ
		Reverse	39	)	
	Reverse idler ge	ear	26	3	(
	Final gear	Final gear/Pinion	63/14	61/15	
		Side gear/Pinion mate gear	13/	9	
Oil capacity (Refere	nce)	$\ell$ (Imp pt)	Approx.	2.3 (4)	F
Remarks	Reverse brake		Instal	lled	
	Double-cone sy	nchronizer	1st and	d 2nd	
	Speedometer d	rive dear	Not ins	tallad	

# < PRECAUTION > PRECAUTION PRECAUTIONS

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. 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

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#### 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.

#### TM-64

# PRECAUTIONS

#### **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.)
- Disconnect both battery cables. The steering lock will remain released with both battery cables discon-3. nected and the steering wheel can be turned.
- Perform the necessary repair operation. 4.
- When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn 5. the ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock ТΜ 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

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

#### CAUTION:

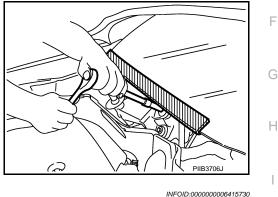
- Never reuse CSC (Concentric Slave Cylinder). Because CSC slides back to the original position every time when removing transaxle assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage. Refer to CL-27, "Removal and Installation".
- Never reuse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



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# < PREPARATION > PREPARATION

# PREPARATION

# Special Service Tools

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Tool number Tool name		Description
KV381054S0 Puller		Removing mainshaft front bearing outer race
KV38100200 Drift a: 65 mm (2.56 in) dia. b: 49 mm (1.93 in) dia.		<ul> <li>Installing mainshaft front bearing outer rac</li> <li>Installing mainshaft rear bearing outer race</li> <li>Installing differential side bearing outer race (clutch housing side)</li> </ul>
ST33220000 Drift a: 37 mm (1.46 in) dia. b: 31 mm (1.22 in) dia. c: 22 mm (0.87 in) dia.		Installing input shaft oil seal
ST33400001 Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.	ZZA1046D	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.	a b c c c c c c c c c c c c c c c c c c	Installing differential side oil seal

# PREPARATION

# < PREPARATION >

# [6MT: RS6F94R]

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.	a b c ZZA0978D	<ul> <li>Installing input shaft rear bearing</li> <li>Installing mainshaft front bearing inner race</li> </ul>
ST33052000 Drift a: 22 mm (0.87 in) dia. b: 28 mm (1.10 in) dia.	a b zZA0969D	<ul> <li>Removing mainshaft rear bearing inner race</li> <li>Removing 6th main gear</li> <li>Removing 5th main gear</li> <li>Removing 4th main gear</li> <li>Removing 1st main gear</li> <li>Removing 1st-2nd synchronizer hub assembly</li> <li>Removing 2nd main gear</li> <li>Removing bushing</li> <li>Removing 3rd main gear</li> <li>Removing mainshaft front bearing inner race</li> </ul>
KV32102700 Drift a: 48.6 mm (1.913 in) dia. b: 41.6 mm (1.638 in) dia.	a to I	<ul> <li>Installing bushing</li> <li>Installing 2nd main gear</li> <li>Installing 3rd main gear</li> <li>Installing 4th main gear</li> <li>Installing 5th main gear</li> <li>Installing 6th main gear</li> </ul>
ST30901000 Drift a: 79 mm (3.11 in) dia. b: 45 mm (1.77 in) dia. b: 35.2 mm (1.386 in) dia.	S-NT065	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 bear- ing mounting bolt

# PREPARATION

# < PREPARATION >

# **Commercial Service Tools**

INFOID:000000006415732

[6MT: RS6F94R]

Tool name		Description
Socket a: 8 mm (0.31 in) b: 5 mm (0.20 in)	× – Þ	Removing and installing drain plug
	a	
Spacer	PCIB1776E	Domoving mainshoft front boaring outer roos
a: 25 mm (0.98 in) dia. b: 25 mm (0.98 in)		Removing mainshaft front bearing outer race
	a PCIB1780E	
Drift a: 17 mm (0.67 in) dia.		Installing bushing
	a	
Drift	S-NT063	Removing input shaft rear bearing
a: 24 mm (0.94 in) dia.		Kentoving input shall real bearing
	PCIB1779E	
Drift a: 35 mm (1.38 in) dia. b: 25 mm (0.98 in) dia.		Installing input shaft front bearing
	abi	
	S-NT065	
Drift a: 43 mm (1.69 in) dia.	~~~~	<ul> <li>Installing input shaft rear bearing</li> <li>Removing differential side bearing inner race (transaxle case side)</li> </ul>
	a	
	NT109	

# PREPARATION

# < PREPARATION >

# [6MT: RS6F94R]

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

Ρ

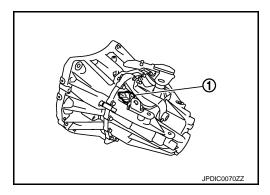
INFOID:000000006415733

# < SYSTEM DESCRIPTION > SYSTEM DESCRIPTION COMPONENT PARTS

**Component Parts Location** 

POSITION SWITCH

1 : Position switch



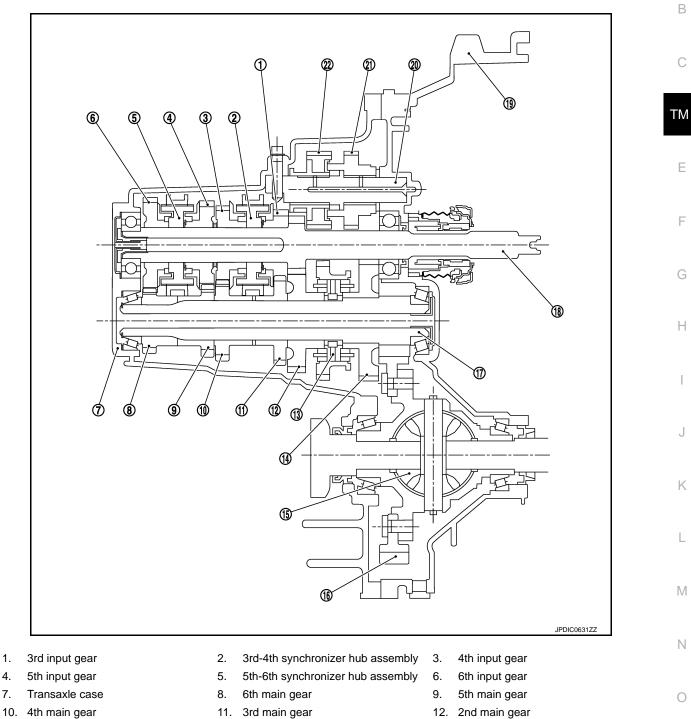
# < SYSTEM DESCRIPTION >

# STRUCTURE AND OPERATION

# Sectional View

INFOID:000000006415734

А



- 13. 1st-2nd synchronizer hub assembly
- 16. Final gear

1.

4. 7.

- 19. Clutch housing
- 22. Reverse output gear

# System Description

**TRIPLE-CONE SYNCHRONIZER** 

- 14. 1st main gear
- 17. Mainshaft
- 20. Reverse idler shaft
- 15. Differential
- 18. Input shaft
- 21. Reverse input gear

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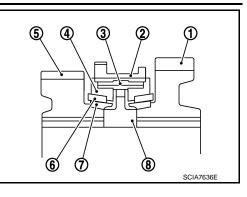
# STRUCTURE AND OPERATION

#### < SYSTEM DESCRIPTION >

#### [6MT: RS6F94R]

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

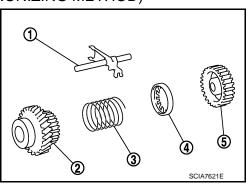
- 1 : 1st main gear
- 2 : 1st-2nd coupling sleeve
- 3 : Insert key
- 4 : Outer baulk ring
- 5 : 2nd main gear
- 6 : Synchronizer cone
- 7 : Inner baulk ring
- 8 : 1st-2nd synchronizer hub



#### 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



**POSITION SWITCH** 

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#### NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING < SYMPTOM DIAGNOSIS > [6MT: RS6F94R]

### SYMPTOM DIAGNOSIS

### NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

#### NVH Troubleshooting Chart

INFOID:000000006415738

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			<u>TM-75</u>			TM-88		TM-81	<u>TM-88</u>		TM 00	00-1411	
	Noise	1	2							3	3		
Symptoms	Oil leakage		3	1	2	2	2						
Symptoms	Hard to shift or will not shift		1	1				2				3	3
	Jumps out of gear							1	2	2			

# < PERIODIC MAINTENANCE > PERIODIC MAINTENANCE

### GEAR OIL

#### Inspection

#### 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.
- 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.

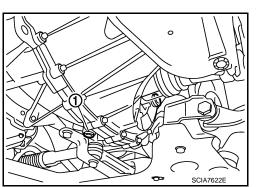
 Tighten filler plug to the specified torque. Refer to <u>TM-88</u>. <u>"Exploded View"</u>.

#### Draining

- 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.
- Set a gasket on drain plug and install it to clutch housing, using a socket [Commercial service tool].
   CAUTION:

#### Never reuse gasket.

 Tighten drain plug to the specified torque. Refer to <u>TM-88</u>. <u>"Exploded View"</u>.



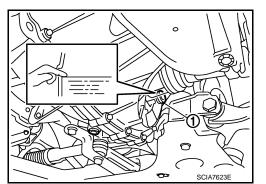
#### Refilling

- 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 : Refer to <u>MA-13, "Fluids and Lubricants"</u>. viscosity Oil capacity : Refer to <u>TM-123, "General Specifica-</u>

tions".

- After refilling gear oil, check the oil level. Refer to <u>TM-75</u>. <u>"Inspection"</u>.
- 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".



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[6MT: RS6F94R]

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## REMOVAL AND INSTALLATION SIDE OIL SEAL

#### Removal and Installation

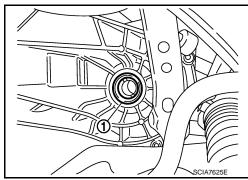
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[6MT: RS6F94R]

#### REMOVAL

- 1. Remove front drive shafts. (MR16DDT) Refer to <u>FAX-22, "LEFT SIDE : Removal and Installation"</u> (LEFT SIDE) and <u>FAX-24, "RIGHT SIDE : Removal and Installation"</u> (RIGHT SIDE).
- 2. Remove front drive shafts. (K9K) Refer to <u>FAX-78</u>, "LEFT SIDE : Removal and Installation" (LEFT SIDE) and <u>FAX-79</u>, "RIGHT SIDE : Removal and Installation" (RIGHT SIDE).
- 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

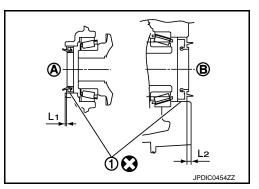
Dimension "L1": 1.2 - 1.8 mm (0.047 - 0.071 in)Dimension "L2": 2.7 - 3.3 mm (0.106 - 0.130 in)

#### **CAUTION:**

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

#### Inspection

INSPECTION AFTER INSTALLATION Check the oil level and oil leakage. Refer to <u>TM-75, "Inspection"</u>.



INFOID:000000006415743

#### **POSITION SWITCH**

	FOSITION SWITCH		
< R	REMOVAL AND INSTALLATION >	[6MT: RS6F94R]	
PC	DSITION SWITCH		
Re	emoval and Installation	INFOID:000000006415744	A
RE	MOVAL		В
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.		С
4.	Remove position switch from transaxle case.	I	
INS	STALLATION		ΤМ
1.	<ul> <li>Apply recommended sealant to threads of position switch.</li> <li>Use Genuine Liquid Gasket, Three Bond 1215 or an equivalent.</li> <li>CAUTION:</li> </ul>		E
•	Remove old sealant and oil adhering to threads.		
2.	Install position switch to transaxle case.		_
3. 4.	Tighten position switch to the specified torque. Refer to <u>TM-88, "Exploded View"</u> . For the next step and after, install in the reverse order of removal.		F
1113	spection	INFOID:000000006415745	G
• C <u>n</u>	SPECTION AFTER INSTALLATION Check continuity between position switch terminals. Refer to <u>TM-73, "BACK-UP LAMF</u> ent Inspection" (Back-up lamp switch) and <u>TM-73, "PARK/NEUTRAL POSITION (PNP</u>		Н
	<u>ent Inspection"</u> (PNP switch). Check the oil leakage. Refer to <u>TM-75, "Inspection"</u> .		I
			J
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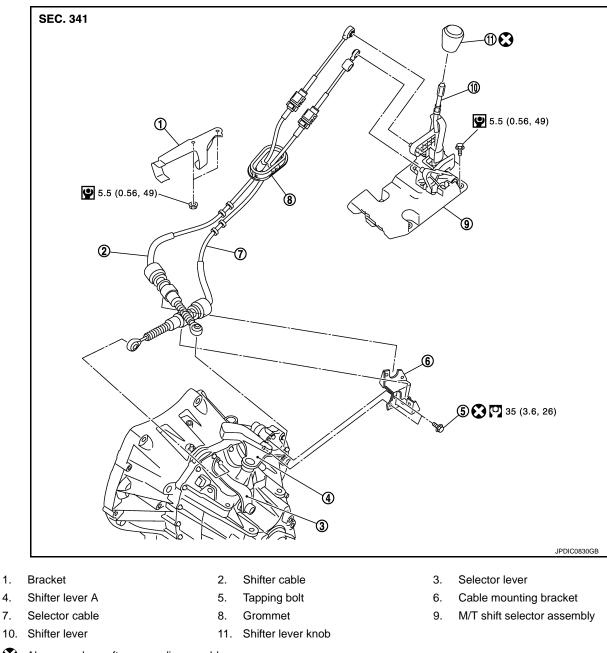
#### **CONTROL LINKAGE**

#### < REMOVAL AND INSTALLATION >

### CONTROL LINKAGE

**Exploded View** 

INFOID:000000006417073



- 🗙 : Always replace after every disassembly.
- : N·m (kg-m, ft-lb)
- Let N·m (kg-m, in-lb)

#### **Removal and Installation**

#### REMOVAL

1.

4.

7.

- 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).

**TM-78** 

INFOID:000000006417074

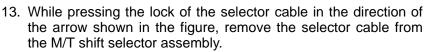
#### **CONTROL LINKAGE**

#### < REMOVAL AND INSTALLATION >

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

> $\triangleleft$ : Vehicle front

- Disconnect clips (A) from bracket. a.
- Remove bolts (B) from bracket. b.
- Remove bracket. C.
- Pull out and disconnect the each cable from the shifter lever A 4. and the selector lever, using a suitable remover.
- 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.
- Remove center console assembly. Refer to <u>IP-23, "Removal and</u> 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.



- 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.





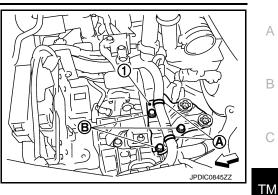
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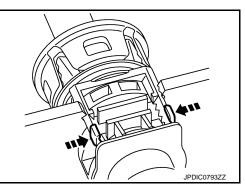
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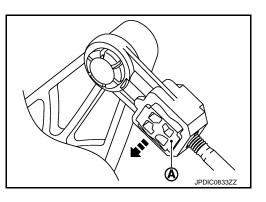
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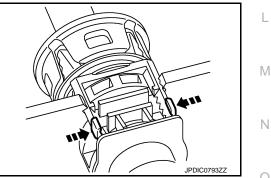
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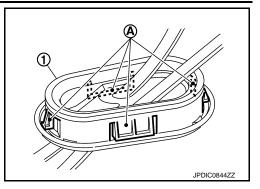






#### < REMOVAL AND INSTALLATION >

- 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.



[6MT: RS6F94R]

#### INSTALLATION

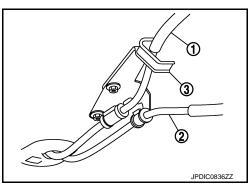
Note the following, and install in the reverse order of removal.

#### 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.



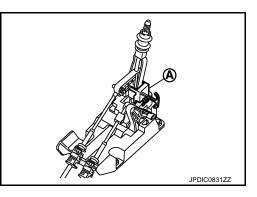
Install the selector cable (the M/T shift selector assembly side), as per the following procedure.

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.
- 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.

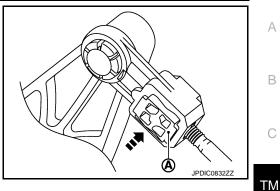


#### TM-80

#### **CONTROL LINKAGE**

#### < REMOVAL AND INSTALLATION >

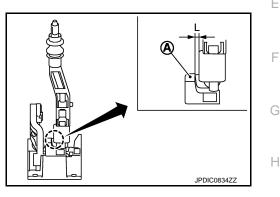
- 5. Insert the stopper (A) until it reaches the selector cable.
- 6. Remove the lever stopper from the M/T shift selector assembly.
- 7. Shift the shifter lever to each gear position to check that there are no bindings. If any, repeat step 3.



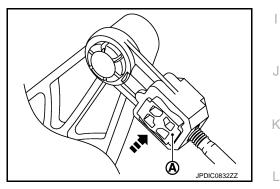
When M/T shift selector assembly is not replaced:

- 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.



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Inspection

#### 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.

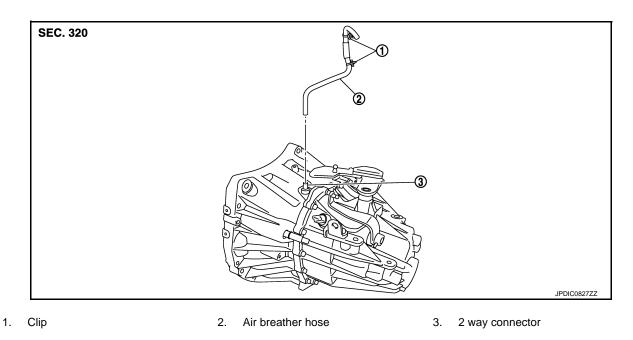
< REMOVAL AND INSTALLATION >

### AIR BREATHER HOSE MR16DDT

MR16DDT : Exploded View

INFOID:000000006417190

INFOID:000000006417191

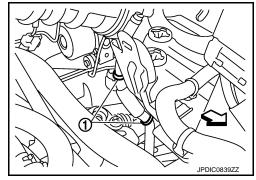


#### MR16DDT : Removal and Installation

#### 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

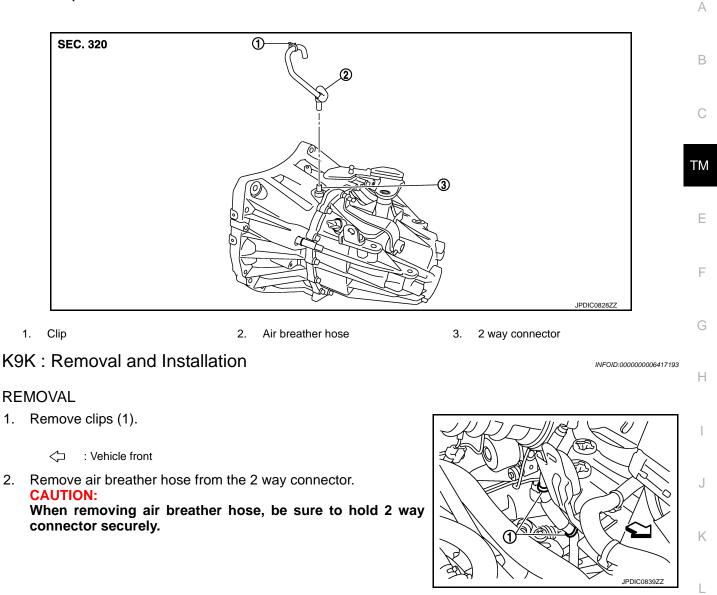
#### **AIR BREATHER HOSE**

#### < REMOVAL AND INSTALLATION >

#### K9K : Exploded View

[6MT: RS6F94R]

INFOID:000000006417192



#### **INSTALLATION**

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

#### CAUTION:

1.

2.

- 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.

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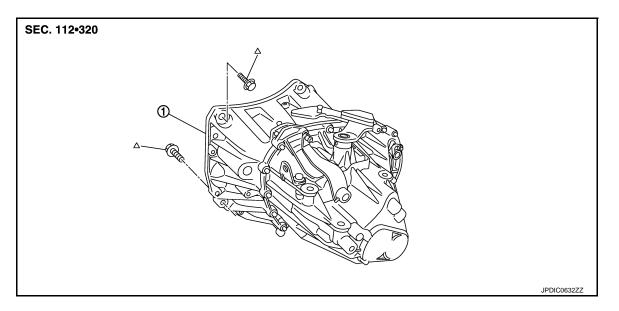
#### < UNIT REMOVAL AND INSTALLATION >

[6MT: RS6F94R]

### UNIT REMOVAL AND INSTALLATION TRANSAXLE ASSEMBLY MR16DDT

MR16DDT : Exploded View

INFOID:000000006415751



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

#### MR16DDT : Removal and Installation

INFOID:000000006415752

#### 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 <u>CL-27, "Removal and Installation"</u>.

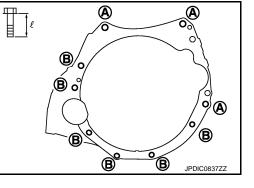
#### REMOVAL

- 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 <u>TM-78</u>, "<u>Removal and</u> <u>Installation</u>".
- 9. Remove starter motor. Refer to <u>STR-29, "MR16DDT : Removal and Installation"</u>.
- 10. Remove clutch tube from CSC (Concentric Slave Cylinder). Refer to <u>CL-25. "Removal and Installation"</u>. 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".

#### TM-84

< U	INIT REMOVAL AND INSTALLATION > [6MT: RS6F94R]	
15.	Remove front drive shafts. Refer to <u>FAX-22, "LEFT SIDE : Removal and Installation"</u> (LEFT SIDE) and <u>FAX-24, "RIGHT SIDE : Removal and Installation"</u> (RIGHT SIDE). <b>NOTE:</b>	А
	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:	В
	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 <u>EM-55, "2WD removal and Installation"</u> .	С
	<□ : Vehicle front	ТМ
18.	Remove rear engine mounting bracket and rear torque rod. Refer to <u>EM-55, "2WD : Removal and Installation"</u> .	
19.	Remove transaxle assembly mounting bolts.	Е
20.	Remove transaxle assembly from the engine.	
	• Fix transaxle assembly to a suitable jack.	
	<ul> <li>The transaxle assembly must not interfere with the wire harnesses and clutch tube.</li> </ul>	F
21.	Remove CSC. Refer to CL-27, "Removal and Installation".	
INS	STALLATION	G
	te the following, and install in the reverse order of removal.	0
CA	UTION:	
	ix transaxle assembly to a suitable jack.	Н
	he transaxle assembly must not interfere with the wire harnesses and clutch tube. /hen installing transaxle assembly, never bring input shaft into contact with clutch cover.	
• Ta	apping work for tapping bolts is not applied to new transaxle case. Do not perform tapping by other nan screwing tapping bolts because tapping is formed by screwing tapping bolts into transaxle	
	ase.	1
	ighten transaxle assembly mounting bolts to the specified torque.	J

0	5			
Bolt symbol	A	В		
Insertion direction	Transaxle to engine	Engine to transaxle		
Quantity	3	6		
Bolt length " $\ell$ " mm (in)	60 (2.36)	50 (1.97)		
Tightening torque N⋅m (kg-m, ft-lb)	62.0 (	6.3, 46)		



#### MR16DDT : Inspection

#### **INSPECTION AFTER INSTALLATION**

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

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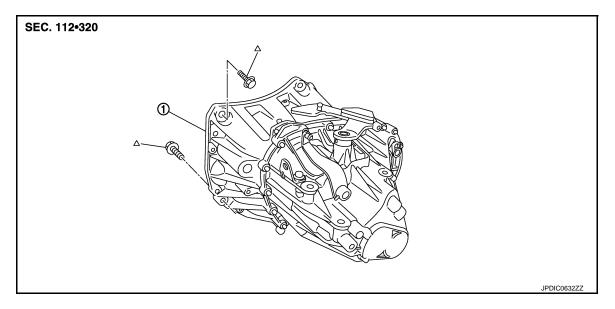
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#### < UNIT REMOVAL AND INSTALLATION >

#### K9K : Exploded View

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[6MT: RS6F94R]



#### 1. Transaxle assembly

 $\Delta$ : Refer to "INSTALLATION" in <u>TM-86, "K9K : Removal and Installation"</u> for the locations and tightening torque.

#### K9K : Removal and Installation

#### **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 <u>CL-27</u>, "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".
- Disconnect selector cable and shifter cable from transaxle assembly. Refer to <u>TM-78</u>, "<u>Removal and</u> <u>Installation</u>".
- 10. Remove starter motor. Refer to EM.
- Remove clutch tube from CSC (Concentric Slave Cylinder). Refer to <u>CL-25. "Removal and Installation"</u>. 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.
- Remove front drive shafts. Refer to <u>FAX-78, "LEFT SIDE : Removal and Installation"</u> (LEFT SIDE) and <u>FAX-79, "RIGHT SIDE : Removal and Installation"</u> (RIGHT SIDE). **NOTE:**

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

16. Remove bracket from clutch housing.

#### TM-86

		TRAN	NSAXLE A	ASSEMB	LY
UNIT REMOVAL	AND INSTA	LLATION >	>		[6MT: RS6F94R]
<ol> <li>Set a suitable j CAUTION:</li> </ol>	ack to transa	xle assembly	y and then se	et a suitable	jack to engine assembly.
	a suitable ja	ck, be caref	ul so that it	does not c	ontact with the switch.
-	e mounting b				m transaxle assembly. Refer to <u>EM-326.</u>
<⊐ : Vehi	cle front				
9. Remove brack to <u>CO-72, "Rer</u>			d move thern	no plunger u	nit aside not to interfere with work. Refer
0. Remove transa	axle assembly	/ mounting b	olts.		
1. Remove transa	axle assembly	from the er	ngine.		
CAUTION: • Fix transax	e assembly t	o a suitable	iack.		
				the wire ha	rnesses and clutch tube.
2. Remove CSC.	Refer to CL-2	27, "Remova	al and Installa	ation".	
NSTALLATION					
Note the following, and install in the reverse order of removal.					
CAUTION: Fix transaxle as	sembly to a	suitable iac	k		
The transaxle as	ssembly mus	st not interfe	ere with the		sses and clutch tube.
					o contact with clutch cover.
					case. Do not perform tapping by other screwing tapping bolts into transaxle
case.				-	0 11 0
Tighten transaxle			s to the spec	ified torque.	
		origino.			
Bolt symbol	A	В	С	D	
Insertion direction	Transaxle	to engine	Engine to	transaxle	©,o o®
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 : Inspectio	n				INFOID-00000000047457
	/11				INFOID:00000006417157

#### INSPECTION AFTER INSTALLATION

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

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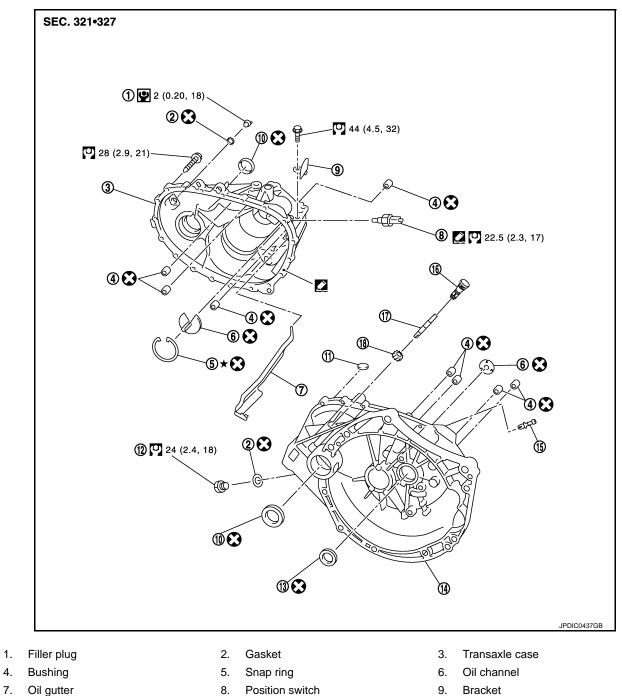
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#### < UNIT DISASSEMBLY AND ASSEMBLY >

### UNIT DISASSEMBLY AND ASSEMBLY TRANSAXLE ASSEMBLY

**Exploded View** 

CASE AND HOUSING



- 9.
  - 12. Drain plug
  - 15. 2 way connector
  - 18. Pinion gear
- Apply Genuine Liquid Gasket, Three Bond 1215 or an equivalent.

11. Magnet

14. Clutch housing

17. Pinion shaft

🗱 : Always replace after every disassembly.

10. Differential side oil seal

13. Input shaft oil seal

4.

16. Plug

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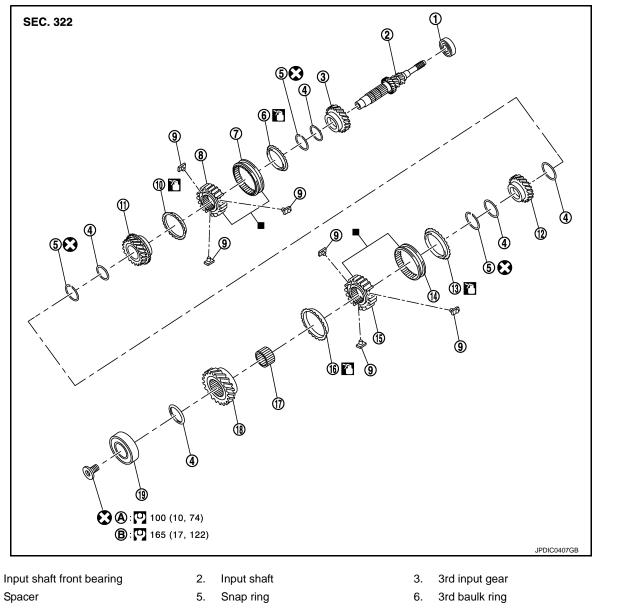
#### **TM-88**

#### < UNIT DISASSEMBLY AND ASSEMBLY >

 $\star$  : Select with proper thickness.

- : N·m (kg-m, ft-lb)
- Let N·m (kg-m, in-lb)

#### SHAFT AND GEAR



- 7. 3rd-4th coupling sleeve
- 10. 4th baulk ring

1.

4.

- 13. 5th baulk ring
- 16. 6th baulk ring
- 19. Input shaft rear bearing
- A. First step
- : Apply gear oil.
- : Replace the parts as a set.
- S: Always replace after every disassembly.
- : N·m (kg-m, ft-lb)

- 8. 3rd-4th synchronizer hub
- 11. 4th input gear
- 14. 5th-6th coupling sleeve
- 17. Needle bearing
- B. Final step

- 9. Insert key
- 12. 5th input gear
- 15. 5th-6th synchronizer hub
- 18. 6th input gear

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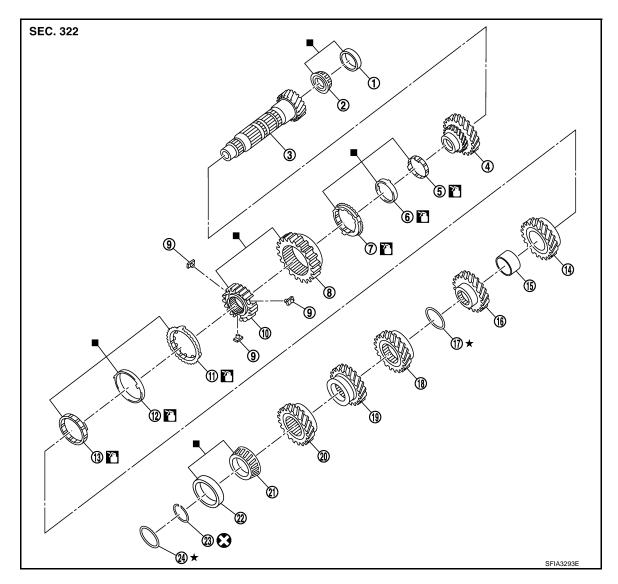
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TM-89

#### < UNIT DISASSEMBLY AND ASSEMBLY >



- 1. Mainshaft front bearing outer race
- 4. 1st main gear
- 7. 1st outer baulk ring
- 10. 1st-2nd synchronizer hub
- 13. 2nd inner baulk ring
- 16. 3rd main gear
- 19. 5th main gear
- 22. Mainshaft rear bearing outer race 23. Snap ring
- : Apply gear oil.
  - : Replace the parts as a set.
- $\star$  : Select with proper thickness.

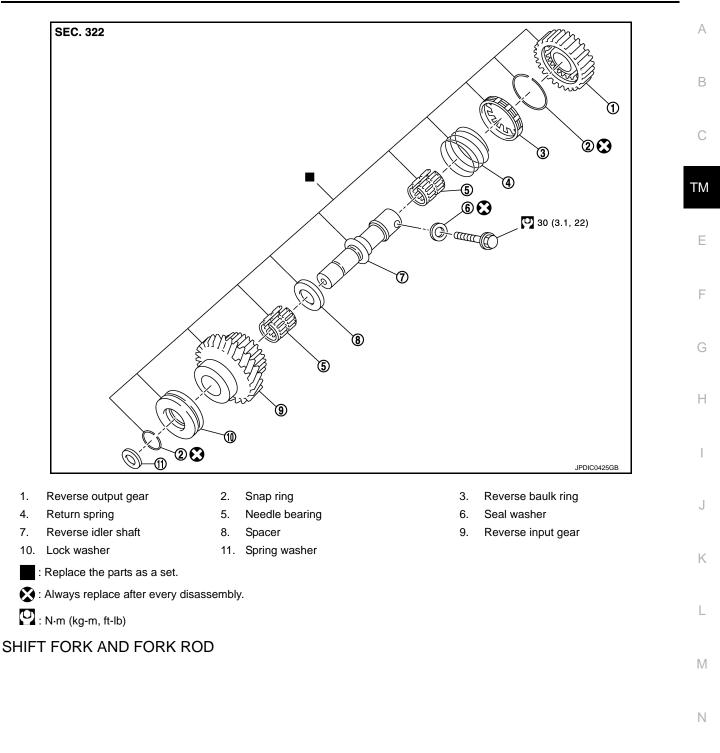
🔀 : Always replace after every disassembly.

- 2. Mainshaft front bearing inner race
- 5. 1st inner baulk ring
- 1st-2nd coupling sleeve 8.
- 11. 2nd outer baulk ring
- 14. 2nd main gear
- 17. Mainshaft adjusting shim
- 20. 6th main gear

- Mainshaft 3.
- 6. 1st synchronizer cone
- 9. Insert key
- 12. 2nd synchronizer cone
- 15. Bushing
- 4th main gear 18.
- 21. Mainshaft rear bearing inner race
- 24. Mainshaft rear bearing adjusting shim

#### < UNIT DISASSEMBLY AND ASSEMBLY >

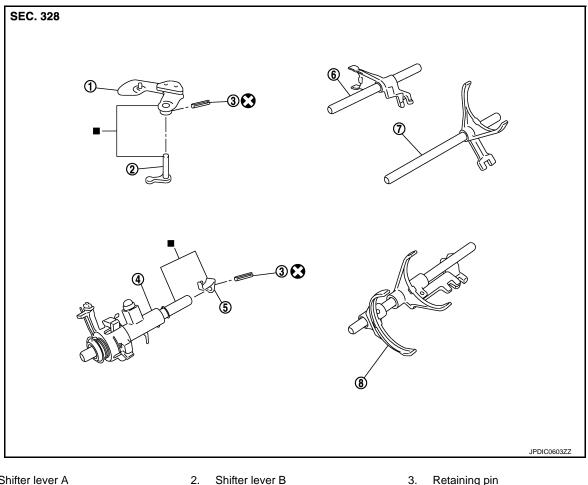
#### [6MT: RS6F94R]



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#### < UNIT DISASSEMBLY AND ASSEMBLY >

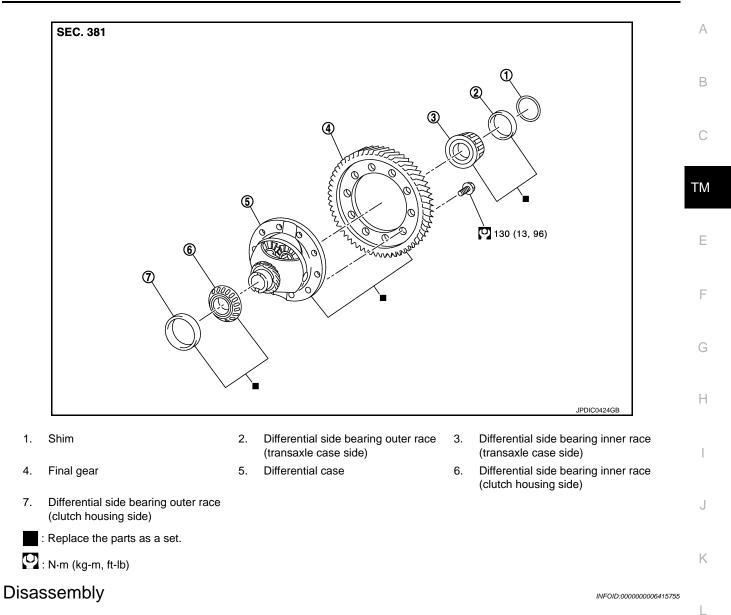


- 1. Shifter lever A
- 4. Selector
- 1st-2nd fork rod 7.
- : Replace the parts as a set.
- 🔀 : Always replace after every disassembly.
- **FINAL DRIVE**

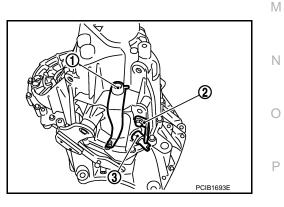
- Shifter lever B
- 5. Selector lever
- 8. Fork rod

- 3. Retaining pin
- 6. Reverse fork rod

#### < UNIT DISASSEMBLY AND ASSEMBLY >



- 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.



#### < UNIT DISASSEMBLY AND ASSEMBLY >

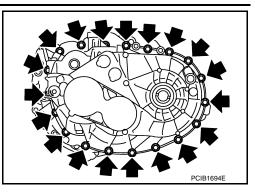
5. Remove transaxle case mounting bolts ( $\Leftarrow$ ).

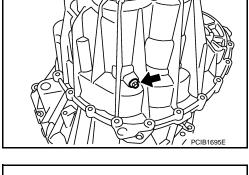
6. Remove reverse idler shaft mounting bolt ( $\Leftarrow$ ) and seal washer.

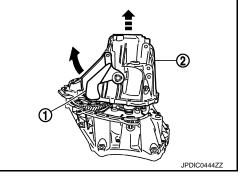
7. Remove transaxle case (2) while rotating shifter lever A (1) in the direction as shown in the figure.

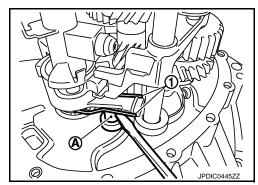
8. Remove selector spring (1) from return bushing (A).

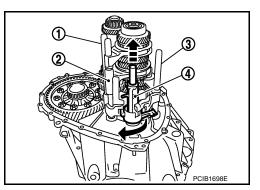
- 9. Shift 1st-2nd fork rod (1), fork rod (2), and reverse fork rod (3) to the neutral position.
- 10. Remove selector (4) from clutch housing.













#### < UNIT DISASSEMBLY AND ASSEMBLY >

#### [6MT: RS6F94R]

- 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.

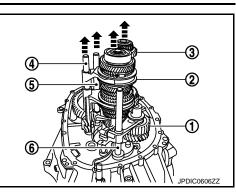
- b. Remove reverse idler shaft assembly and reverse fork rod (6) from clutch housing.
- 12. Remove spring washer from clutch housing.
- 13. Pull up and remove input shaft assembly (1), mainshaft assembly (2), fork rod (3), and 1st-2nd fork rod (4) from clutch housing. NOTE:

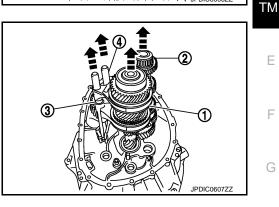
It is easier to pull up when shifting each fork rod to each shaft side.

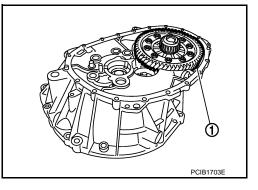
- 14. Remove final drive assembly (1) from clutch housing.
- 15. Remove magnet from clutch housing.

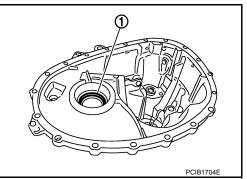
16. Remove differential side oil seals (1) from clutch housing and transaxle case. **CAUTION:** 

Never damage clutch housing and transaxle case.

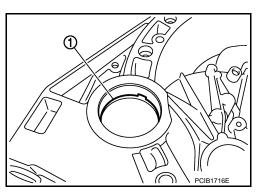








17. Remove differential side bearing outer race (1) from clutch housing, using a brass rod. CAUTION: Never damage clutch housing.



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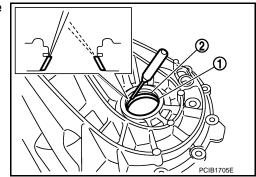
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#### < UNIT DISASSEMBLY AND ASSEMBLY >

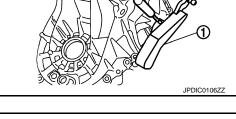
Remove differential side bearing outer race (1) from transaxle case, using a brass rod.
 CAUTION:

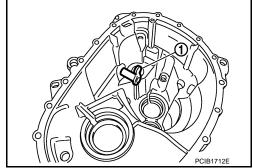
#### Never damage transaxle case.

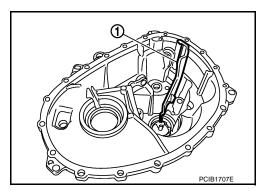
19. Remove shim (2) from transaxle case.

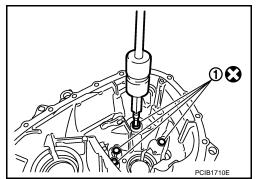


- 20. Remove shifter lever A (1) retaining pin, using a pin punch.
- 21. Remove shifter lever A from transaxle case.









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].

#### [6MT: RS6F94R]

#### < UNIT DISASSEMBLY AND ASSEMBLY >

- 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.

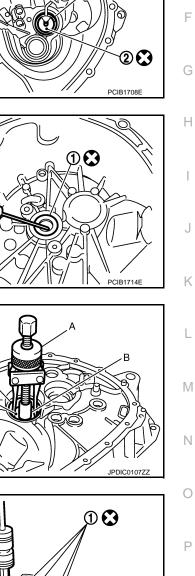
27. Remove snap ring (1) and oil channel (2) from transaxle case.

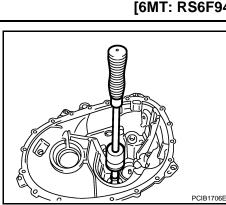
28. Remove input shaft oil seal (1) from clutch housing, using an oil seal remover. **CAUTION:** 

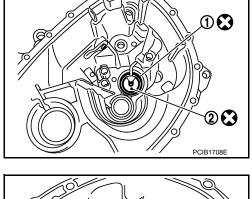
Never damage clutch housing.

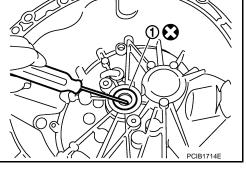
- 29. Remove mainshaft front bearing outer race (1) from clutch housing, using the puller (A) [SST: KV381054S0] and a spacer (B) [Commercial service tool].
- 30. Remove oil channel (2) from clutch housing.

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









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[6MT: RS6F94R]

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#### < UNIT DISASSEMBLY AND ASSEMBLY >

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

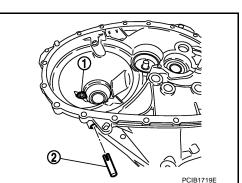
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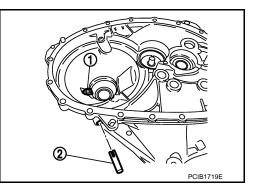
#### Assembly

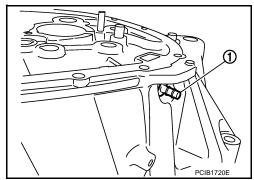
1. Install pinion gear (1) and pinion shaft (2) to clutch housing. **CAUTION:** Replace transaxle assembly when replacing clutch housing.

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

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







#### [6MT: RS6F94R]

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#### < UNIT DISASSEMBLY AND ASSEMBLY >

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

 Install mainshaft front bearing outer race to clutch housing, using the drift (A) [SST: KV38100200].
 CAUTION:

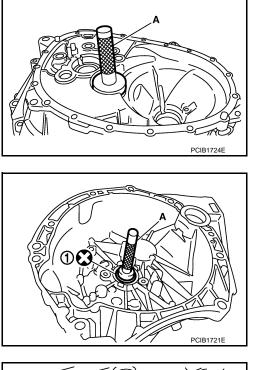
Replace mainshaft front bearing outer race and mainshaft front bearing inner race as a set.

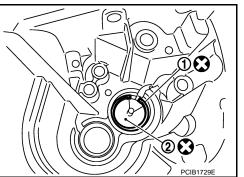
7. Install input shaft oil seal (1) to clutch housing, using the drift (A) [SST: ST33220000].

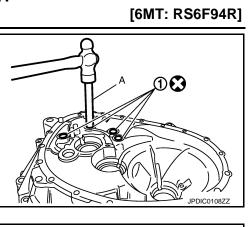
- 8. Install snap ring (1) and oil channel (2) to transaxle case. CAUTION:
  - Select and install snap ring that has the same thickness as previous one.
  - Replace transaxle assembly when replacing transaxle case.
- 9. Install mainshaft rear bearing adjusting shim to transaxle case. CAUTION:

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).







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#### < UNIT DISASSEMBLY AND ASSEMBLY >

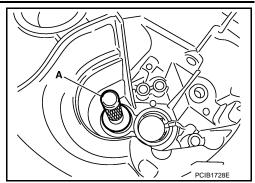
Install mainshaft rear bearing outer race to transaxle case, using the drift (A) [SST: KV38100200].
 CAUTION:

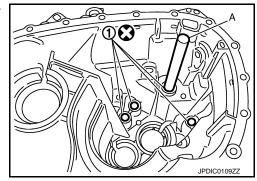
Replace mainshaft rear bearing outer race and mainshaft rear bearing inner race as a set.

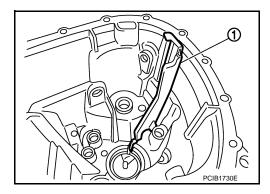
11. Install bushings (1) to transaxle case, using a drift (A) [Commercial service tool].

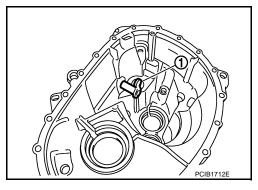
12. Install oil gutter (1) to transaxle case.

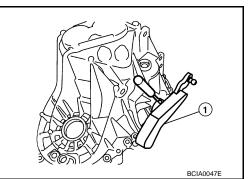
- Install shifter lever B (1) to transaxle case.
   CAUTION: Replace shifter lever A and shifter lever B as a set.
- 14. Install shifter lever A to transaxle case. **CAUTION: Replace shifter lever A and shifter lever B as a set.**
- 15. Install retaining pin to shifter lever A (1), using a pin punch.
   CAUTION: Never reuse retaining pin.
- 16. Install shim to transaxle case.











#### [6MT: RS6F94R]

#### < UNIT DISASSEMBLY AND ASSEMBLY >

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:** 

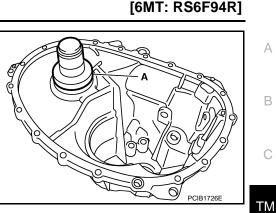
Replace differential side bearing outer race (clutch housing side) and differential side bearing inner race (clutch housing side) as a set.

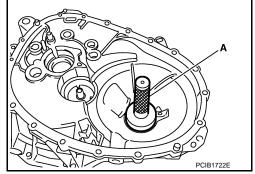
- 19. Install differential side oil seals (1) to clutch housing and transaxle case, using the drift [Stamping number: B.vi 1666-B] of the drift set [SST: KV32500QAA].
  - А : Transaxle case side
  - В : Clutch housing side

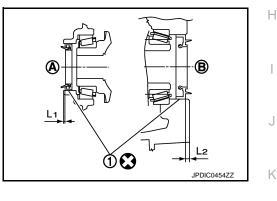
Dimension "L1"	: 1.2 – 1.8 mm (0.047 – 0.071 in)
Dimension "L2"	: 2.7 – 3.3 mm (0.106 – 0.130 in)

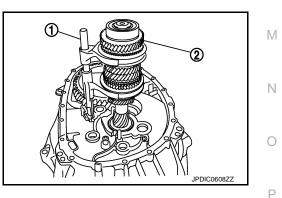
#### **CAUTION:**

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









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#### < UNIT DISASSEMBLY AND ASSEMBLY >

- 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:

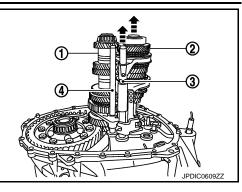
It is easier to pull up when shifting each fork rod to each shaft side.

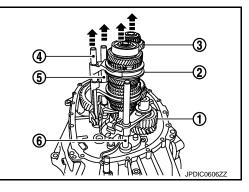
- c. Set reverse fork rod (6) to reverse idler shaft assembly, and then install them to clutch housing.
- 25. Shift 1st-2nd fork rod (1), fork rod (2), and reverse fork rod (3) to the neutral position.
- 26. Install selector (4) to clutch housing. CAUTION: Replace selector lever and selector as a set.

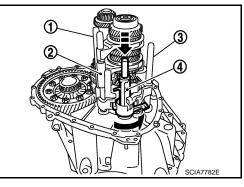
- 27. Install selector spring (1) to return bushing (A).
- 28. Apply recommended sealant to mounting surface of transaxle case.
  - Use Genuine Liquid Gasket, Three Bond 1215 or an equivalent.

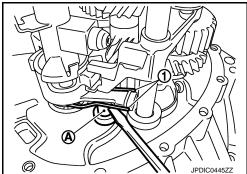
#### **CAUTION:**

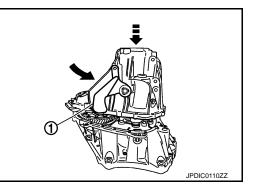
- Never allow old liquid gasket, moisture, oil, or foreign matter to remain on mounting surface.
- Check that mounting surface is not damaged.
- Apply sealant bead continuously.
- 29. Install transaxle case to clutch housing while rotating shifter lever A (1) in the direction as shown in the figure.











[6MT: RS6F94R]

#### < UNIT DISASSEMBLY AND ASSEMBLY >

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

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

- 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.

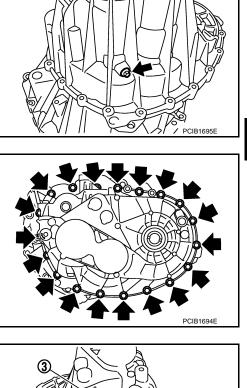
- b. Install position switch to transaxle case, and tighten it to the specified torque.
- 33. Install bracket (2) to transaxle case, and tighten mounting bolt to the specified torque.
- 34. Install selector lever (3), as per the following procedure.
- a. Install selector lever to transaxle case.
   CAUTION:
   Replace selector lever and selector as a set.
- b. Install retaining pin to selector lever, using a pin punch. CAUTION:

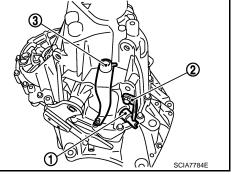
#### Never reuse retaining pin.

- 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.





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#### [6MT: RS6F94R]

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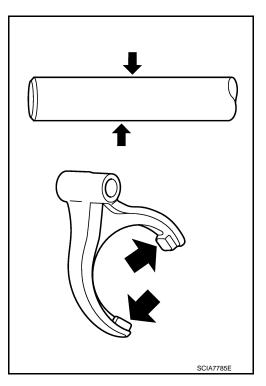
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#### < UNIT DISASSEMBLY AND ASSEMBLY >

Inspection

INSPECTION AFTER DISASSEMBLY

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



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#### < UNIT DISASSEMBLY AND ASSEMBLY >

**INPUT SHAFT AND GEAR** 

#### **Exploded View**

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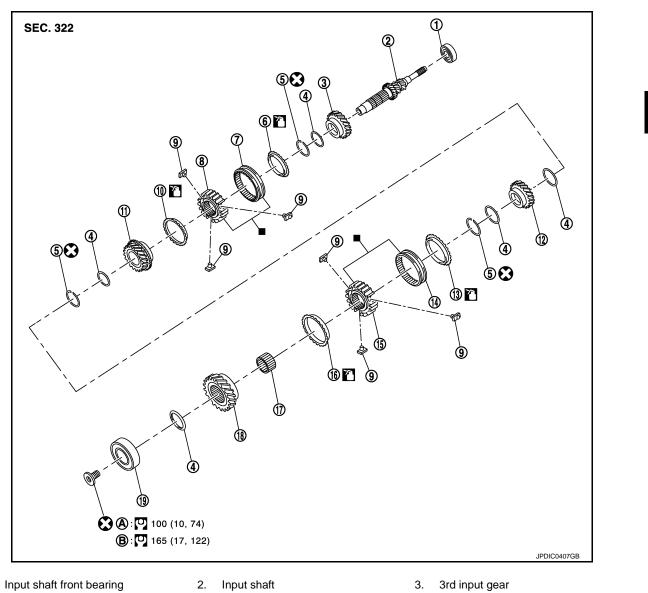
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6.

9.

3rd baulk ring

15. 5th-6th synchronizer hub

Insert key

12. 5th input gear

18. 6th input gear

4. Spacer

1.

- 7. 3rd-4th coupling sleeve
- 10. 4th baulk ring
- 13. 5th baulk ring
- 16. 6th baulk ring
- 19. Input shaft rear bearing
- First step Α.
- : Apply gear oil.

: Replace the parts as a set.

🔀 : Always replace after every disassembly.

5.

8.

14.

17.

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Snap ring

11. 4th input gear

Final step

Needle bearing

3rd-4th synchronizer hub

5th-6th coupling sleeve

- : N·m (kg-m, ft-lb)
- Disassembly
- **CAUTION:**

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#### **TM-105**

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TM-106

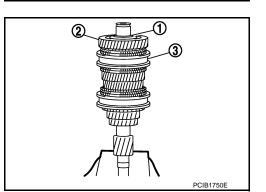
• Fix input shaft in a vise with back plate, and then remove gears and snap rings.

**INPUT SHAFT AND GEAR** 

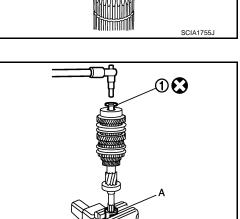
- For removal of snap ring, set snap ring pliers and flat pliers at both sides of snap ring. While expanding snap ring with snap ring pliers, move snap ring with flat pliers.
- Disassemble gear components putting direction marks on the parts that do not affect any functions.

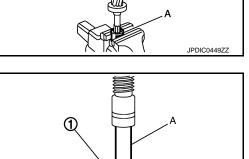
1. Remove input shaft rear bearing mounting bolt (1), using the drift (A) [SST: KV32300QAM].

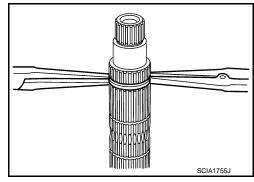
- 2. Remove input shaft rear bearing (1), as per the following procedure.
- a. Set a puller [Commercial service tool] to input shaft rear bearing.
- b. Remove input shaft rear bearing, using a drift (A) [Commercial service tool].
- 3. Remove spacer (1), 6th input gear (2), needle bearing, 6th baulk ring, and 5th-6th synchronizer hub assembly (3).
- 4. Remove insert keys and 5th-6th coupling sleeve from 5th-6th synchronizer hub.



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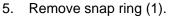




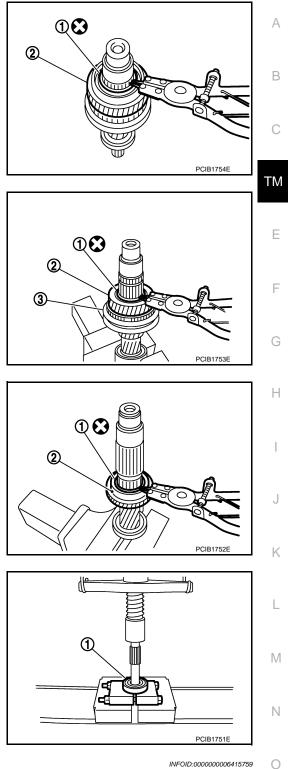
#### **INPUT SHAFT AND GEAR**

#### < UNIT DISASSEMBLY AND ASSEMBLY >

#### [6MT: RS6F94R]



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

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

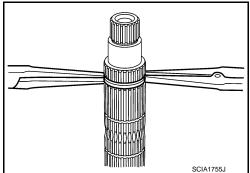
• Replace transaxle assembly when replacing input shaft.

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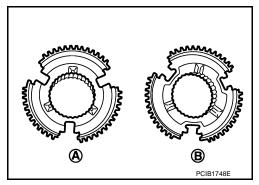
#### **INPUT SHAFT AND GEAR**

#### < UNIT DISASSEMBLY AND ASSEMBLY >

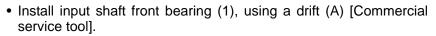
- For installation of snap ring, set snap ring pliers and flat pliers at both sides of snap ring. While expanding snap ring with snap ring pliers, move snap ring with flat pliers.
- Never reuse snap ring.
- Check that snap ring is securely installed in a groove.
- Replace 3rd-4th coupling sleeve and 3rd-4th synchronizer hub as a set.
- Replace 5th-6th coupling sleeve and 5th-6th synchronizer hub as a set.

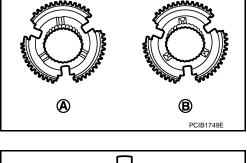


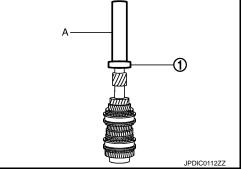
- Be careful to install 3rd-4th synchronizer hub according to the specified direction.
  - A : 3rd input gear side
  - B : 4th input gear side



- Be careful to install 5th-6th synchronizer hub according to the specified direction.
  - A : 5th input gear side
  - B : 6th input gear side







## **INPUT SHAFT AND GEAR**

### < UNIT DISASSEMBLY AND ASSEMBLY >

- 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.
- 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.

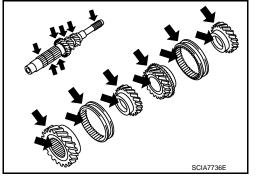
### Inspection

### INSPECTION AFTER DISASSEMBLY

Input Shaft and Gear

Check the following items and replace if necessary.

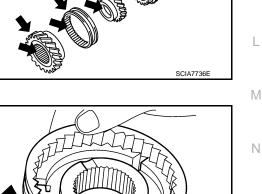
- Damage, peeling, bend, uneven wear, and distortion of shaft.
- Excessive wear, damage, and peeling of gear.



Synchronizer Hub and Coupling Sleeve

Check the following items and replace if necessary.

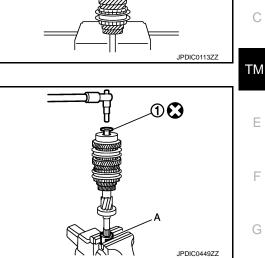
- · Breakage, damage, and unusual wear on contact surface of coupling sleeve, synchronizer hub, and insert key.
- Coupling sleeve and synchronizer hub move smoothly.





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**Baulk Ring** 



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[6MT: RS6F94R]

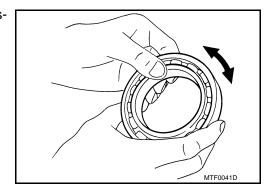
## **INPUT SHAFT AND GEAR**

### < UNIT DISASSEMBLY AND ASSEMBLY >

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

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

### Bearing



### [6MT: RS6F94R]

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## < UNIT DISASSEMBLY AND ASSEMBLY >

MAINSHAFT AND GEAR

## **Exploded View**

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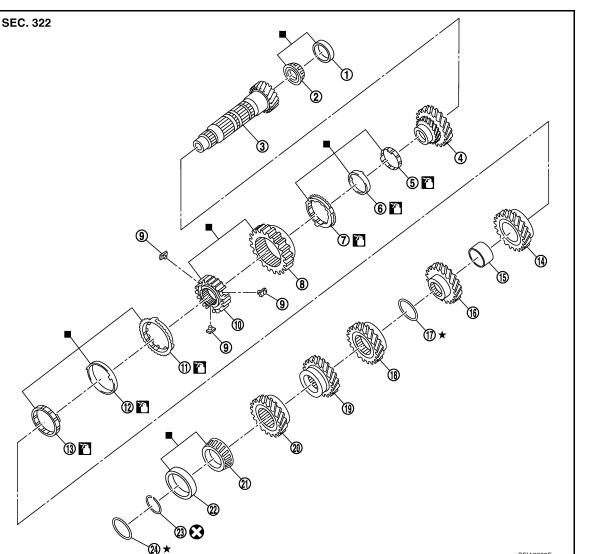
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- Mainshaft front bearing outer 1. race
- 4. 1st main gear
- 7. 1st outer baulk ring
- 10. 1st-2nd synchronizer hub
- 2nd inner baulk ring 13.
- 16. 3rd main gear
- 19. 5th main gear
- 22. Mainshaft rear bearing outer race 23.

: Apply gear oil.

: Replace the parts as a set.

★ : Select with proper thickness.

X : Always replace after every disassembly.

- 2. Mainshaft front bearing inner race
- 1st inner baulk ring 5.
- 8. 1st-2nd coupling sleeve
- 2nd outer baulk ring 11.
- 2nd main gear 14.
- Mainshaft adjusting shim 17.
- 20. 6th main gear
- Snap ring

- Mainshaft 3.
- 1st synchronizer cone 6. 9. Insert key

SFIA3293E

- 12. 2nd synchronizer cone
- 15. Bushing
- 18. 4th main gear
- 21. Mainshaft rear bearing inner race 24. Mainshaft rear bearing adjusting
  - shim

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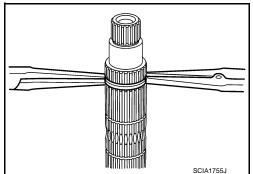
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[6MT: RS6F94R]

### < UNIT DISASSEMBLY AND ASSEMBLY >

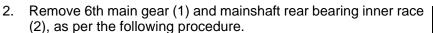
### Disassembly

- 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.

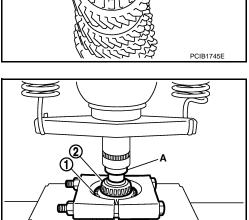


1

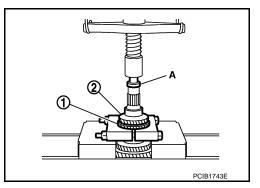
1. Remove snap ring (1).



- 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].



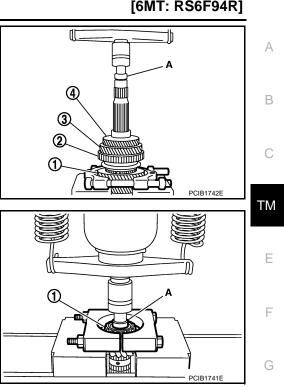
- 3. Remove 4th main gear (1) and 5th main gear (2), as per the following procedure.
- a. Set a puller [Commercial service tool] to 4th main gear.
- b. Remove 5th main gear and 4th main gear, using the drift (A) [SST: ST33052000].
- 4. Remove mainshaft adjusting shim.



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### < UNIT DISASSEMBLY AND ASSEMBLY >

- 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].



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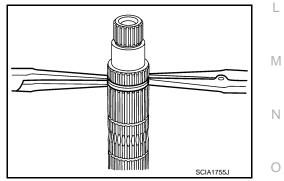
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### Assembly

### **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.



### < UNIT DISASSEMBLY AND ASSEMBLY >

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.

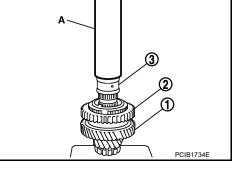
- 2. Apply gear oil to 1st inner baulk ring, 1st synchronizer cone, 1st outer baulk ring, 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring. **CAUTION:** 
  - Replace 1st inner baulk ring, 1st synchronizer cone, and 1st outer baulk ring as a set.
  - · Replace 2nd inner baulk ring,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

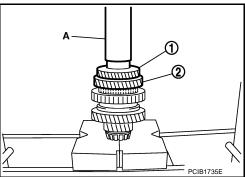
### Replace 1st-2nd synchronizer hub and 1st-2nd coupling sleeve as a set.

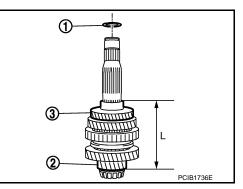
Install 1st main gear (1), 1st inner baulk ring, 1st synchronizer 4. cone, 1st outer baulk ring, 1st-2nd synchronizer hub assembly (2), 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring.

6. Install 3rd main gear (1) and 2rd main gear (2), using the drift

5. Install bushing (3), using the drift (A) [SST: KV32102700].



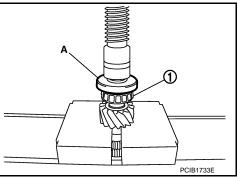


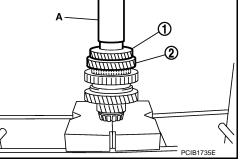


- Measure dimension "L" as shown in the figure. Select mainshaft 7. adjusting shim (1) according to the following list, and then install it to mainshaft.
  - 2 : Mainshaft
  - 3 : 3rd main gear

(A) [SST: KV32102700].

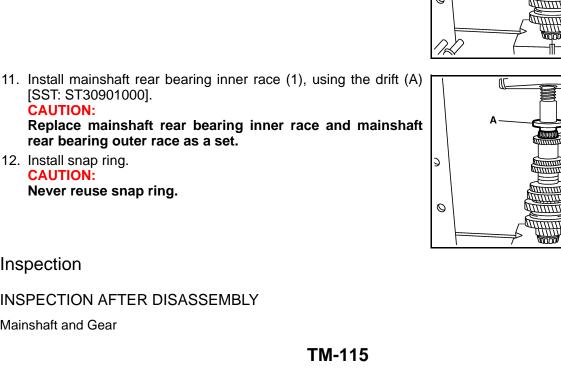
Dimension "L"	Mainshaft adjusting shim thickness
147.690 - 147.666 (5.8146 - 5.8136)	1.500 (0.0591)
147.665 - 147.641 (5.8136 - 5.8126)	1.525 (0.0600)
147.640 - 147.616 (5.8126 - 5.8116)	1.550 (0.0610)
147.615 – 147.591 (5.8116 – 5.8107)	1.575 (0.0620)
147.590 - 147.566 (5.8106 - 5.8097)	1.600 (0.0630)
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)





[6MT: RS6F94R]

Unit: mm (in)

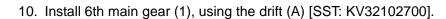


### < UNIT DISASSEMBLY AND ASSEMBLY >

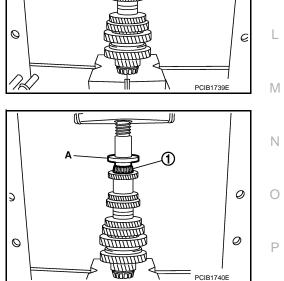
Dimension "L"	Mainshaft adjusting shim thickness
147.490 – 147.466 (5.8067 – 5.8057)	1.700 (0.0669)
147.465 – 147.441 (5.8057 – 5.8048)	1.725 (0.0679)
147.440 - 147.416 (5.8047 - 5.8038)	1.750 (0.0689)
147.415 – 147.391 (5.8037 – 5.8028)	1.775 (0.0699)

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

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



- [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.

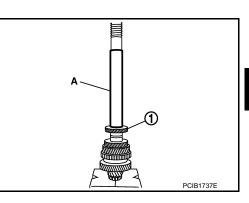


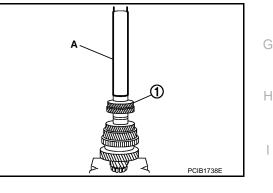
INFOID:000000006415764

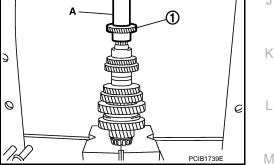
Inspection

### INSPECTION AFTER DISASSEMBLY

Mainshaft and Gear







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### < UNIT DISASSEMBLY AND ASSEMBLY >

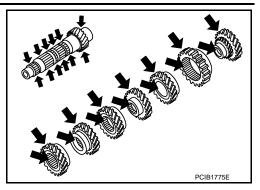
- Check the following items and replace if necessary.
- Damage, peeling, bend, uneven wear, and distortion of shaft.
- Excessive wear, damage, and peeling of gear.

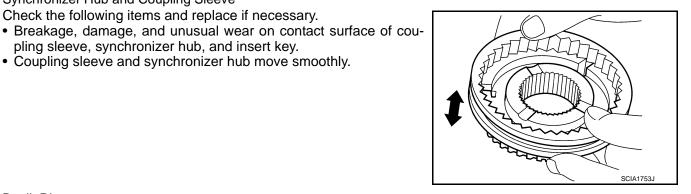
Check the following items and replace if necessary.

pling sleeve, synchronizer hub, and insert key. · Coupling sleeve and synchronizer hub move smoothly.

Synchronizer Hub and Coupling Sleeve

[6MT: RS6F94R]







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.

### **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.



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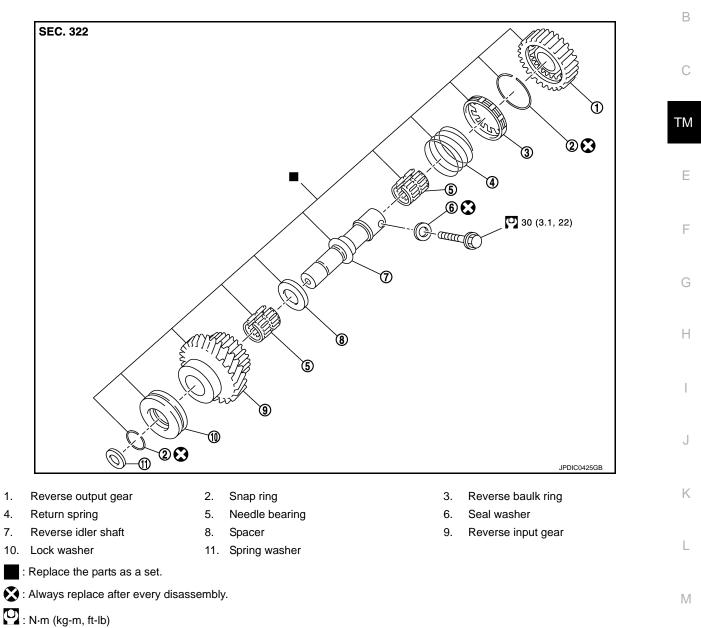
## < UNIT DISASSEMBLY AND ASSEMBLY >

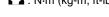
## **REVERSE IDLER SHAFT AND GEAR**

## **Exploded View**

INFOID:000000006415765

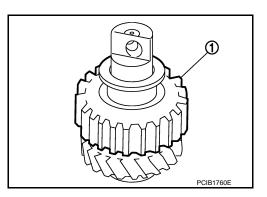
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## Disassembly

1. Remove reverse output gear (1).



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## **REVERSE IDLER SHAFT AND GEAR**

### < UNIT DISASSEMBLY AND ASSEMBLY >

2. Remove snap ring (1).

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

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

INSPECTION AFTER DISASSEMBLY

• Check that snap ring is securely installed in a groove.

idler shaft, spacer, reverse input gear, and lock washer as a set.

Remove needle bearings (1) and washer.

5.

Assembly

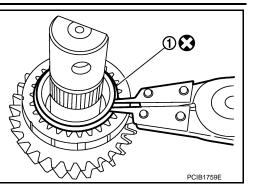
**CAUTION:** 

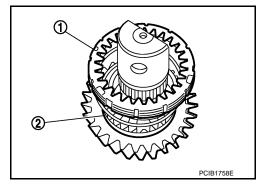
Inspection

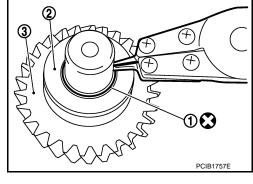
• Never reuse snap ring.

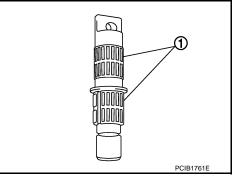
• Replace reverse output gear, snap ring, reverse baulk ring, return spring, needle bearing, reverse

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









INFOID:000000006415767

### INFOID:000000006415768



[6MT: RS6F94R]

## **REVERSE IDLER SHAFT AND GEAR**

### < UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: RS6F94R]

### Shaft and Gear

Check the following items. Replace reverse output gear, snap ring, reverse baulk ring, return spring, needle A 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.

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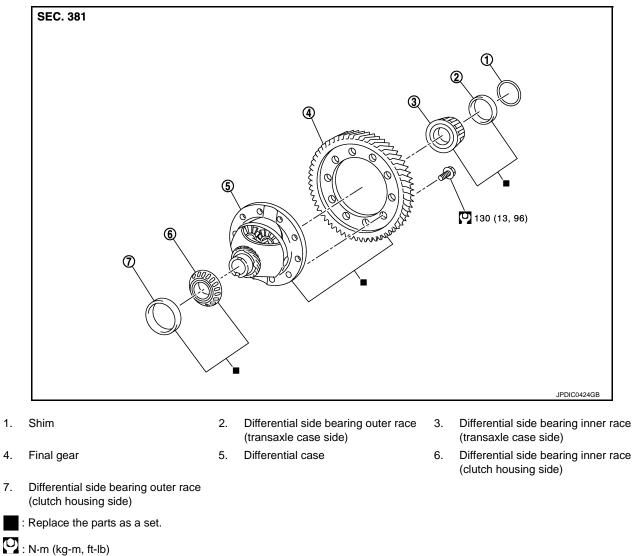
В

## **FINAL DRIVE**

## FINAL DRIVE

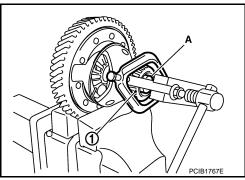
**Exploded View** 

INFOID:000000006415769



### Disassembly

- 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].



INFOID:000000006415770

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

## **FINAL DRIVE**

## < UNIT DISASSEMBLY AND ASSEMBLY >

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].



3.

**CAUTION:** 

Inspection

case side) as a set.

INSPECTION AFTER DISASSEMBLY

Install final gear, and then tighten final gear mounting bolts to the specified torque. 1. **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:** 

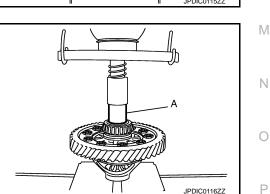
Replace differential side bearing inner race (clutch housing side) and differential side bearing outer race (clutch housing side) as a set.

Install differential side bearing inner race (transaxle case side),

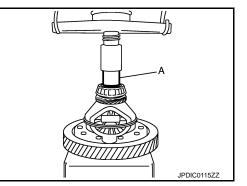
Replace differential side bearing inner race (transaxle case

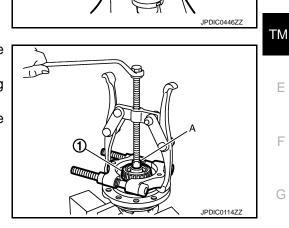
side) and differential side bearing outer race (transaxle

using a drift (A) [Commercial service tool].









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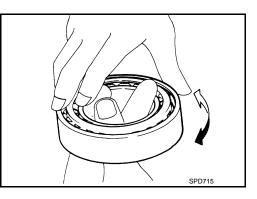
## [6MT: RS6F94R]



### < UNIT DISASSEMBLY AND ASSEMBLY >

### Bearing

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



## SERVICE DATA AND SPECIFICATIONS (SDS)

### < SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS) SERVICE DATA AND SPECIFICATIONS (SDS)

## **General Specifications**

INFOID:000000006415774

Transaxle type			RS6F	-94R
ngine type		MR16DDT	K9K	
Axle type		2WD		
Number of speed			6	3
Synchromesh type	9		War	ner
Shift pattern				3 5 N
Gear ratio	1st		3.3636	PCIB1769E
	2nd		1.94	474
	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	1	1
	Main gear	1st	37	41
		2nd	3	7
		3rd	39	41
		4th	3	9
		5th	32	29
		6th	33	30
		Reverse	4	2
	Reverse idler gear	Input/Output	25/29	28/29
Final gear     Final gear/Pinion       Side gear/Pinion mate gear		Final gear/Pinion	59/14	
		13/10		
Oil capacity (Reference) $\ell$ (Imp pt)		$\ell$ (Imp pt)	Approx. 2	.0 (3-1/2)
Remarks	Reverse synchronize	er	Insta	alled
	Triple-cone synchron	nizer	1st an	d 2nd

[6MT: RS6F94R]

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# < PRECAUTION > PRECAUTION PRECAUTIONS

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. 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:000000006706076

### 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.

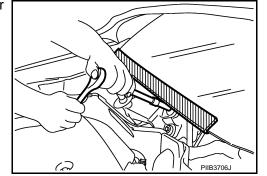
If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

### TM-124

### OPERATION PROCEDURE

- Connect both battery cables.
   NOTE: Supply power using jumper cables if battery is discharged.
- 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



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

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 M 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

## CAUTION: • To replace TCM, refer to <u>TM-178, "Description"</u>. • To replace transaxle assembly, refer to <u>TM-180, "Description"</u>. Precaution for G Sensor Removal/Installation or Replacement INFOLD:00000006706079 P CAUTION: To remove/install or replace G sensor, refer to <u>TM-182, "Description"</u>. Removal and Installation Procedure for CVT Unit Connector INFOLD:00000006601689

REMOVAL

### TM-125

INFOID:000000006706077

INFOID:000000006601687

INFOID:000000006706078

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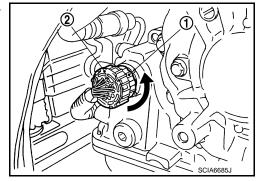
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### < PRECAUTION >

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

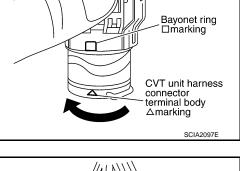
## [CVT: RE0F10B]

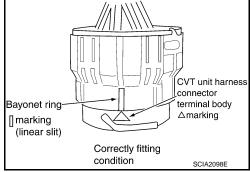


### INSTALLATION

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

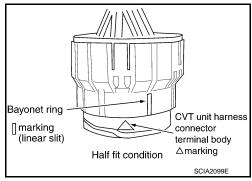
Rotate bayonet ring clockwise until ∆ marking on CVT unit harness connector terminal body is aligned with the slit on bayonet ring as shown in the figure (correctly fitting condition), install CVT unit harness connector to CVT unit harness connector terminal body.





### **CAUTION:**

- Securely align ∆ 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:000000006601690

### NOTE:

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

< PRECAUTION >

break).

· 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.

[CVT: RE0F10B]

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Bend

Perform TCM in-

put/output signal /

inspection before replacement.

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BATTERY

Break

OLD ONE

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SEF289H

SEF291H

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

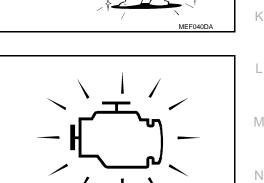
• Before replacing TCM, perform TCM input/output signal inspection and make sure whether TCM functions properly or not. TM-164, "Reference Value".

- 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

- 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".

TM-127



INFOID:000000006601691

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### 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 <u>PG-4</u>.

## ATFTEMP COUNT Conversion Table

INFOID:000000006601692

ATFTEMP COUNT	Temperature °C (°F)	ATFTEMP COUNT	Temperature °C (°F)	
4	-30 (-22) 177		90 (194)	
8	-20 (-4)	-20 (-4) 183 9		
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

## [CVT: RE0F10B]

## < PREPARATION > PREPARATION

## PREPARATION

## Special Service Tool

INFOID:000000006601693

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Tool number Tool name		Description
1. ST25054000 Adapter 2. ST25055000 Adapter	SCIAB372J	Measuring line pressure
KV31103600 Joint pipe adapter (With ST25054000)		Measuring line pressure
ommercial Service Tool	ZZA1227D	INF0/D:000000006
Tool number		
Tool name		Description
		Loosening nuts and bolts
Power tool	PBIC0190E	Loosening nuts and bolts
		Loosening nuts and bolts Measuring line pressure
Power tool Oil pressure gauge set 1. Oil pressure gauge 2. Hose	PBICO190E	

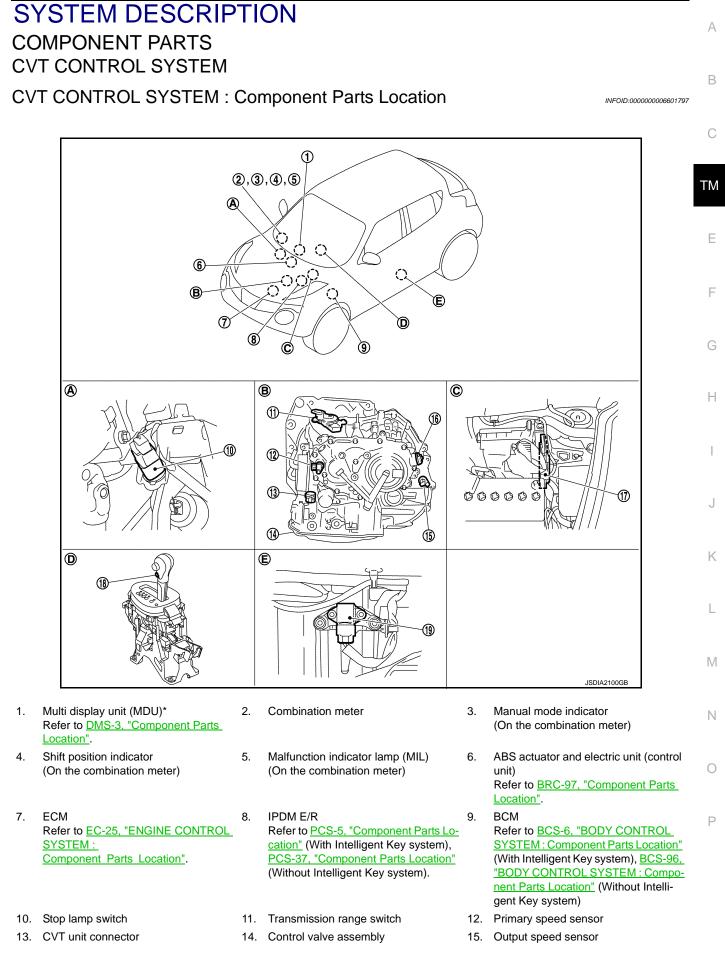
## PREPARATION

### < PREPARATION >

Tool number Tool name		Description
Drift a: 56 mm (2.20 in) dia. b: 50 mm (1.97 in) dia.	a b MT115	Installing differential side oil seal
Drift a: 60 mm (2.36 in) dia. b: 55 mm (2.17 in) dia.	a b NT115	Installing converter housing oil seal

< SYSTEM DESCRIPTION >

### [CVT: RE0F10B]



TM-131

### < SYSTEM DESCRIPTION >

- 16. Secondary speed sensor
- 19. G sensor
- A. Brake pedal, upper
- D. CVT shift selector assembly
- B. Transaxle assembly

17. TCM

- E. Driver seat (LHD) or passenger seat (RHD), under
- 18. S mode switch
  - C. Engine room 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:000000006601798

Name	Function
ТСМ	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	<ul> <li>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)</li> <li>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.</li> <li>The TCM receives the following signal via CAN communications from the ECM for judging the vehicle driving conditions.</li> <li>Engine speed signal</li> <li>Accelerator pedal position signal</li> <li>TCM sends and receives the following signals with ECM through CAN communication to perform D position N idle control.</li> <li>N idle instruction signal</li> </ul>
ВСМ	<ul> <li>The TCM receives the following signal via CAN communications from the BCM for judging the vehicle driving conditions.</li> <li>Stop lamp switch signal</li> <li>Turn indicator signal</li> </ul>

### < SYSTEM DESCRIPTION >

### [CVT: RE0F10B]

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INFOID:000000006601799

INFOID:000000006601800

INFOID:000000006601803

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

\*: With Nissan Dynamic Control System

## CVT CONTROL SYSTEM : TCM

• 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.

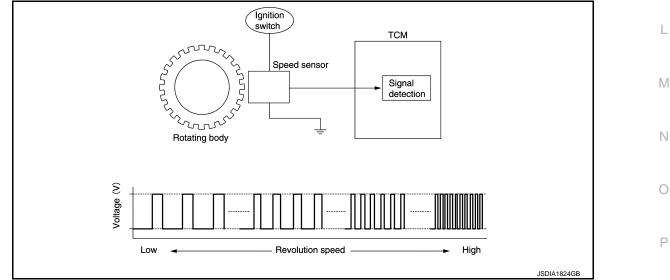
For TCM control items, refer to <u>TM-144</u>, "CVT CONTROL SYSTEM : System Description".

### **CVT CONTROL SYSTEM : Transmission Range Switch**

- 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

- 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 k rotating speed from the changing cycle of this pulse signal.



## CVT CONTROL SYSTEM : Primary Speed Sensor

INFOID:000000006601801

• The primary speed sensor is installed to side cover of transaxle.

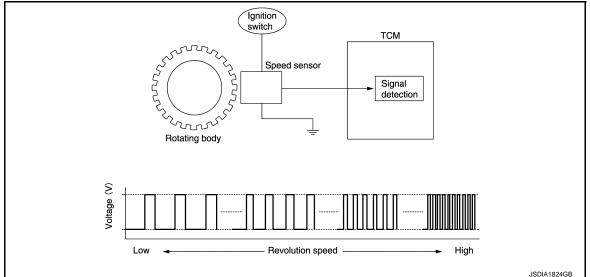
The primary speed sensor detects primary pulley speed.

## TM-133

### < SYSTEM DESCRIPTION >

### [CVT: RE0F10B]

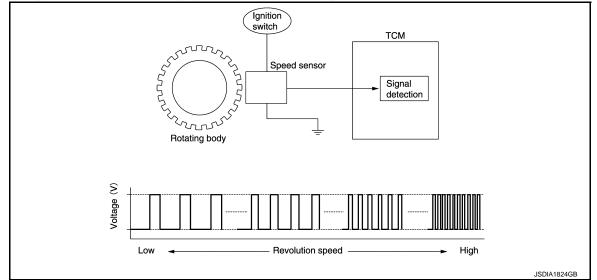
• The primary speed sensor generates the ON-OFF pulse (short waveform) in proportion to the rotating body speed which is "The higher the rotating body speed is, the faster the change cycle is". The TCM judges the rotating speed from the changing cycle of this pulse signal.



## CVT CONTROL SYSTEM : Secondary Speed Sensor

INFOID:000000006601802

- 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:000000006601804

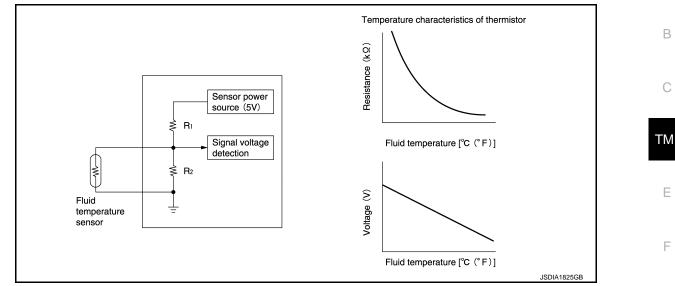
- The CVT fluid temperature sensor is installed to control valve.
- The CVT fluid temperature sensor detects CVT fluid temperature in oil pan.

### < SYSTEM DESCRIPTION >

### [CVT: RE0F10B]

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• 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.

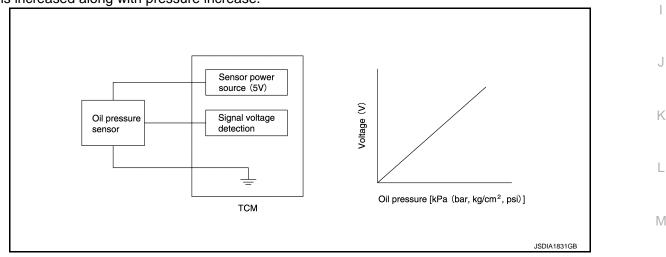


## **CVT CONTROL SYSTEM : Secondary Pressure Sensor**

INFOID:000000006601805

Н

- 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:000000006601810

- 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 <u>TM-141</u>, "<u>TRANSAXLE</u>: <u>Component Description</u>".
- 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:000000006601809

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

## TM-135

### < SYSTEM DESCRIPTION >

- 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

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

- · 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

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

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

[CVT: RE0F10B]

INFOID:000000006601811

INFOID:000000006601807

INFOID:000000006601814

INFOID:000000006601812

### < SYSTEM DESCRIPTION >

1.

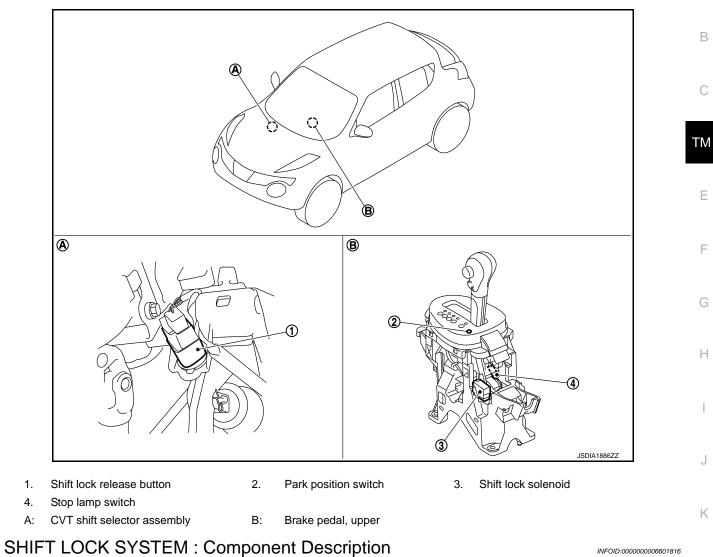
4.

## SHIFT LOCK SYSTEM : Component Parts Location

## [CVT: RE0F10B]

INFOID:000000006601815

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INFOID:000000006601816

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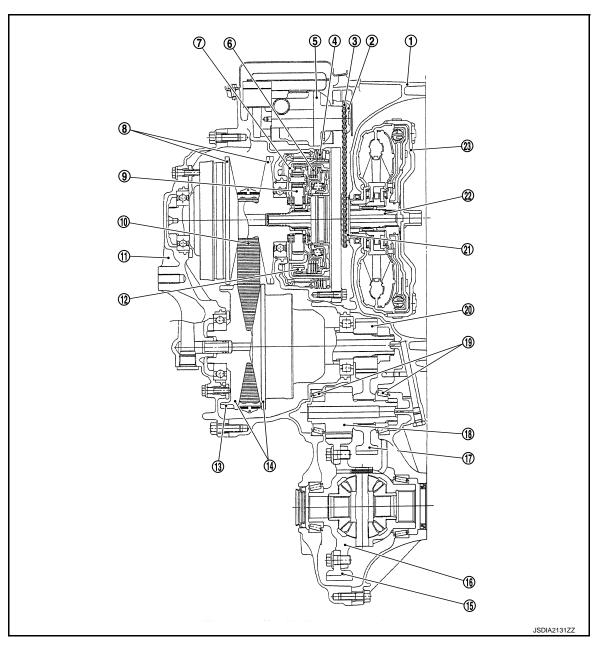
Component	Function
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
Lock lever	<ul> <li>Rotates according to shift lock solenoid activation and releases the shift lock.</li> <li>If shift lock solenoid does not activate, lock lever can be rotated when shift lock release button is pressed and shift lock is released.</li> </ul>
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	<ul> <li>The stop lamp switch turns ON when the brake pedal is depressed.</li> <li>When the stop lamp switch turns ON, the shift lock solenoid is energized.</li> </ul>

< SYSTEM DESCRIPTION >

# STRUCTURE AND OPERATION TRANSAXLE

TRANSAXLE : Cross-Sectional View

INFOID:000000006601549



- 1. Converter housing
- 4. Reverse brake
- 7. Planetary carrier
- 10. Steel belt
- 13. Parking gear
- 16. Differential case
- 19. Taper roller bearing
- 22. Input shaft

- 2. Driven sprocket
- 5. Oil pump
  - 8. Primary pulley
- 11. Side cover
- 14. Secondary pulley
- 17. Idler gear
- 20. Output gear
- 23. Torque converter

- 3. Chain
- 6. Forward clutch
- 9. Sun gear
- 12. Internal gear
- 15. Final gear
- 18. Reduction gear
- 21. Drive sprocket

### < SYSTEM DESCRIPTION >

### **TRANSAXLE** : Operation Status

INFOID:000000006601818

[CVT: RE0F10B]

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×: Engaged or applied.

Slector le- ver posi- tion	Parking mecha- nism	Counter gear set	Low brake	High clutch	Reverse brake	Primary pulley	Secondary pulley	Steel belt	Reduction gear set	В
Р	×	×				×	×	×		
R		×			×	×	×	×	×	С
Ν		×				×	×	×		
D		×	$\times$ (1GR)	imes (2GR)		×	×	×	×	ТМ
L		×	$\times$ (1GR)	imes (2GR)		×	×	×	×	

## **TRANSAXLE** : Transaxle Mechanism

### **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

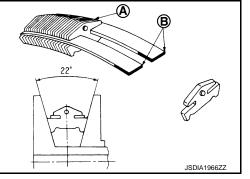
It is composed of multiple steel plates (A) and two steel rings (B) stacked to a several number. The feature of this steel belt transmits power with compression of the steel plate in contrast with transmission of power in pulling with a rubber belt. Friction force is required with the pulley slope to 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.  $\Rightarrow$ The plate is pushed and extended outward.  $\Rightarrow$ The steel ring shows withstands.  $\Rightarrow$ Pulling force is generated on the steel ring.  $\Rightarrow$ The plate of the primary pulley is nipped between the pulley.  $\Rightarrow$  Friction force is generated between the steel belt and the pulley.

Therefore, responsibilities are divided by the steel plate that trans-

mits 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



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L

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INFOID:000000006601819

Ε

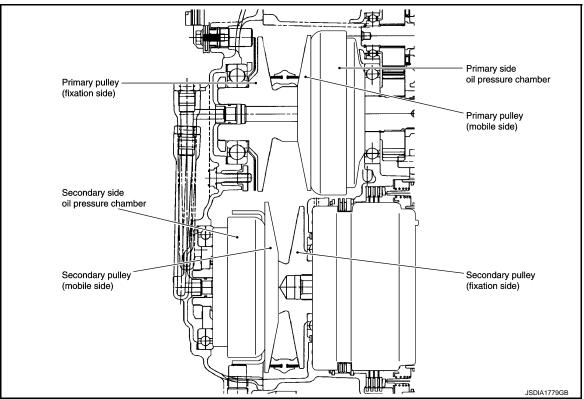
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### < SYSTEM DESCRIPTION >

### [CVT: RE0F10B]

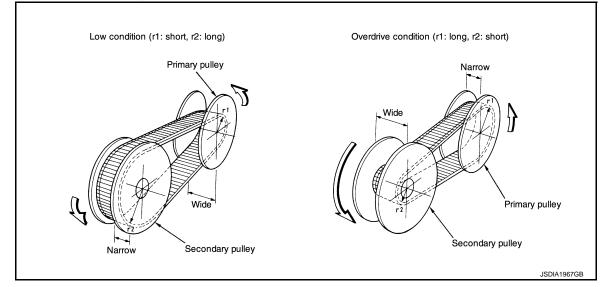
The primary pulley (input shaft side) and the secondary pulley (output shaft side) have the shaft with slope (fixed cone surface), movable sheave (movable cone surface that can move in the axial direction) and oil pressure chamber at the back of the movable sheave.



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.

### TM-140

### < SYSTEM DESCRIPTION >

### [CVT: RE0F10B]

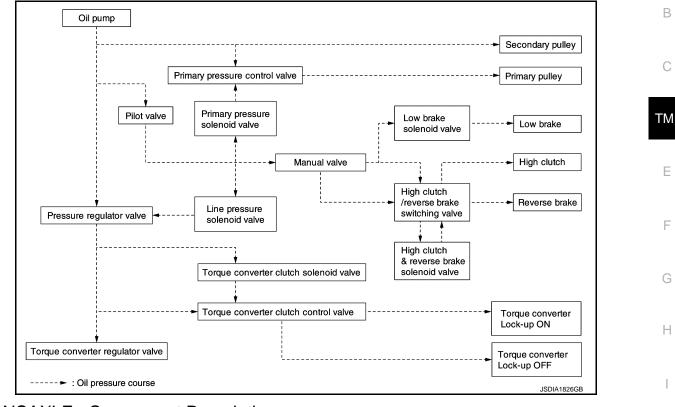
## TRANSAXLE : Oil Pressure System

INFOID:000000006601820

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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:000000006601821

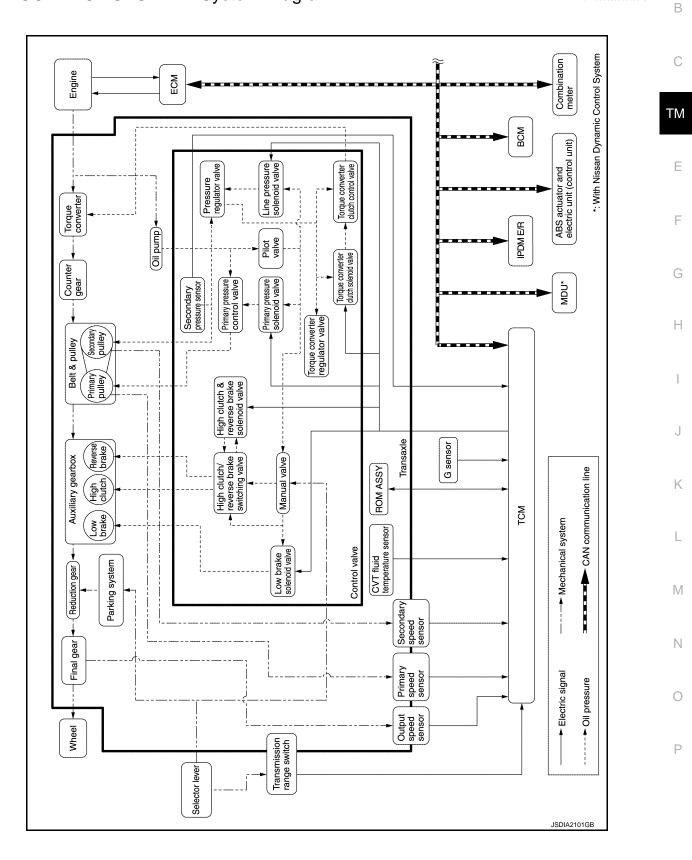
Part name	Function
Torque converter	It is composed of the cover converter, turbine assembly, stator, pump impeller assembly, etc. It increases the engine torque and transmits the power to the transaxle.
Oil pump	Through the oil pump drive chain, it uses the vane oil pump driven by the engine. It generates 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 transmis- sion)	It is composed of the primary pulley, secondary pulley, steel belt, etc. and the mecha- nism 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 (in- tegrated 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 correspond- ing to the driving condition.

### < SYSTEM DESCRIPTION >

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 tighten- ing 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** 



[CVT: RE0F10B]

INFOID:000000006601822

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TM-143

### < SYSTEM DESCRIPTION >

## CVT CONTROL SYSTEM : System Description

INFOID:000000006601823

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)		ТСМ		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*	⇒	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 con- trol	Idle neu- tral con- trol	Lock-up control	CAN com- munica- tion control	Fail-safe function <sup>*3</sup>
Input	Transmission range switch	Х	Х	Х		Х	Х	Х
	Accelerator pedal position signal *1	Х	Х	Х		Х	Х	Х
	Closed throttle position signal <sup>*1</sup>	Х		Х		Х	Х	
	Engine speed signal <sup>*1</sup>	Х	Х			Х	Х	Х
	CVT fluid temperature sensor	Х	Х	Х		Х		Х
	Manual mode switch signal <sup>*1</sup>	Х		Х		Х	Х	
	Stop lamp switch signal <sup>*1</sup>	Х		х	Х	Х	х	Х
	Primary speed sensor	Х		Х		Х	Х	Х
	Secondary speed sensor	Х	Х	Х		Х	Х	Х
	Secondary pressure sensor	Х		Х				Х
	G sensor				Х			Х
	turn signal				Х			Х
Out- put	Step motor			Х				Х
	TCC solenoid valve		Х			Х		Х
	Lock-up select solenoid valve		Х			Х		Х
	Line pressure solenoid valve	Х	Х	Х				Х
	Secondary pressure solenoid valve	Х		Х				Х
	Maual mode indicator signal <sup>*2</sup>			Х			Х	

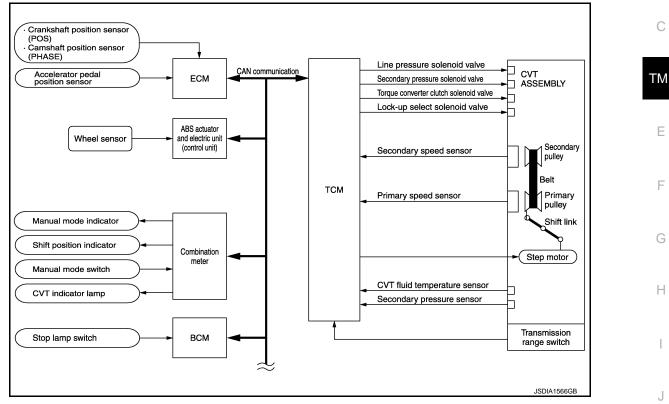
#### < SYSTEM DESCRIPTION >

\*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



# CVT CONTROL SYSTEM : Fail-safe

INFOID:000000006765949

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	_	<ul><li>Start is slow</li><li>Acceleration is slow</li></ul>
P0705	_	<ul> <li>Position indicator on combination meter is not displayed</li> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration at high load state is slow</li> <li>Manual mode is not activated</li> <li>Lock-up is not performed</li> </ul>

**SYSTEM** 

INFOID:000000006706113

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В

# < SYSTEM DESCRIPTION >

DTC	Co	ndition	Vehicle behavior	
	Engine coolant temperature	Open circuit is detected while ignition switch is OFF	<ul><li>Selector shock is large</li><li>Low is fixed</li></ul>	
P0710	when engine starts is 10°C (50°F) or more	Other than the above	<ul> <li>Selector shock is large</li> <li>Engine speed is high in middle and high speed range</li> </ul>	
10/10	Engine coolant temperature (50°F) or less	when engine starts is 10°C	<ul><li>Start is slow</li><li>Acceleration is slow</li><li>Vehicle speed is not increased</li></ul>	
	Engine coolant temperature 31°F) or less	when engine starts is –35°C (–	Vehicle speed is not increased	
P0715		_	<ul> <li>Re-acceleration is slightly slow</li> <li>Re-start is slow after vehicle is stop by strong de celeration</li> <li>Manual mode is not activated</li> <li>Lock-up is not performed</li> </ul>	
P0715		_	Idle neutral control is not performed	
P0720		_	<ul> <li>Start is slow</li> <li>Re-acceleration is slow</li> <li>Re-start is slow after vehicle is stop by strong deceleration</li> <li>Manual mode is not activated</li> <li>Lock-up is not performed</li> </ul>	
P0725		_	Lock-up is not performed	
P0740			<ul><li>Selector shock is large</li><li>Lock-up is not performed</li></ul>	
P0744	_		Lock-up is not performed	
P0746	A malfunction is detected		<ul><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	
1 07 40	Function is excessively reduced	ced after a malfunction is detect-	<ul><li>Start is difficult</li><li>Drive is difficult</li><li>Lock-up is not performed</li></ul>	
P0778		_	Engine speed is high in middle and high speed range	
P0826		_	Manual mode is not activated	
P0840		_	<ul><li>Start is slow</li><li>Acceleration at high load state is slow</li></ul>	
P0841	_		<ul><li>Start is slow</li><li>Acceleration is slow</li></ul>	
P0868	_		<ul> <li>Start is slow</li> <li>Acceleration is slow (Slow acceleration is subject to secondary pressure that is recognized by TCM)</li> </ul>	
P1585	_		Idle neutral control is not performed	
P1701	_		<ul><li>Start is slow</li><li>Acceleration at high load state is slow</li></ul>	
P1705		_	<ul><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	
P1722		_	Lock-up is not activated in coast state	

#### < SYSTEM DESCRIPTION >

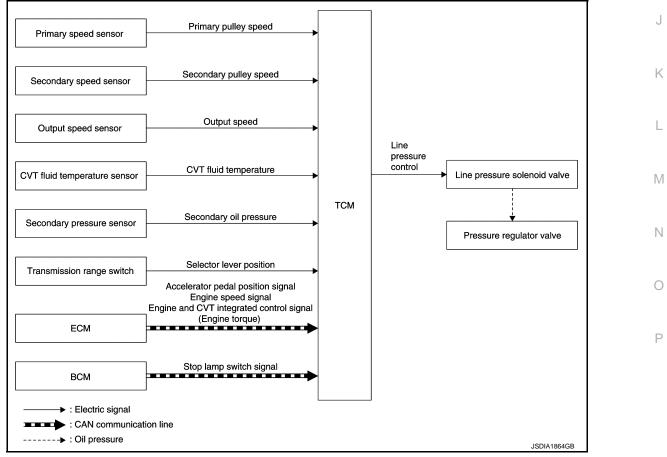
#### [CVT: RE0F10B]

INFOID:000000006601826

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

# LINE PRESSURE CONTROL

# LINE PRESSURE CONTROL : System Diagram



< SYSTEM DESCRIPTION >

# LINE PRESSURE CONTROL : System Description

INFOID:00000006601827

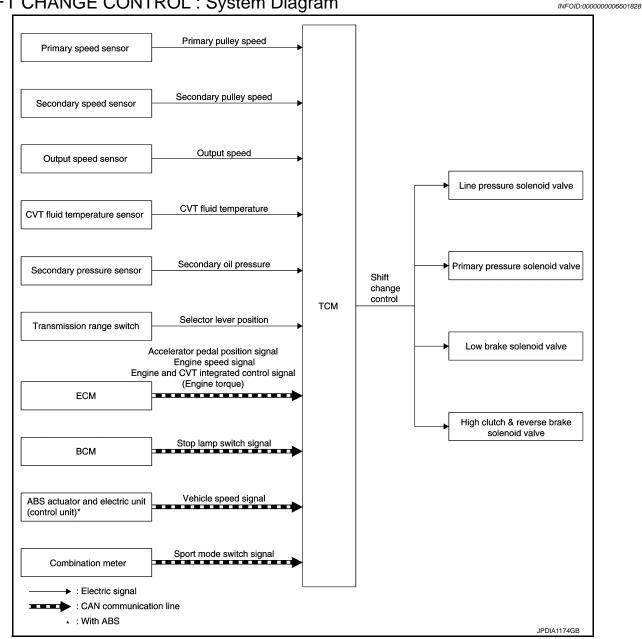
Highly accurate line pressure control (secondary pressure control) reduces friction for improvement of fuel economy.

#### 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

#### < SYSTEM DESCRIPTION >

# SHIFT CHANGE CONTROL : System Description

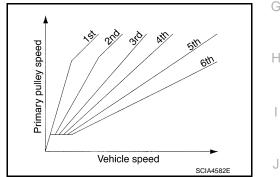
To select the gear ratio that can give the driving force to meet driver's intent or vehicle situation, the vehicle driving condition such as vehicle speed or accelerator pedal position is detected and the most appropriate gear ratio is selected and the shifting method before reaching the speed is determined.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

#### D POSITION

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..



Shift area

Gear ratio : highest

Vehicle speed

lowest

Gear ratio :

Primary pulley speed

#### 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.

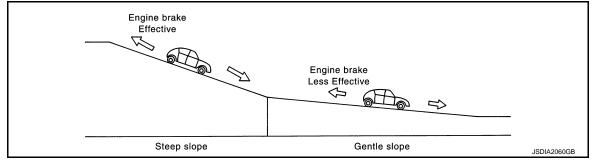
When the selector lever or the paddle shifter shifts to "UP (+ side)" side while driving in M6.

#### 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

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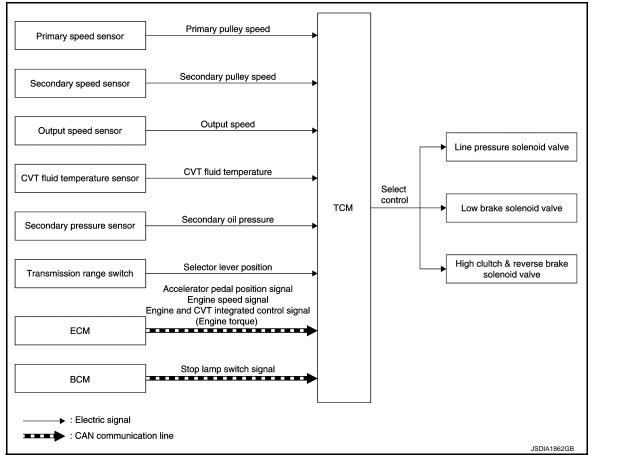
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#### < SYSTEM DESCRIPTION >

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



# SELECT CONTROL : System Description

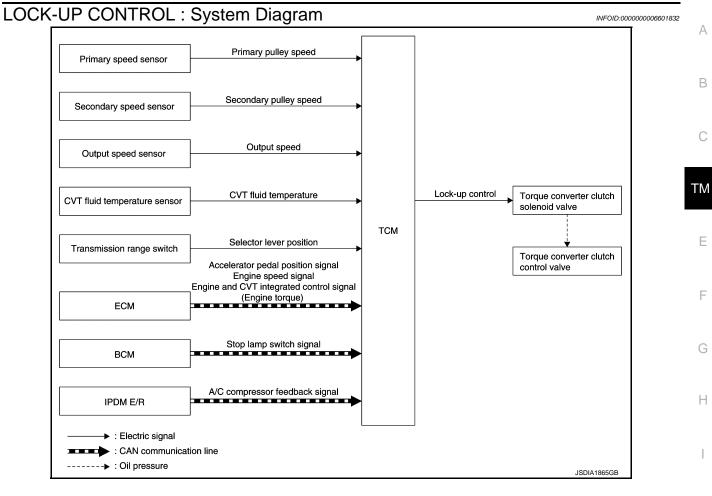
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Based on accelerator pedal angle, engine speed, primary pulley speed, and the secondary pulley speed, the optimum operating pressure is set to reduce impact of a selector lever operation while shifting from "N" ("P") to "D" ("R") position.

LOCK-UP CONTROL

INFOID:000000006601830

# [CVT: RE0F10B]



# LOCK-UP CONTROL : System Description

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

#### Lock-up engagement

< SYSTEM DESCRIPTION >

 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

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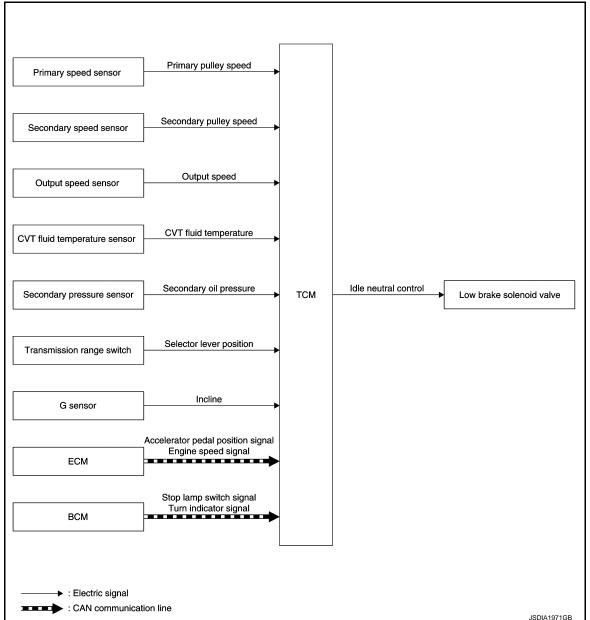
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#### < SYSTEM DESCRIPTION >

# IDLE NEUTRAL CONTROL : System Diagram



# IDLE NEUTRAL CONTROL : System Description

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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)

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#### < SYSTEM DESCRIPTION >

#### [CVT: RE0F10B]

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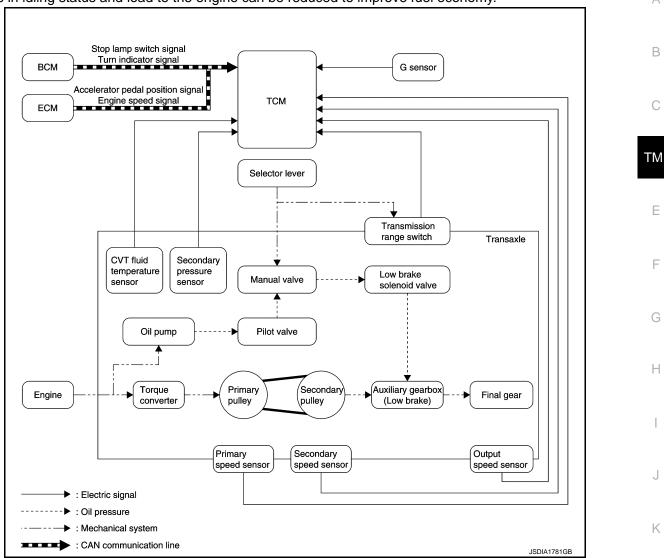
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status and the power transmission route of transaxle is the same status as the N position. In this way, the transaxle is in idling status and load to the engine can be reduced to improve fuel economy.



#### 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	$\mathbb{M}$
Selector lever position	: "D" position	
Vehicle speed	: 0 km/h (0 MPH)	
Accelerator pedal position	: 0.0/8	Ν
Brake pedal	: Depressed	
Engine speed	: Idle speed	
Turn signal lamp/hazard signal lamp	: Not activated	0

#### 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

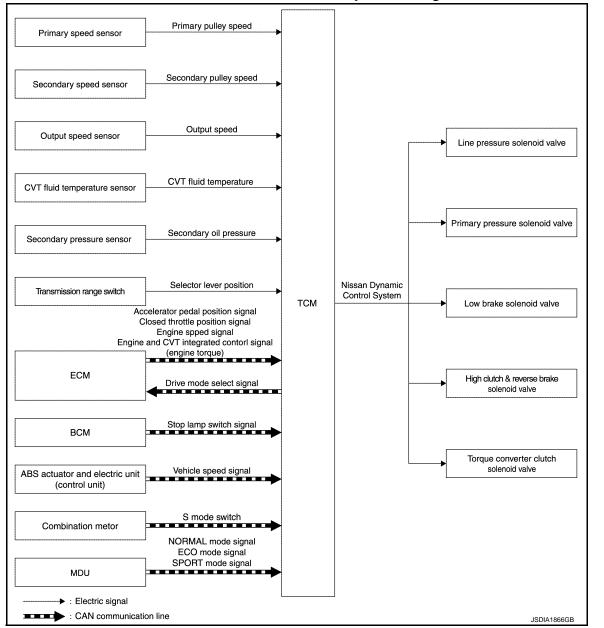
#### < SYSTEM DESCRIPTION >

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

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# LOCK-UP AND SELECT CONTROL SYSTEM : System Description

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- 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

#### < SYSTEM DESCRIPTION >

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Control mode	Control	A
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.	В
ECO mode	Driving mode that selects the shift schedule with priority on fuel economy which gives low engine revo- lution.	С

#### 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 ТΜ when the accelerator pedal is released.

# SHIFT LOCK SYSTEM

# SHIFT LOCK SYSTEM : System Description

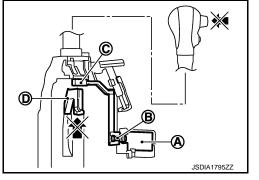
- The shift lock is the mechanism provided to prevent quick start of a vehicle by incorrect operation of a drive when the selector lever is in P position.
- · Selector lever can be shifted from the P position to another position when the following conditions are satisfied.
- Ignition switch is ON.
- Stop lamp switch ON (brake pedal is depressed)
- Press the selector button.

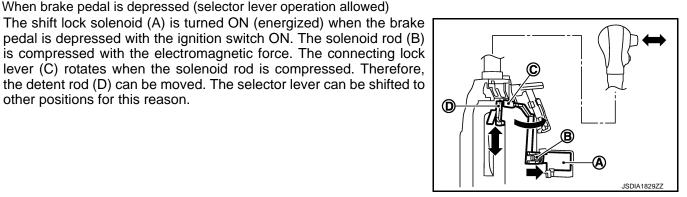
other positions for this reason.

#### 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.





P POSITION HOLD MECHANISM (IGNITION SWITCH LOCK)

#### < SYSTEM DESCRIPTION >

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.

# KEŸ LOCK SYSTEM

# KEY LOCK SYSTEM : System Description

# 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.

SYSTEM

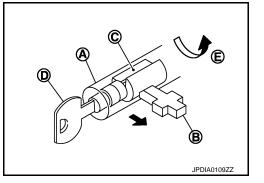
#### Key lock status

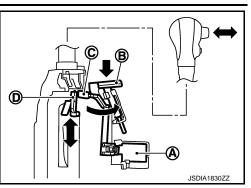
The slider (B) in the key cylinder (A) is moved to the left side of the figure when the selector lever is in any position other than P position. The rotator (D) that rotates together with the key (C) cannot be rotated for this reason. The key cannot be removed from the key cylinder because it cannot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





# [CVT: RE0F10B]

INFOID:000000006601839

## ON BOARD DIAGNOSTIC (OBD) SYSTEM

#### < SYSTEM DESCRIPTION >

# ON BOARD DIAGNOSTIC (OBD) SYSTEM

### Diagnosis Description

#### 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 <u>TM-159</u>. "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 G 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 recom-
- mended.
- 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 <u>EC-83, "CONSULT-III Function"</u>.

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# ON BOARD DIAGNOSTIC (OBD) SYSTEM

#### < SYSTEM DESCRIPTION >

[CVT: RE0F10B]

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 dataMisfire — DTC: P0300 - P0304Fuel 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 <u>EC-108, "DTC Index"</u>.
- 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.

I How to Erase DTC (With GST)

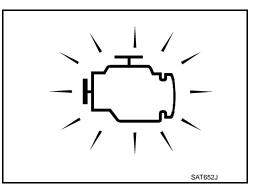
- 1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- 2. Select Mode 4 with GST (Generic Scan Tool). For details, refer to EC-83. "CONSULT-III Function".

#### 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 <u>EC-436</u>, "Component <u>Function Check"</u>.
- 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.



#### < SYSTEM DESCRIPTION >

# **DIAGNOSIS SYSTEM (TCM)**

# CONSULT-III Function (TRANSMISSION)

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

Conditions	Function	С
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.	ТМ
CAN Diagnosis	This mode displays a network diagnosis result about CAN by a diagram.	
CAN Diagnosis Support Mon- itor	It monitors the status of CAN communication.	E
Function Test*	This mode can show results of self-diagnosis of ECU with either "OK" or "NG". For engines, more prac- tical tests regarding sensors/switches and/or actuators are available.	F
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 cont	rol is activated)
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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. L 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:	Ν
It is necessary to change CVT fluid.	
Less than 210000:	$\cap$
It is not necessary to change CVT fluid.	0
CAUTION: Touch "CLEAR" after changing CVT fluid, and then erase "CVTF DETERIORATION DATE".	Р
SELF-DIAGNOSTIC RESULT MODE Refer to <u>TM-171, "DTC Index"</u> .	

DATA MONITOR MODE

**Display Items List** 

# **TM-159**

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# **DIAGNOSIS SYSTEM (TCM)**

#### < SYSTEM DESCRIPTION >

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

# **DIAGNOSIS SYSTEM (TCM)**

#### < SYSTEM DESCRIPTION >

# [CVT: RE0F10B]

		Monitor item selection		
Monitored item (Unit)	(Unit)	MAIN SIGNALS	ECU IN- PUT SIG- NALS	Remarks
ISOLT3	(A)	Х	▼	Secondary pressure solenoid valve output current
SOLMON1	(A)	Х	Х	Torque converter clutch solenoid valve monitor current
SOLMON2	(A)	Х	Х	Line pressure solenoid valve monitor current
SOLMON3	(A)	Х	Х	Secondary pressure solenoid valve monitor current
BRAKE SW	(On/Off)	Х	х	Displays the reception status of the stop lamp switch sig- nal received through CAN communication.
FULL SW	(On/Off)	Х	Х	Not mounted but displayed.
IDLE SW	(On/Off)	Х	х	Displays the reception status of the closed throttle posi- tion signal received through CAN communication.
SPORT MODE SW	(On/Off)	x	х	<ul><li>Displays the reception status of the sport mode switch signal received through CAN communication.</li><li>It is displayed although not equipped.</li></ul>
STRDWNSW	(On/Off)	▼	Х	<ul><li>Displays the operation status of the paddle shifter (down switch).</li><li>It is displayed although not equipped.</li></ul>
STRUPSW	(On/Off)	•	х	<ul><li>Displays the operation status of the paddle shifter (up switch).</li><li>It is displayed although not equipped.</li></ul>
DOWNLVR	(On/Off)	▼	х	Displays the operation status of the selector lever (down switch).
UPLVR	(On/Off)	▼	х	Displays the operation status of the selector lever (up switch).
NONMMODE	(On/Off)	▼	х	Displays if the selector lever position is not at the manual shift gate.
MMODE	(On/Off)	▼	х	<ul><li>Displays if the selector lever position is at the manual shift gate.</li><li>It is displayed although not equipped.</li></ul>
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)	▼	▼	<ul> <li>Displays the transmission status of the S mode indicator signal transmitted through CAN communication.</li> <li>It is displayed although not equipped.</li> </ul>
MMODE IND	(On/Off)	▼	▼	Displays the transmission status of the manual mode sig- nal 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

# **DIAGNOSIS SYSTEM (TCM)**

#### < SYSTEM DESCRIPTION >

### [CVT: RE0F10B]

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

< SYSTEM DESCRIPTION > [CVT: REOF10B] Diagnostic Tool Function © OBD SELF-DIAGNOSTIC PROCEDURE (WITH GST) Refer to EC-72. "Diagnosis Description".

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# < ECU DIAGNOSIS INFORMATION > ECU DIAGNOSIS INFORMATION

# ТСМ

# **Reference Value**

# 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
	CVT fluid: Approx. 20°C (68°F)	Approx. 2.01 – 2.05 V
ATF TEMP SEN	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 speedom- eter 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
	Vehicle stopped	Approx. 0.00 G
G SPEED	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 acceler- ator 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
	CVT fluid: Approx. 20°C (68°F)	47
ATFTEMP COUNT <sup>*1</sup>	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

### < ECU DIAGNOSIS INFORMATION >

### [CVT: RE0F10B]

Item name	Condition	Display value (Approx.)	
	<ul><li>Engine started</li><li>Vehicle is stopped.</li></ul>	Approx. –0.500 MPa	- A
LU PRS	<ul> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 20 km/h (12 MPH) or more</li> </ul>	Approx. 0.450 MPa	В
LINE PRS	<ul> <li>After engine warm up</li> <li>Selector lever: "N" position</li> <li>At idle</li> </ul>	Approx. 0.500 MPa	С
LINE PRS	<ul> <li>After engine warm up</li> <li>Selector lever: "N" position</li> <li>Depress the accelerator pedal fully</li> </ul>	Approx. 4.400 – 4.900 MPa	ТМ
TGT SEC PRESS	<ul> <li>After engine warm up</li> <li>Selector lever: "N" position</li> <li>At idle</li> </ul>	Approx. 0.700 MPa	E
	Lock-up "OFF"	Approx. 0.0 A	-
ISOLT1	Lock-up "ON"	Approx. 0.7 A	F
	Release your foot from the accelerator pedal	Approx. 0.8 A	_ 1
ISOLT2	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	G
001 110114	Lock-up "OFF"	Approx. 0.0 A	_
SOLMON1	Lock-up "ON"	Approx. 0.7 A	-
	"N" position idle	Approx. 0.8 A	- H
SOLMON2	When stalled	Approx. 0.3 – 0.6 A	-
	"N" position idle	Approx. 0.6 – 0.7 A	-
SOLMON3	When stalled	Approx. 0.4 – 0.6 A	-
	Depressed brake pedal	On	-
BRAKE SW	Released brake pedal	Off	J
	Fully depressed accelerator pedal	ON	-
FULL SW	Released accelerator pedal	Off	K
	Released accelerator pedal	On	-
IDLE SW	Fully depressed accelerator pedal	Off	-
SPORT MODE SW	Always	Off	- L
STRDWNSW	Always	Off	-
STRUPSW	Always	Off	M
	Selector lever: - side	On	
DOWNLVR	Other than the above	Off	-
	Selector lever: + side	On	N
UPLVR	Other than the above	Off	-
	Manual shift gate position (neutral, +side, -side)	Off	-
NONMMODE	Other than the above	On	0
	Manual shift gate position (neutral)	On	_
MMODE	Other than the above	Off	P
INDLRNG	Always	Off	_
	Selector lever in "D" position	On	_
INDDRNG	When setting selector lever to other positions	Off	_
	Selector lever in "N" position	On	-
INDNRNG	When setting selector lever to other positions	Approx. 0.8 A           Approx. 0.3 – 0.6 A           Approx. 0.4 – 0.6 A           On           Off           ON           Off           ON           Off           On           Off           Off           Off	-

#### < ECU DIAGNOSIS INFORMATION >

Item name	Condition	Display value (Approx.)
NDRRNG	Selector lever in "R" position	On
INDRKING	When setting selector lever to other positions	Off
INDPRNG	Selector lever in "P" position	On
INDPRING	When setting selector lever to other positions	On           Off           Changes On ⇔ Off           Changes On ⇔ Off           Changes On ⇔ Off           Changes On ⇔ Off           On           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 $\Leftrightarrow$ Off
SMCOIL C	During driving	Changes On $\Leftrightarrow$ Off
SMCOIL B	During driving	Changes On $\Leftrightarrow$ Off
SMCOIL A	During driving	Changes On $\Leftrightarrow$ Off
	Selector lever in "P", "N" positions	On
LUSEL SOL OUT	Wait at least for 5 seconds with the selector lever in "R", "D" positions	Off
	Selector lever in "P", "N" positions	On
LUSEL SOL MON	Wait at least for 5 seconds with the selector lever in "R", "D" positions	Off
	ESP is activated	On
/DC ON	Other conditions	Off
TCS ON	Always	Off
ABS ON	ABS is activated	On
AB2 ON	Other conditions	Off
ACC ON	Always	Off
	Selector lever in "N" or "P" position	N·P
RANGE	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	When setting selector lever to other positions         Off           Selector lever in "P" position         On           When setting selector lever to other positions         Off           Approx. 2 seconds after ignition switch ON         On           Other conditions         Off           Always         Off           In manual mode         On           Other conditions         Off           During driving         Changes On $\Leftrightarrow$ O           Selector lever in "P", "N" positions         On           Wait at least for 5 seconds with the selector lever in "R", "D" positions         Off           ESP is activated         On           Other conditions         Off           Always         Off           Always         Off           Selector lever in "N" or "P" position         N.P           Selector lever in "N" or "P" position         N.P           Selector lever in "N" or "P" position         Off           Always         Off           Selector lever in "N" or "P" position         N.P           Selector lever in "N" or "P" position         On	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
POSITION SW	Always	Off
ECO SW	Always	Off
	Nissan Dynamic Control System: NORMAL mode	NORMAL
DRIVE MODE STATS <sup>*2</sup>	Nissan Dynamic Control System: ECO mode	ECO
	Nissan Dynamic Control System: SPORT mode	SPORT
	Nissan Dynamic Control System: SPORT mode	N·P           R           D           1, 2, 3, 4, 5, 6           On           Off           Off           On           Off           On           Off           On           Off           On           Off           ORMAL           ECO           SPORT           On
SPORT MODE <sup>*2</sup>	Other conditions	Off

#### < ECU DIAGNOSIS INFORMATION >

Item name	Condition	Display value (Approx.)	
	Nissan Dynamic Control System: NORMAL mode	On	А
NORMAL MODE <sup>*2</sup>	Other conditions	Off	
	Nissan Dynamic Control System: ECO mode	On	В
ECO MODE <sup>*2</sup>	Other conditions	Off	
SNOW MODE <sup>*2</sup>	Always	Off	
*1. Maana CV/T fluid tompara	ture. Convert numerical values for actual fluid temperature of	C (°E) Defer to TM 129 "ATETEMD COUNT	(

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

# TERMINAL LAYOUT



SCIA6679J

### PHYSICAL VALUES

Terminal No. (wire color) Description		Description		Condition	Value (Approx.)			
+	_	Signal name	Input/Output			Input/Output		
1	Ground	R RANGE SW	Input		Selector lever in "R" position	10 – 16 V		
(G)	Ground	K NANGE SW	mput		Other than the above position	0 V		
2	Ground	N RANGE SW	Input	Ignition switch	Selector lever in "N" position	10 – 16 V		
(Y)	Ground	N RANGE SW	mput	ON	Other than the above position	0 V		
3	Ground	D RANGE SW	Input		Selector lever in "D" positions	10 – 16 V		
(W)	Ground		mput		Other than the above position	0 V		
4 <sup>*1</sup> (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	Ground	P RANGE SW	Input	Ignition switch	Selector lever in "P" position	10 – 16 V		
(L)	(L) Ground	F NAINGE SVV	input	ŌN	Other than the above position	0 V		

[CVT: RE0F10B]

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TCM

#### < ECU DIAGNOSIS INFORMATION >

# [CVT: RE0F10B]

	nal No. color)	Descriptio	Description		Condition	Value (Approx.)
+	-	Signal name	Input/Output			
13 (SB)	Ground	CVT fluid temperature sensor	Input	Ignition switch	When CVT fluid tem- perature is 20°C (68°F)	2.0 V
(36)		Sensor		ON	When CVT fluid tem- perature is 80°C (176°F)	1.0 V
15 (P)	Ground	Secondary pressure sensor	Input	<ul><li>Selector leve</li><li>Idle speed</li></ul>	r: "N" position	1.0 V
25 (Y)	Ground	Sensor ground	Input		Always	0 V
26 (LG)	Ground	Sensor power	Output	Ignition switch		5.0 V
				Ignition switch (	JFF	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. <sup>*2</sup> CAUTION: Connect the diagnosis data link ca- ble to the vehicle diagnosis connec- tor.		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	<ul> <li>Selector leve</li> <li>While driving</li> </ul>	r: "M <sup>1</sup> " position at 20 km/h (12 MPH)	800 Hz (V) 6 4 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
34 (R)	Ground	Secondary speed sensor	Input	<ul><li>Selector leve</li><li>While driving</li></ul>	r: "M <sup>1</sup> " position at 20 km/h (12 MPH)	500 Hz (V) 15 0 0 ++2 ms JPDIA0901ZZ
35 (W)	Ground	Input speed sensor	Input	<ul> <li>Selector leve</li> <li>While driving</li> </ul>	r: "M <sup>1</sup> " position at 20 km/h (12 MPH)	800 Hz (V) 6 4 2 0 • +2 ms JPDIA0819ZZ

#### < ECU DIAGNOSIS INFORMATION >

### [CVT: RE0F10B]

	nal No. color)	Description			Condition	Value (Approx.)	A	
+	-	Signal name	Input/Output	•				
					Selector lever in "P" or "N" positions	10 – 16 V	В	
37 (L)	Ground	Lock-up select sole- noid valve	Output	Ignition switch ON	Wait at least for 5 sec- onds with the selector lever in "R" or "D" posi- tions.	0 V	С	
38	Ground	Torque converter	Output	When vehicle cruises in "D"	When CVT performs lock-up	6.0 V	ТМ	
(G)	Ground	clutch solenoid valve	Output	position	When CVT does not perform lock-up	1.5 V		
39	Ground	Secondary pressure	Output		Release your foot from the accelerator pedal.	5.0 – 7.0 V	E	
(W)	Ground	solenoid valve	solenoid valve	Output	"P" or "N" posi-	Press the accelerator pedal all the way down.	3.0 – 4.0 V	F
40	Ground	Line pressure sole-	Output	tion idle	Release your foot from the accelerator pedal.	5.0 – 7.0 V	G	
(Y)	Ground	Cround	noid valve	Output		Press the accelerator pedal all the way down.	1.0 V	Н
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	Ground	Dewereurstu	lanut	Ignition switch ON	_	10 – 16 V	J	
(LG)	Ground	Power supply	Input	Ignition switch OFF	_	0 V	K	
47 (BG)	Ground	Power supply (memory back-up)	Input		Always	10 – 16 V	_ 1	
48	Ground	Power supply	Input	Ignition switch ON	—	10 – 16 V	L	
(Y)	Ground	rowei suppiy	Input	Ignition switch OFF	_	0 V	- M	

\*1: This harness is not used.

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

#### Fail-safe

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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.

#### < ECU DIAGNOSIS INFORMATION >

DTC	Со	ndition	Vehicle behavior
P0703		_	<ul><li>Start is slow</li><li>Acceleration is slow</li></ul>
P0705			<ul> <li>Position indicator on combination meter is not displayed</li> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration at high load state is slow</li> <li>Manual mode is not activated</li> <li>Lock-up is not performed</li> </ul>
	Engine coolant temperature	Open circuit is detected while ignition switch is OFF	<ul><li>Selector shock is large</li><li>Low is fixed</li></ul>
P0710	when engine starts is 10°C (50°F) or more	Other than the above	<ul> <li>Selector shock is large</li> <li>Engine speed is high in middle and high speed range</li> </ul>
F0710	Engine coolant temperature (50°F) or less	when engine starts is 10°C	<ul><li>Start is slow</li><li>Acceleration is slow</li><li>Vehicle speed is not increased</li></ul>
	Engine coolant temperature 31°F) or less	when engine starts is $-35^{\circ}C$ (–	Vehicle speed is not increased
P0715		_	<ul> <li>Re-acceleration is slightly slow</li> <li>Re-start is slow after vehicle is stop by strong deceleration</li> <li>Manual mode is not activated</li> <li>Lock-up is not performed</li> </ul>
P0715		_	Idle neutral control is not performed
P0720		_	<ul> <li>Start is slow</li> <li>Re-acceleration is slow</li> <li>Re-start is slow after vehicle is stop by strong deceleration</li> <li>Manual mode is not activated</li> <li>Lock-up is not performed</li> </ul>
P0725		—	Lock-up is not performed
P0740		_	<ul><li>Selector shock is large</li><li>Lock-up is not performed</li></ul>
P0744		_	Lock-up is not performed
P0746	A malfunction is detected		<ul><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>
10740	Function is excessively reduced	ced after a malfunction is detect-	<ul> <li>Start is difficult</li> <li>Drive is difficult</li> <li>Lock-up is not performed</li> </ul>
P0778		_	Engine speed is high in middle and high speed range
P0826		—	Manual mode is not activated
P0840			<ul><li>Start is slow</li><li>Acceleration at high load state is slow</li></ul>
P0841		_	<ul><li>Start is slow</li><li>Acceleration is slow</li></ul>
P0868		_	<ul> <li>Start is slow</li> <li>Acceleration is slow (Slow acceleration is subject to secondary pressure that is recognized by TCM)</li> </ul>
P1585		_	Idle neutral control is not performed
P1701		_	<ul><li>Start is slow</li><li>Acceleration at high load state is slow</li></ul>

#### < ECU DIAGNOSIS INFORMATION >

[CVT: RE0F10B]

DTC	Condition	Vehicle behavior	
P1705	_	<ul><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	А
P1722	—	Lock-up is not activated in coast state	В
	A malfunction is detected in primary pulley speed sensor side	<ul> <li>Acceleration is slow</li> <li>Re-start is slow after vehicle is stop by strong deceleration</li> <li>Manual mode is not activated</li> <li>Lock-up is not performed</li> </ul>	С
P1723	A malfunction is detected in secondary pulley speed sensor	<ul> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Re-start is slow after vehicle is stop by strong deceleration</li> <li>Manual mode is not activated</li> <li>Lock-up is not performed</li> </ul>	TM
P1726	_	Acceleration is slow	
P1740	_	<ul><li>Selector shock is large</li><li>Lock-up is not performed</li></ul>	F
	A malfunction is detected in low side (when vehicle is stopped)	<ul><li>Low is fixed</li><li>Lock-up is not performed</li></ul>	
P1777	A malfunction is detected in high side (during driving)	<ul><li>Start is slow</li><li>Acceleration is low in low speed range</li><li>Lock-up is not performed</li></ul>	G
U1000	_	<ul><li>Start is slow</li><li>Acceleration is slow</li><li>Vehicle speed is not increased</li></ul>	Η
U1010	_	<ul><li>Start is slow</li><li>Acceleration is slow</li><li>Vehicle speed is not increased</li></ul>	I

# **DTC Inspection Priority Chart**

INFOID:000000006601681

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 <u>TM-195</u>.

		L
Priority	Detected items (DTC)	
1	U1000	
2	Except above	M

# DTC Index

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# NOTE: If DTC "U1000" is displayed with other DTCs, first perform the trouble diagnosis for DTC "U1000". Refer to $\underline{\text{TM-195}}$ .

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DTC				
OBD	Except OBD	Items	Reference	P
CONSULT-III GST <sup>*</sup>	CONSULT-III only "TRANSMISSION"	(CONSULT-III screen terms)	Kelerenee	I
_	P0703	BRAKE SWITCH B	<u>TM-197</u>	
P0705	P0705	T/M RANGE SENSOR A	<u>TM-200</u>	
P0710	P0710	FLUID TEMP SENSOR A	<u>TM-202</u>	
P0715	P0715	INPUT SPEED SENSOR A	<u>TM-204</u>	

#### < ECU DIAGNOSIS INFORMATION >

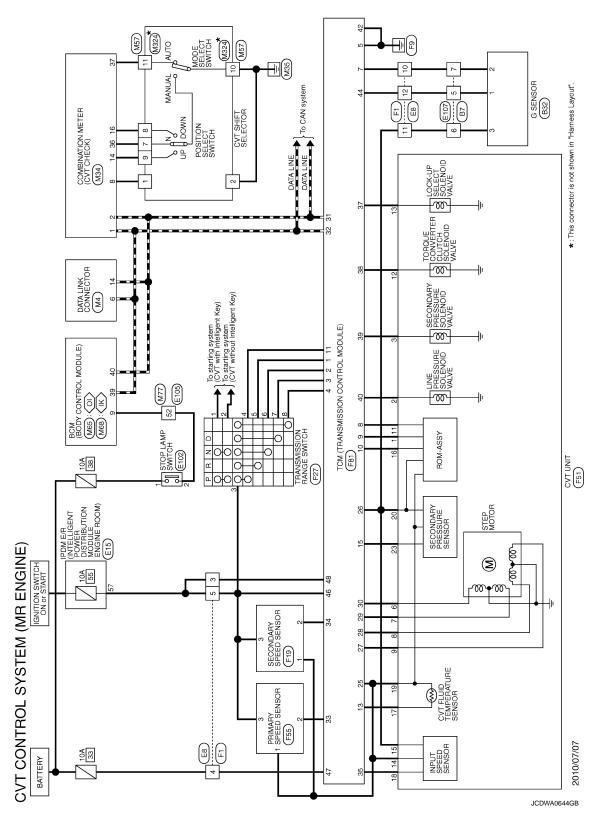
DTC			
OBD	Except OBD	Items	Reference
CONSULT-III GST <sup>*</sup>	CONSULT-III only "TRANSMISSION"	(CONSULT-III screen terms)	1/616161166
_	P0717	INPUT SPEED SENSOR A	<u>TM-207</u>
P0720	P0720	OUTPUT SPEED SENSOR	<u>TM-209</u>
_	P0725	ENGINE SPEED	<u>TM-212</u>
_	P0730	INCORRECT GR RATIO	<u>TM-214</u>
P0740	P0740	TORQUE CONVERTER	<u>TM-215</u>
P0744	P0744	TORQUE CONVERTER	<u>TM-217</u>
P0745	P0745	PC SOLENOID A	<u>TM-219</u>
P0746	P0746	PC SOLENOID A	<u>TM-221</u>
P0776	P0776	PC SOLENOID B	<u>TM-223</u>
P0778	P0778	PC SOLENOID B	<u>TM-225</u>
_	P0826	UP/DOWN SHIFT SWITCH	<u>TM-227</u>
P0840	P0840	FLUID PRESS SEN/SW A	<u>TM-230</u>
_	P0841	FLUID PRESS SEN/SW A	<u>TM-232</u>
_	P0868	FLUID PRESS LOW	<u>TM-234</u>
_	P1585	G SENSOR	<u>TM-236</u>
_	P1701	ТСМ	<u>TM-239</u>
_	P1705	TP SENSOR	<u>TM-241</u>
_	P1722	VEHICLE SPEED	<u>TM-242</u>
	P1723	SPEED SENSOR	<u>TM-244</u>
_	P1726	THROTTLE CONTROL SIG	<u>TM-246</u>
P1740	P1740	SLCT SOLENOID	<u>TM-247</u>
_	P1745	LINE PRESS CONTROL	<u>TM-249</u>
P1777	P1777	STEP MOTOR	<u>TM-250</u>
P1778	P1778	STEP MOTOR	<u>TM-252</u>
U1000	U1000	CAN COMM CIRCUIT	<u>TM-195</u>
	U1010	CONTROL UNIT (CAN)	<u>TM-196</u>

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

# WIRING DIAGRAM CVT CONTROL SYSTEM

# Wiring diagram

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



TM-173

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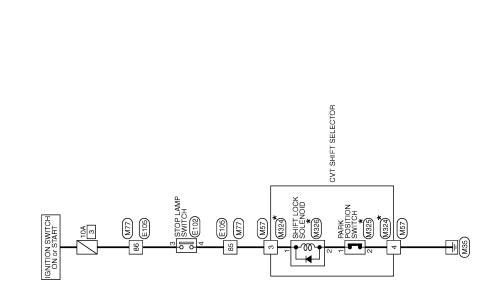
# **CVT SHIFT LOCK SYSTEM**

# Wiring diagram

This connector is not shown in "Harness Layout".

INFOID:000000006601853

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



SHIFT LOCK SYSTEM

**BASIC INSPECTION** DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

### INTRODUCTION

< BASIC INSPECTION >

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.

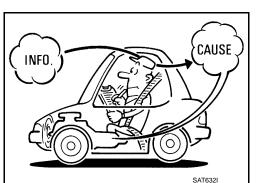
# 2.CHECK SYMPTOM 1

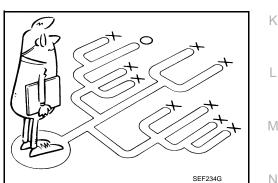
Check the following items based on the information obtained from the customer.

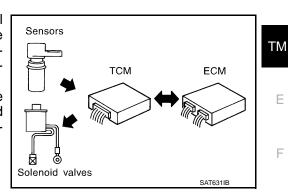
Fail-safe. Refer to <u>TM-169</u>, "Fail-safe".

CVT fluid inspection. Refer to <u>TM-184</u>, "Inspection".

• Line pressure test. Refer to TM-188, "Inspection and Judgment".









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INFOID:000000006601544

# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

• 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

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)

TM-176

INFOID:000000006601545

# DIAGNOSIS AND REPAIR WORKFLOW

#### < BASIC INSPECTION >

[CVT: RE0F10B]

Symptoms	D venicle does not move. (D Any position D Particular position)			
	<ul> <li>No shift</li> <li>Lock-up malfunction</li> </ul>			
	Noise or vibration			
	No pattern select Others ( )			
				Malfunction indicator (MI)
DIAGNOSTIC WORKSH	IEET		TM	

#### 1 □ Read the item on cautions concerning fail-safe and understand the customer's complaint. TM-169 Е CVT fluid inspection, stall test and line pressure test CVT fluid inspection F Leak (Repair leak location.) <u>TM-184</u> □ State □ Amount 2 □ Stall test □ Torque converter one-way clutch □ Engine □ Reverse brake Line pressure low <u>TM-186</u>, □ Forward clutch □ Primary pulley <u>TM-188</u> Н □ Steel belt □ Secondary pulley Line pressure inspection - Suspected part: □ Perform self-diagnosis. 3 TM-159 Enter checks for detected items. Perform road test. TM-190 J 4-1. <u>TM-190</u> Check before engine is started 4 4-2. Check at idle <u>TM-191</u> 4-3. Cruise test TM-192 Κ □ 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. L <u>TM-157</u>, 6 □ Erase the results of the self-diagnosis from the TCM and the ECM. <u>TM-159</u> Μ

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# ADDITIONAL SERVICE WHEN REPLACING TCM

< BASIC INSPECTION >

# ADDITIONAL SERVICE WHEN REPLACING TCM

# Description

INFOID:000000006601854

[CVT: RE0F10B]

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

**1.**CHECK WORK CONTENTS

INFOID:000000006601855

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.

 $\mathbf{3.}$ 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 <u>TM-180, "Procedure"</u>.

>> GO TO 5.

**5.**PERFORM G SENSOR CALIBRATION

#### . DITI ٨ > N /

ADDITIONAL SERVICE WHEN REPLACING TOM					
< BASIC INSPECTION >	[CVT: RE0F10B]				
Refer to TM-182, "Procedure".					
		А			
>> GO TO 6.					
6. PERFORM IDLE NEUTRAL CONTROL LEARNING		В			
Refer to <u>TM-183</u> , "Description".					
>> WORK END		С			
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# ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY < BASIC INSPECTION > [CVT: RE0F10B]

# ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

# Description

INFOID:000000006601856

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:000000006601857

#### 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 <u>TM-239</u>, "<u>DTC Logic</u>".

**1.**PREPARATION BEFORE WORK

(P)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

#### (B) 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.

#### ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY [CVT: RE0F10B]

< BASIC INSPECTION >

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	B
UNIT CLB ID 1	00	
UNIT CLB ID 2	00	_
UNIT CLB ID 3	00	C
UNIT CLB ID 4	00	
UNIT CLB ID 5	00	TN
UNIT CLB ID 6	00	
$\begin{array}{llllllllllllllllllllllllllllllllllll$		E — F
<ol> <li>Shift selector lever to "P" position.</li> <li>Check that "P" is displayed on shift position indi NOTE: It indicates approximately 1 or 2 seconds after s Does shift position indicator display "P"?</li> </ol>		Г (
YES >> GO TO 5. NO >> GO TO 4. 4.DETECTION OF MALFUNCTION ITEMS		ŀ
<ul> <li>Check the following items:</li> <li>Harness between the TCM and the ROM assemble</li> <li>Disconnected, loose, bent, collapsed, or otherwise</li> <li>Power supply and ground of TCM. (Refer to TM-2)</li> </ul>	abnormal connector housing terminals	
Is the inspection result normal?		
YES >> GO TO 1. NO >> Repair or replace the malfunctioning pa 5.PERFORM G SENSOR CALIBRATION	rts.	k
Refer to TM-182, "Procedure".		[
>> GO TO 6. 6.PERFORM IDLE NEUTRAL CONTROL LEARNI	NG	N
Refer to TM-183, "Description".		_
>> WORK END		ľ
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#### < BASIC INSPECTION >

### CALIBRATION OF DECEL G SENSOR

### Description

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:000000006601859

INFOID:00000006601858

### **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**

#### < BASIC INSPECTION >

### IDLE NEUTRAL CONTROL LEARNING

### Description

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

### **1.**PREPARATION BEFORE WORK

<ul><li>With CONSULT-III</li><li>Start the engine.</li></ul>	E
CAUTION:	
Never drive the vehicle.	_
2. Select "DATA MONITOR" in "TRANSMISSION".	F
3. Select "ATFTEMP COUNT".	
Is "ATFTEMP COUNT" 47 [equivalent to 20°C (68°F)] or more?	
YES >> GO TO 2.	G
NO >> 1. Warm up the transaxle assembly until "ATFTE 20°C(68°F)] or more.	MP COUNT" reaches "47" [equivalent to
2. GO TO 2.	Н
2. PERFORM IDLE NEUTRAL CONTROL LEARNING	
CAUTION:	
Perform this work with the flat road. ( $\pm$ 2.6 %or less)	
<ol> <li>Shift the selector lever to "D" position.</li> </ol>	
2. Drive the vehicle at the 8 km/h (5 MPH) or more.	
3. Brake pedal is depressed and stop the vehicle.	J
4. Maintain the following conditions for 30 seconds or more.	
Stop lamp switch : ON	к
Accelerator pedal position sensor : OFF	
Engine speed : 475 – 700 rpm	
Electrical load : Not applied*	1
*: Rear window defogger switch, air conditioner switch, light straight ahead. (Parking lamp ON is possible)	
<ol> <li>Brake pedal is released and drive the vehicle.</li> <li>Perform steps 1 and 2 again. (one time)</li> </ol>	N
o. I enorm steps I and Z again. (one time)	
>> INSPECTION END	Ν

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[CVT: RE0F10B]

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### **CVT FLUID**

### < BASIC INSPECTION >

### **CVT FLUID**

#### Inspection

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:

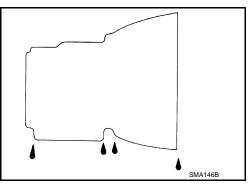
- 1. Check for fluid leakage.
- 2. With the engine warmed up, drive the vehicle in an urban area. When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to 80°C (122 to 176°F).
- 3. Park the vehicle on a level surface.

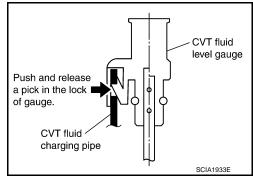
top end of the CVT fluid charging pipe.

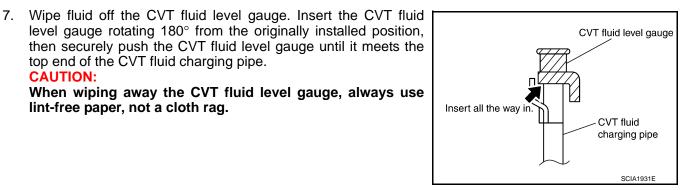
lint-free paper, not a cloth rag.

**CAUTION:** 

- 4. Apply parking brake firmly.
- 5. With engine at idle, while depressing brake pedal, move shift selector throughout the entire shift range.
- Pull out the CVT fluid level gauge from the CVT fluid charging 6. pipe after pressing the tab on the CVT fluid level gauge to release the lock.

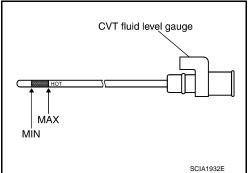






8. Place the selector lever in "P" or "N" and check that the fluid level is within the specified range. CAUTION:

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

### **CVT FLUID**

#### < BASIC INSPECTION >

#### [CVT: RE0F10B]

#### 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".

		1
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, cool- er 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

#### **CAUTION:**

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e	place drain plug gasket with new ones at the final stage of the operation when installing.	
	Remove drain plug from oil pan.	
	Remove drain plug gasket from drain plug.	Н
•	Install drain plug gasket to drain plug. CAUTION:	
	Never reuse drain plug gasket.	I
•	Install drain plug to oil pan.	
	Drain plug – tightening torque : Refer to <u>TM-283, "Exploded View"</u> .	J
	Fill CVT fluid from CVT fluid charging pipe to the specified level.	
	CVT fluid : Refer to <u>TM-308, "General Specifica-</u> Fluid capacity <u>tion"</u> .	K
	CAUTION:	L
	<ul> <li>Use only Genuine NISSAN CVT Fluid NS-2. Never mix with other fluid.</li> </ul>	
	<ul> <li>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.</li> <li>When filling CVT fluid, take care not to scatter heat generating parts such as exhaust.</li> <li>Sufficiently shake the container of CVT fluid before using.</li> <li>Delete CVT fluid deterioration date with CONSULT-III after changing CVT fluid.</li> </ul>	M
	With the engine warmed up, drive the vehicle in an urban area.	Ν
•	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).	0
	Check CVT fluid level and condition.	-
	Repeat steps 1 to 5 if CVT fluid has been contaminated.	
		Р

### STALL TEST

### Inspection and Judgment

#### INSPECTION

- 1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
- 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.
- 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.

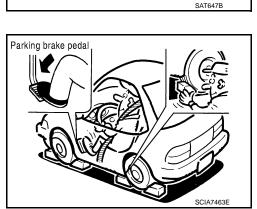
- 5. Start engine, apply foot brake, and place selector lever in "D" position.
- 6. While holding down the foot brake, gradually press down the accelerator pedal.
- Quickly read off the stall speed, and then quickly remove your foot from the accelerator pedal.
   CAUTION:

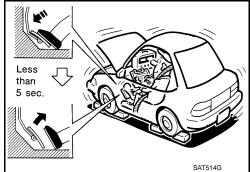
Never hold down the accelerator pedal for more than 5 seconds during this test.

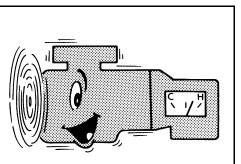
Stall speed: Refer to TM-308, "Stall Speed".

- 8. Move the selector lever to the "N" position.
- 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







### **STALL TEST**

#### < BASIC INSPECTION >

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	Selector le	ver position	Expected problem leastion	А
	"D"	"R"	Expected problem location	
	Н	0	Forward clutch	_
	0	Н	Reverse brake	В
Ctall ratation	L	L	Engine and torque converter one-way clutch	
Stall rotation	н	н	<ul> <li>Line pressure low</li> <li>Primary pulley</li> <li>Secondary pulley</li> <li>Steel belt</li> </ul>	С
O: Stall speed wi	thin standard	value position		TM

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

INSPECTION

Line Pressure Test Port

Line pres

Line Pressure Test Procedure

- 1. Inspect the amount of engine oil and replenish if necessary.
- 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:

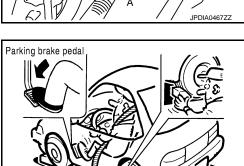
The CVT fluid temperature rises in the range of 50 to 80°C (122 to 176°F) during 10 minutes of driving.

 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).

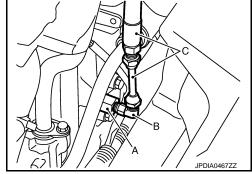
CAUTION:

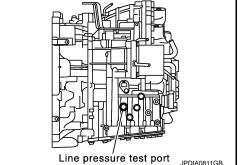
When using the oil pressure gauge, be sure to use the Oring attached to the oil pressure detection plug.

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



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### LINE PRESSURE TEST

#### < BASIC INSPECTION >

### Start the engine, and then measure the line pressure at both idle and the stall speed. CAUTION:

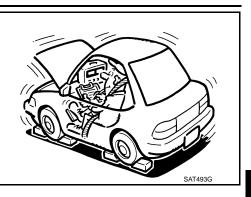
- Keep the brake pedal pressed all the way down during measurement.
- When measuring the line pressure at the stall speed, refer to <u>TM-186, "Inspection and Judgment"</u>.
- 6. After the measurements are complete, install the oil pressure detection plug and tighten to the specified torque below.

#### • : 7.5 N·m (0.77 kg-m, 66 in-lb)

#### **CAUTION:**

- Never reuse O-ring.
- Apply CVT fluid to O-ring.

#### Line Pressure



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	Unit: kPa (bar, kg/cm <sup>2</sup> , psi)	
Engine speed	Line pressure	F
Engine speed	"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		
	Low for all positions ("P", "R", "N", "D")	<ul> <li>Possible causes include malfunctions in the pressure supply system and low oil pump output.</li> <li>For example</li> <li>Oil pump wear</li> <li>Pressure regulator valve or plug sticking or spring fatigue</li> <li>Oil strainer ⇒ oil pump ⇒ pressure regulator valve passage oil leak</li> <li>Engine idle speed too low</li> </ul>		
Idle speed	Only low for a spe- cific 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	<ul> <li>Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function.</li> <li>For example</li> <li>Accelerator pedal position signal malfunction</li> <li>CVT fluid temperature sensor malfunction</li> <li>Line pressure solenoid malfunction (sticking in OFF state, filter clog, cut line)</li> <li>Pressure regulator valve or plug sticking</li> </ul>		
Stall speed	Line pressure does not rise higher than the line pressure for idle.	<ul> <li>Possible causes include a sensor malfunction or malfunction in the pressure adjustment function.</li> <li>For example</li> <li>Accelerator pedal position signal malfunction</li> <li>TCM malfunction</li> <li>Line pressure solenoid malfunction (shorting, sticking in ON state)</li> <li>Pressure regulator valve or plug sticking</li> </ul>		
	The pressure rises, but does not enter the standard posi- tion.	<ul> <li>Possible causes include malfunctions in the pressure supply system and malfunction in the pressure adjustment function.</li> <li>For example</li> <li>Accelerator pedal position signal malfunction</li> <li>Line pressure solenoid malfunction (sticking, filter clog)</li> <li>Pressure regulator valve or plug sticking</li> </ul>		
	Only low for a spe- cific 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.		

#### TM-189

[CVT: RE0F10B]

### < BASIC INSPECTION >

## ROAD TEST

### Description

#### DESCRIPTION

- The purpose of the test is to determine overall performance of CVT **ROAD** and analyze causes of problems.
- The road test consists of the following three parts:
- 1. "Check Before Engine Is Started" <u>TM-190</u>.
- 2. "Check at Idle" TM-191.
- 3. "Cruise Test" <u>TM-192</u>.

ROAD TEST PROCEDURE	
1. Check before engine is started.	
$\overline{\nabla}$	
2. Check at idle.	
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3. Cruise test.	
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- 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

### 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.
  - Perform self-diagnosis and note NG items. Refer to <u>TM-159</u>, "CONSULT-III Function (TRANSMISSION)".
  - 3. Go to TM-191, "Check at Idle".

#### TM-190

INFOID:00000006601699

### **ROAD TEST**

< BASIC INSPECTION >	ROAD TEST	[CVT: RE0F10B]
NO >> Stop "Road Test". Refer to	TM-259, "Symptom Table".	
Check at Idle		INFOID:00000006601701
<b>1.</b> CHECK STARTING THE ENGINE		
<ol> <li>Park vehicle on flat surface.</li> <li>Move selector lever to "P" or "N" personal selector lever to "P" or "N" personal selector lever to "F".</li> <li>Turn ignition switch OFF.</li> <li>Turn ignition switch to "START" point of the selector lever to "START" personal sele</li></ol>		
Is engine started?         YES       >> GO TO 2.         NO       >> Stop "Road Test". Refer to         2       OUTO OT A DTINO THE ENGINE	TM-259, "Symptom Table".	
2.CHECK STARTING THE ENGINE		
<ol> <li>Turn ignition switch ON.</li> <li>Move selector lever to "D", "M" or "</li> <li>Turn ignition switch to "START" po</li> </ol>		
<u>Is engine started?</u> YES >> Stop "Road Test". Refer to NO >> GO TO 3.	TM-259, "Symptom Table".	
<b>3.</b> CHECK "P" POSITION FUNCTION		
<ol> <li>Move selector lever to "P" position</li> <li>Turn ignition switch OFF.</li> <li>Release parking brake.</li> <li>Push vehicle forward or backward.</li> <li>Apply parking brake.</li> </ol>		
Does vehicle move forward or backwardYES>> Refer to TM-259, "SymptoNO>> GO TO 4.	<u>rd?</u> <u>m Table"</u> . Continue "Road Test".	
4. CHECK "N" POSITION FUNCTION		
<ol> <li>Start engine.</li> <li>Move selector lever to "N" position</li> <li>Release parking brake.</li> </ol>		
NO >> GO TO 5.	<u>rd?</u> <u>m Table"</u> . Continue "Road Test".	
5.CHECK SHIFT SHOCK		
<ol> <li>Apply foot brake.</li> <li>Move selector lever to "R" position</li> </ol>		
Is there large shock when changing from		
6.CHECK "R" POSITION FUNCTION		
Release foot brake for several seconds	5.	
Does vehicle creep backward when for	ot brake is released?	
YES >> GO TO 7. NO >> Refer to <u>TM-259, "Symptor</u>	<u>n Table"</u> . Continue "Road Test".	
7. CHECK "D" POSITION FUNCTION		
Move selector lever to "D" position and Does vehicle creep forward in all positi	•	

YES >> Go to <u>TM-192. "Cruise Test"</u>. NO >> Stop "Road Test". Refer to <u>TM-259, "Symptom Table"</u>.

### **ROAD TEST**

#### < BASIC INSPECTION >

#### Cruise Test

### **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.

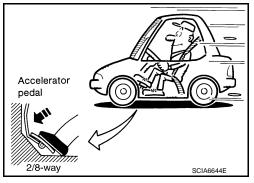
#### CVT fluid operating temperature: 50 – 80°C (122 – 176°F)

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

## Read vehicle speed and engine speed. Refer to <u>TM-308.</u> <u>"Shift Characteristics"</u>.

#### <u>OK or NG</u>

- OK >> GO TO 2.
- NG >> Refer to <u>TM-259, "Symptom Table"</u>. Continue "Road Test".



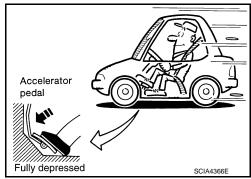
### 2. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 2

- 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 <u>TM-308</u>, <u>"Shift Characteristics"</u>.

#### OK or NG

- OK >> GO TO 3.
- NG >> Refer to <u>TM-259, "Symptom Table"</u>. 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 <u>TM-259, "Symptom Table"</u>. Continue "Road Test".

**4.**CHECK SHIFT-UP FUNCTION

During manual mode driving, is upshift from M1  $\rightarrow$  M2  $\rightarrow$  M3  $\rightarrow$  M4  $\rightarrow$  M5  $\rightarrow$  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 <u>TM-259, "Symptom Table"</u>. Continue "Road Test".

**5.**CHECK SHIFT-DOWN FUNCTION

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

Image: Read the gear position. Refer to <u>TM-159, "CONSULT-III Function (TRANSMISSION)"</u>.

Is downshifting correctly performed?

YES >> GO TO 6.

NO >> Refer to <u>TM-259, "Symptom Table"</u>. Continue "Road Test".

### TM-192

#### < BASIC INSPECTION >

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6. CHECK ENGINE BRAKE FUNCTION	А
Check engine brake.	
Does engine braking effectively reduce speed in M1 position?         YES       >> 1. Stop the vehicle.         2. Perform self-diagnosis. Refer to <u>TM-159. "CONSULT-III Function (TRANSMISSION)"</u> .         NO       >> Refer to <u>TM-259. "Symptom Table"</u> . Then continue trouble diagnosis.	В
NO >> Refer to <u>mi-259, Symptom table</u> . Then continue trouble diagnosis.	С
	ТМ
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	Н
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	K
	L
	M

TM-193

#### < BASIC INSPECTION >

### CVT POSITION

#### Inspection and Adjustment

INFOID:000000006601703

[CVT: RE0F10B]

#### 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.
- Press selector button to operate selector lever, while depressing the brake pedal.
  Press selector button to operate selector lever.
  Press selector lever.
  Selector lever can be operated without pressing selector button.
- 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

 Place selector lever in "P" position. CAUTION:

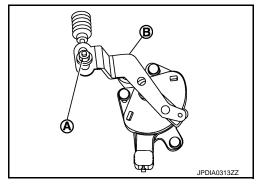
#### Turn wheels more than 1/4 rotations and apply the park lock.

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 <u>TM-273, "Removal and Installation"</u>. CAUTION:

Fix the manual lever when tightening.



## DTC/CIRCUIT DIAGNOSIS U1000 CAN COMM CIRCUIT

### Description

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

#### DTC DETECTION LOGIC

	Trouble diagnosis name	DTC is detected if	Possible cause
U1000	CAN Communication Line	When TCM is not transmitting or receiving CAN communica- tion signal for 2 seconds or more.	Harness or connectors (CAN communication line is open or shorted.)
OFF and wait at least 1	N PROCEDURE" has been 0 seconds before performin the following procedure to cor	ig the next test.	
With CONSULT-III			
1. Turn ignition switch (			
	it for at least 6 seconds. tic Results" in "TRANSMISSIO	ON".	
•			
9/			
With GST     Follow the procedure "W     s "U1000" detected?	ith CONSULT-III".		
Follow the procedure "W Is "U1000" detected?	ith CONSULT-III".		
Follow the procedure "W <u>ls "U1000" detected?</u> YES >> Go to <u>TM-19</u>		2. "Intermittent Incident".	
Follow the procedure "W <u>ls "U1000" detected?</u> YES >> Go to <u>TM-19</u>	9 <u>5. "Diagnosis Procedure"</u> . nittent incident. Refer to <u>GI-42</u>	2. "Intermittent Incident".	INFOID-000000006601578
Follow the procedure "W Is <u>"U1000" detected?</u> YES >> Go to <u>TM-19</u> NO >> Check intern Diagnosis Procedur	9 <u>5. "Diagnosis Procedure"</u> . nittent incident. Refer to <u>GI-42</u> re	2. "Intermittent Incident".	INFOID:000000006601578
Follow the procedure "W s <u>"U1000" detected?</u> YES >> Go to <u>TM-19</u> NO >> Check intern	9 <u>5. "Diagnosis Procedure"</u> . nittent incident. Refer to <u>GI-42</u> re	2. "Intermittent Incident".	INFOID:000000006601578

[CVT: RE0F10B]

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INFOID:000000006601576

INFOID:000000006601577

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### U1010 CONTROL UNIT (CAN)

### Description

INFOID:000000006601579

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:000000006601580

INFOID:00000000660158

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
U1010	TCM Communication Malfunc- tion	When detecting error during the initial diagnosis of CAN control- ler to 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

- 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 <u>GI-42, "Intermittent Incident"</u>.

#### Diagnosis Procedure

1.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

#### Is the inspection result normal?

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

### P0703 BRAKE SWITCH B

### Description

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

### DTC Logic

INFOID:000000006601583

INFOID:000000006601582

#### DTC DETECTION LOGIC

DTC	Т	rouble diagnosis name	DTC is detected if	Possible cause
P0703	3 1	Brake Switch B Circuit	When the brake switch does not switch to ON or OFF.	<ul> <li>Harness or connectors</li> <li>(Stop lamp switch, and BCM circuit are open or shorted.)</li> <li>(CAN communication line is open or shorted.)</li> <li>Stop lamp switch</li> </ul>
TC CONFIRM	IATION PROC	EDURE		
AUTION:				
Note:	ehicle at a safe	speea.		
			en previously performed, al	ways turn ignition switch
			ming the next test. confirm the malfunction is elimi	nated
.CHECK DTC		ing procedure to		
. Turn ignition				
2. Start engine			_	
		nsecutive second Its" in "TRANSMI		
s "P0703" detec	0			
YES >> Go t	o <u>TM-197, "Diag</u>	nosis Procedure".		
NO >> Che	ck intermittent in	cident. Refer to <u>G</u>	I-42, "Intermittent Incident".	
Diagnosis Pr	ocedure			INFOID:00000006601584
	P LAMP SWITC			
			n Iomn cwitch Defente DD 0	Increasting and Adjustments
. Check and a		ition position of stond and Adjustment" (R	op lamp switch. Refer to <u>BR-9, "</u> HD).	inspection and Adjustment"
(LHD), <u>BR-7</u> Turn ignition				
(LHD), <u>BR-7</u> 2. Turn ignition 3. Disconnect	BCM connector.			
(LHD), <u>BR-7</u> . Turn ignition . Disconnect I . Turn ignition	BCM connector. switch ON.	1 vehicle side harr	ness connector terminal and oro	und.
(LHD), <u>BR-7</u> Turn ignition 5. Disconnect Turn ignition	BCM connector. switch ON. ge between BCM	I vehicle side harr	ness connector terminal and gro	und.
(LHD), <u>BR-7</u> . Turn ignition . Disconnect . Turn ignition . Check voltag	BCM connector. switch ON. ge between BCM	1 vehicle side harr		
(LHD), <u>BR-7</u> 2. Turn ignition 3. Disconnect 4. Turn ignition 5. Check voltag Without intellige	BCM connector. switch ON. ge between BCM nt key system		ness connector terminal and gro	vund. Voltage (Approx.)
(LHD), <u>BR-7</u> . Turn ignition . Disconnect . Turn ignition . Check voltage Without intellige BCM vehicle side	BCM connector. switch ON. ge between BCM nt key system harness connector	1 vehicle side harr Ground –		

With intelligent BCM vehicle side	harness connector		Oraclitica		
Connector	Terminal	Ground	Condition	Voltage (Approx.)	
MGQ	MG9 0	Ground	Depressed brake pedal	Battery voltage	
IVIOO	M68 9		Released brake pedal	0 V	

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### P0703 BRAKE SWITCH B

#### < DTC/CIRCUIT DIAGNOSIS >

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	Continuity
E102	2	M65	9	Existed
With intelligent key sys	stem			
Chan laman awitah yahial	e side harness connector	BCM vehicle side I	arnoss connector	
Stop lamp switch vehicl	e side namess connector	Dolvi verilele side i		Continuity
Connector	Terminal	Connector	Terminal	Continuity

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		Continuity
M65 9	-	Not existed

BCM vehicle side	harness connector		Continuity
Connector	Connector Terminal		Continuity
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?

- >> 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

YES

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

#### Is the inspection result normal?

YES >> GO TO 6.

### TM-198

### **P0703 BRAKE SWITCH B**

[CVT: RE0F10B]

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< DTC/CIRCUIT DIAGNOSIS > [CV	T: RE0F10B]
NO >> Replace BCM. Refer to <u>BCS-93</u> , " <u>Removal and Installation</u> " (With intelligent key <u>125</u> , " <u>Reference Value</u> " (Without intelligent key system).	system), <u>BCS-</u>
6. DETECT MALFUNCTIONING ITEMS	
Check TCM connector pin terminals for damage or loose connection with harness connector.	
Is the inspection result normal?	
<ul> <li>YES &gt;&gt; Replace TCM. Refer to <u>TM-280, "Removal and Installation"</u>.</li> <li>NO &gt;&gt; Repair or replace damaged parts.</li> </ul>	
Component Inspection	INFOID:000000006601585

1.CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

	Stop lamp switch		Condition	Continuity		
С	connector	Terr	minal	Condition	Continuity	
	E102	1 2		Depressed brake pedal	Existed	
	L102	, 	2	Released brake pedal	Not existed	
eck s ID). I	stop lamp sw 3R-77, "Inspe	vitch after adjusting action and Adjustme	brake pedal — refe nt" (RHD).	r to <u>BR-9, "Inspection</u>	n and Adjustment	
	spection resul		<u> </u>			
ES	<ul> <li>&gt;&gt; Check the second s</li></ul>	he following. If NG, rep s for short or open bet s for short or open bet e (No. 38, located in fe	ween battery and sto ween stop lamp swite	p lamp switch.		
0		replace the stop lamp				

< DTC/CIRCUIT DIAGNOSIS >

### P0705 TRANSMISSION RANGE SWITCH A

### DTC Logic

INFOID:000000006601587

[CVT: RE0F10B]

#### 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 cor- rect voltage signal (based on the gear position) from the switch.	<ul> <li>Harness or connectors (Transmission range switch- es circuit is open or shorted.)</li> <li>Transmission range switch</li> </ul>

### 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

#### (B) 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 <u>GI-42, "Intermittent Incident"</u>.

#### **Diagnosis** Procedure

INFOID:000000006601588

### 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 co	onnector	Transmission rang	e switch connector	Continuity
Connector	Terminal	Connector	Terminal	- Continuity
	1	F27	5	
<b>F</b> 04	2		6	Existed
F81	3		7	- Existed
	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

### **P0705 TRANSMISSION RANGE SWITCH A**

		SMISSION RANG	SE SWITCH A	
< DTC/CIRCUIT DIA				[CVT: RE0F10B]
Check the following ite • Harness for short or • 10A fuse (No. 55, lo • Ignition switch.	open between ignition		sion range switch.	
Is the inspection resul	t normal?			
YES >> GO TO 3.				
	replace damaged par			
3. CHECK TRANSM				
Check transmission ra		TM-201, "Component	Inspection".	
<u>Is the inspection resul</u> YES >> GO TO 4.				
	replace damaged par	ts.		
4. СНЕСК ТСМ				
Check TCM input/outp	out signals. Refer to T	M-164, "Reference Va	lue".	
Is the inspection resul	t normal?			
		er to <u>GI-42, "Intermitte</u> -280, "Removal and In		
-			<u>stallation</u> .	
Component Inspe	ection			INFOID:000000006601589
1.CHECK TRANSMI	SSION RANGE SWIT	СН		
Check continuity betw	een transmission rang	ge switch connector te	rminals.	
	Tran	smission range switch conr	pector	
Selector lever position	Connector	1	ninal	Continuity
		1	2	
Р		3	4	-
R	E07	3	5	Eviated
N	F27	1	2	- Existed
IN		3	6	
D		3	7	
Is the inspection resul				
YES >> INSPECT NO >> GO TO 2.				
2.CHECK CVT POSI				
1. Disconnect contro				
	on range switch. (Refe	er to step 1 above.)		
Is the inspection resul				
YES >> Adjust CV NO >> GO TO 3.		M-194, "Inspection an	<u>d Adjustment"</u> .	
<b>3.</b> CHECK TRANSMI		сц		
			and an address of the state	
	sion range switch. Re on range switch. (Refe	fer to <u>TM-278, "Remo</u> er to step 1 above.)	vai and Installation".	
Is the inspection resul	-			
YES >> Adjust tra	nsmission range swite	ch. Refer to <u>TM-278, "I</u>	nspection and Adjust	ment".

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

#### **P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A**

< DTC/CIRCUIT DIAGNOSIS >

### P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

### DTC Logic

INFOID:000000006601591

[CVT: RE0F10B]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0710	Transmission Fluid Tempera- ture Sensor A Circuit	During running, the CVT fluid temperature sensor signal volt- age is excessively high or low.	<ul> <li>Harness or connectors (Sensor circuit is open or shorted.)</li> <li>CVT fluid temperature sensor</li> </ul>

### 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 <u>GI-42</u>, "Intermittent Incident".

#### **Diagnosis** Procedure

INFOID:000000006601592

### 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			Resistance (Approx.)
E91	40 05		20 (68)	6.5 kΩ
F01	F81 13	25	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 <u>TM-301, "Removal and Installation"</u>.

### TM-202

### P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

#### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

 ${f 3.}$  CHECK HARNESS BETWEEN TCM AND CVT FLUID TEMPERATURE SENSOR А 1. Disconnect the CVT unit harness connector. Check continuity between TCM connector terminals and CVT unit harness connector terminals. 2. В TCM connector CVT unit harness connector Continuity Connector Terminal Connector Terminal 13 17 F81 F24 Existed 25 19 If OK, check harness for short to ground and short to power. 3. ТΜ Reinstall any part removed. 4. 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". F Is the inspection result normal? YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident". >> Replace the TCM. Refer to TM-280, "Removal and Installation". NO Component Inspection INFOID:000000006601593 Н CVT FLUID TEMPERATURE SENSOR 1.CHECK CVT FLUID TEMPERATURE SENSOR 1. Turn ignition switch OFF. Disconnect CVT unit harness connector. 2. 3. Check resistance between CVT unit harness connector terminals. J CVT unit harness connector Temperature °C (°F) Resistance (Approx.) Connector Terminal

19

20 (68)

80 (176)

Is the inspection result normal?

F51

#### YES >> INSPECTION END

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

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### P0715 INPUT SPEED SENSOR A

### DTC Logic

[CVT: RE0F10B]

INFOID:000000006707370

#### DTC DETECTION LOGIC

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

#### 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 (in- creased 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 <u>TM-204, "Diagnosis Procedure"</u>.

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

#### **Diagnosis** Procedure

INFOID:000000006707371

#### 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			Voltage (Approx.)
Connector Terminal		Ground	vollage (Approx.)
F55	3		10 V – 16V

Is the inspection result normal?

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

**2.** CHECK TCM INPUT SIGNAL

### P0715 INPUT SPEED SENSOR A

#### < DTC/CIRCUIT DIAGNOSIS >

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.

Т	CM connector		Condition	Data (Approx.)	
Connector	Terminal		Condition	Data (Approx.)	C
				800 Hz	_
F55	2	1	<ul> <li>Selector lever: "M<sup>1</sup>" position</li> </ul>		ΤN
			Vehicle speed: 20 km/h (12 MPH)	→ +2 ms	E
				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.  $_{
m H}$ 

	onnector	Primary speed sensor vehic	cle side harness connector	Continuit
Connector	Terminal	Connector	Terminal	Continuity
F81	25		1	Existed
FOI	33	F55 -	2	Existed
CHECK HARNI	94. or replace damaged ESS BETWEEN TCM	parts. I AND PRIMARY SPEED S or terminal and ground.	SENSOR (PART 2)	
	TCM connector			Continuity
		minal		
Connector	Tei		iround	
			Ground	Not existed
Connector F81 s the inspection re		G	sround	Not existed

CVT ur	CVT unit connector		Continuity	Ρ
Connector	Terminal	Ground	Continuity	
F51	14	Ground	Not existed	
101	19		NOT EXISTED	

Is the inspection result normal?

YES >> GO TO 6.

[CVT: RE0F10B]

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### P0715 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

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.
- 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	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			Continuity
Connector Terminal		Ground	Continuity
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 <u>GI-42, "Intermittent Incident"</u>

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 <u>TM-290, "Removal and Installation"</u>.

NO >> Repair or replace damaged parts.

### P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

### P0717 INPUT SPEED SENSOR A

### DTC Logic

[CVT: RE0F10B]

INFOID:000000006601595

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0717	Input/Turbine Speed Sensor A Circuit No Signal	<ul> <li>Input speed sensor value is less than 150 rpm while primary pulley speed is more than 1,000 rpm.</li> <li>Input speed is less than 300 rpm just after that input speed sensor value is more than 1,000 rpm.</li> </ul>	<ul> <li>Harness or connectors (Sensor circuit is open or shorted.)</li> <li>Input speed sensor</li> </ul>
DTC CONFIRMATIO	N PROCEDURE		
CAUTION: Always drive vehicle a	at a safe speed.		
NOTÉ:	-	and the second	
OFF and wait at least	ON PROCEDURE" has been 10 seconds before performin	ng the next test.	
	n the following procedure to cor	nfirm the malfunction is elimi	nated.
<b>1.</b> CHECK DTC DETE	CTION		_
With CONSULT-III     Turn ignition switch	ON		
2. Start the vehicle.			
<ol> <li>Select "DATA MON 4. Start engine and m</li> </ol>	aintain the following conditions	for at least 5 consecutive se	econds.
PRI SPEED	: 1,000 rpm or moi	re	
With GST			
Follow the procedure "\	Nith CONSULT-III".		
<u>Is "P0717" detected?</u> YES >> Go to TM-2	207, "Diagnosis Procedure".		
NO >> Check inte	rmittent incident. Refer to GI-42	2, "Intermittent Incident".	
Diagnosis Procedu	ure		INFOID:00000006601596
1. СНЕСК ТСМ ІМРИ	T 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	Terr	minal	Condition	Data (Approx.)	0
F81	35	25	<ul> <li>Selector lever: "M<sup>1</sup>" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	800 Hz (V) 6 4 2 0 •••2 ms JPDIA0819ZZ	Ρ

Is the inspection result normal?

### TM-207

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### P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

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 c	TCM connector CVT unit vehicle side harness connector		Continuity	
Connector	Terminal	Connector	Terminal	Continuity
	25		14	
F81	26	F51	15	Existed
	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 o	TCM connector		Continuity
Connector	Terminal		Continuity
	25	Ground	
F81	26		Existed
	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 <u>TM-301, "Removal and Installation"</u>.

NO >> Repair or replace damaged parts..

### **P0720 OUTPUT SPEED SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

## P0720 OUTPUT SPEED SENSOR

### DTC Logic

[CVT: RE0F10B]

INFOID:000000006601598

DTC	Trouble diagnosis name	DTC is detected if	Possible cause		
P0720	Output Speed Sensor Circuit	<ul> <li>Signal from output speed sensor not input due to open or short circuit.</li> <li>Unexpected signal input dur- ing running.</li> </ul>	<ul> <li>Harness or connectors (Sensor circuit is open or shorted.)</li> <li>Output speed sensor</li> </ul>		
TC CONFIRMATION					
AUTION:					
lways drive vehicle at OTE:	a safe speed.				
"DTC CONFIRMATIO FF and wait at least 10	N PROCEDURE" has been 0 seconds before performing the following procedure to con	g the next test.			
.CHECK DTC DETEC	• ·				
With CONSULT-III					
Turn ignition switch C					
	intain the following conditions	for at least 12 consecutive s	econds.		
ACC PEDAL OPEN	: More than 1.0/8				
RANGE	: "D" position				
Driving location	: Driving the vehicl				
	creased engine loa maintain the drivin required for this te	g conditions			
If DTC is detected,					
With GST ollow the procedure "Wi	ith CONSULT-III"				
"P0720" detected?					
	9, "Diagnosis Procedure".				
	nittent incident. Refer to GI-42	<u>, "Intermittent Incident"</u> .			
iagnosis Procedur	e		INFOID:00000006601599		
. CHECK POWER ANI	D SENSOR GROUND				
. Turn ignition switch (					
. Disconnect the second	ndary speed sensor harness o	connector.			
Turn ignition switch (	ON. een secondary speed sensor h	arness connector terminals			
Check voltage betwee					
Check voltage betwe					
	ehicle side harness connector		Voltage (Approx.)		
<u> </u>	ehicle side harness connector Terminal	Ground	Voltage (Approx.) 10 V – 16V		

NO >> GO TO 5.

2. CHECK TCM INPUT SIGNAL

1. Turn ignition switch OFF.

### TM-209

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### P0720 OUTPUT SPEED SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

- 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 (Approv.)	
Connector	Terr	minal	Condition	Data (Approx.)	
F81	34	25	<ul> <li>Selector lever: "M<sup>1</sup>" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	500 Hz (V) 15 10 5 0 **2 ms 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	Continuity
F81	25	F19	1	Existed
	34	113	2	Existed

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	TCM connector		Continuity
Connector	Terminal	Ground	Continuity
F81	25	Gibuna	Not existed
F01	34		NOT EXISTED

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			Continuity
Connector	Terminal	Ground	Continuity
F51	14	Gibuna	Not existed
1-01	19		

Is the inspection result normal?

YES >> GO TO 6.

### **P0720 OUTPUT SPEED SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

Check continuit	M E/R connector.		vehicle side harness	connector te	rminal and IPDM E/
Secondary speed sensor vehicle side harness connector IPDM E/R vehicle side harness connector					Continuity
Connector	Terminal	Connect	or	Terminal	
F19	3	E15		57	Existed
CHECK HARNE		ONDARY SPEI	ED SENSOR (POWE		al and ground.
Connector	Те	rminal	Ground		Continuity
F19		3			Not existed
•	or replace damaged	•			
IPDM E/R 10A fuse (No.55, Harness for short Ignition switch the inspection res YES >> Check i NO >> Repair		E/R) DM E/R and ign Refer to <u>GI-42.</u>		n -	

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### P0725 ENGINE SPEED

### Description

The engine speed signal is transmitted from ECM to TCM by CAN communication line.

DTC Logic

INFOID:000000006601601

INFOID:000000006601602

INFOID:000000006601600

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0725	Engine Speed Input Circuit	<ul> <li>TCM does not receive the CAN communication signal from the ECM.</li> <li>Engine speed is too low while driving.</li> </ul>	• 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 <u>GI-42, "Intermittent Incident"</u>.

#### **Diagnosis Procedure**

### **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 <u>TM-159</u>, "CONSULT-III Function (TRANSMISSION)".
- **3.** CHECK INPUT SIGNALS

#### With CONSULT-III

- 1. Start engine.
- 2. Select "DATA MONITOR" in "TRANSMISSION".

### **P0725 ENGINE SPEED**

< DTC/CIRCUIT DIAGNOSIS >

## 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		E	
ACC PEDAL OPEN	Released accelerator pedal – Fully depressed accelerator pedal	0.0/8 - 8.0/8		
s the inspection re	sult normal?		C	
YES >> GO TC NO >> Check	<ol> <li>4. ignition signal circuit. Refer to <u>EC-414, "Component Fu</u></li> </ol>	nction Check"		
<b>1.</b> CHECK TCM			ΤN	
Check TCM input/c	utput signals. Refer to TM-164, "Reference Value".			
s the inspection re	sult normal?		E	
YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u> . NO >> Replace the TCM. Refer to <u>TM-280, "Removal and Installation"</u> .				
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### P0730 INCORRECT GEAR RATIO

### Description

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:000000006601604

INFOID:000000006601603

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0730	Incorrect Gear Ratio	Unexpected gear ratio detect- ed.	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 N	IPH)
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 <u>GI-42, "Intermittent Incident"</u>.

#### **Diagnosis** Procedure

INFOID:000000006601605

#### **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 <u>TM-159</u>, "CON-<u>SULT-III Function (TRANSMISSION)"</u>.
- YES 2 (DTC for "P0730" is displayed)>>Replace the transaxle assembly. Refer to <u>TM-301</u>, "<u>Removal and</u> <u>Installation</u>".
- NO >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.

### P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

P0740 TORQUE CONVERTER

### DTC Logic

[CVT: RE0F10B]

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INFOID:000000006601607

#### DTC Trouble diagnosis name DTC is detected if ... Possible cause · Harness or connectors Normal voltage not applied to (Solenoid circuit is open or Torque Converter Clutch Cir-P0740 solenoid due to open or short shorted.) cuit/Open circuit. Torque converter clutch sole-ТΜ noid 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. F 1. CHECK DTC DETECTION (P)With CONSULT-III 1. Turn ignition switch ON. 2. Wait at least 10 consecutive seconds. Select "Self Diagnostic Results" in "TRANSMISSION". 3. With GST Н Follow the procedure "With CONSULT-III". Is "P0740" detected? YES >> Go to TM-215, "Diagnosis Procedure". >> Check intermittent incident. Refer to GI-42, "Intermittent Incident". NO Diagnosis Procedure INFOID:000000006601608 1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE CIRCUIT 1. Turn ignition switch OFF. Κ Disconnect TCM connector. 2. 3. Check resistance between TCM connector terminal and ground. TCM connector Resistance (Approx.) Connector Terminal Ground F81 38 $3.0 - 9.0 \Omega$ M Is the inspection result normal? YES >> GO TO 4. NO >> GO TO 2. Ν $\mathbf{2}$ . CHECK HARNESS BETWEEN TCM AND TORQUE CONVERTER CLUTCH SOLENOID VALVE Disconnect CVT unit harness connector. 1. Check continuity between TCM connector terminal and CVT unit harness connector terminal. 2. TCM connector CVT unit harness connector Continuity Ρ Connector Terminal Connector Terminal F81 38 F51 12 Existed

If OK, check harness for short to ground and short to power. 3.

If OK, check continuity between ground and transaxle assembly. 4.

Reinstall any part removed. 5.

Is the inspection result normal?

>> GO TO 3. YES

### TM-215

### **P0740 TORQUE CONVERTER**

< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace damaged parts.

**3.**CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to <u>TM-216, "Component Inspection"</u>.

#### 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 <u>TM-280</u>, "Removal and Installation".

#### Component Inspection

#### 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			Resistance (Approx.)
Connector	Terminal	Ground	
F51	12		3.0 – 9.0 Ω

Is the inspection result normal?

#### YES >> INSPECTION END

NO >> Replace the transaxle assembly. Refer to <u>TM-301, "Removal and Installation"</u>.

# P0744 TORQUE CONVERTER

# Description

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:000000006601611 С

# DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0744	Torque Converter Clutch Circuit Intermittent	<ul> <li>CVT cannot perform lock-up even if electrical circuit is good.</li> <li>TCM detects as irregular by comparing difference value with slip rotation.</li> <li>There is big difference engine speed and primary speed when TCM lock-up signal is on.</li> </ul>	<ul> <li>Hydraulic control circuit</li> <li>Torque converter clutch solenoid valve</li> </ul>
OFF and wait at least 10 s	safe speed. PROCEDURE" has been econds before performing following procedure to con		ways turn ignition switch
With CONSULT-III Turn ignition switch ON Select "DATA MONITO		or at least 30 seconds.	
ACC PEDAL OPEN RANGE VEHICLE SPEED	: More than 1.0/8 : "D" position : Constant speed of mo km/h (25 MPH)	re than 40	
		. "Intermittent Incident".	
Diagnosis Procedure			INFOID:00000006601612
1.CHECK LINE PRESSUR	RE		
Perform line pressure test. I <u>s the inspection result norm</u> YES >> GO TO 2. NO >> Repair or replace 2.CHECK TORQUE CON	nal? ce damaged parts. Refer to	TM-188, "Inspection and Ju	udgment".

Check torque converter clutch solenoid valve. Refer to TM-216, "Component Inspection".

[CVT: RE0F10B]

INFOID:000000006601610

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# **P0744 TORQUE CONVERTER**

< DTC/CIRCUIT DIAGNOSIS >

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 <u>TM-207, "DTC Logic"</u>.

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 <u>TM-164, "Reference Value"</u>.

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.

NO >> Replace the TCM. Refer to <u>TM-280</u>, "Removal and Installation".

# P0745 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

# P0745 PRESSURE CONTROL SOLENOID A

# DTC Logic

DTC DETECTION LOGIC

	Trouble diagnosis name	DTC is detected if	Possible cause
P0745	Pressure Control Solenoid A	<ul> <li>Normal voltage not applied to solenoid due to open or short circuit.</li> <li>TCM detects as irregular by comparing target value with monitor value.</li> </ul>	<ul> <li>Harness or connectors (Solenoid circuit is open or shorted.)</li> <li>Line pressure solenoid valve</li> </ul>
TC CONFIRMATION	PROCEDURE		
IOTE: f "DTC CONFIRMATIOI	N PROCEDURE" has been	previously performed, al	wavs turn ignition switch
OFF and wait at least 10	) seconds before performir	ng the next test.	
.CHECK DTC DETECT	he following procedure to co	ninm the manunction is elimi	naled.
With CONSULT-III			
. Turn ignition switch C			
<ul> <li>Start engine and wait</li> <li>Select "Self Diagnost</li> </ul>	: at least 5 seconds. ic Results" in "TRANSMISSI	ON".	
With GST			
ollow the procedure "Wi s "P0745" detected?	IN CONSULT-III.		
YES >> Go to TM-21	9, "Diagnosis Procedure".		
	ittent incident. Refer to GI-42	2. "Intermittent Incident".	
Jianneie Drocodur			
rayinosis rincedul	e		INFOID:000000006601615
Diagnosis Procedur 1.CHECK LINE PRESS	e URE SOLENOID VALVE CIR	RCUIT	INFOID:00000006601615
CHECK LINE PRESS	URE SOLENOID VALVE CIR DFF.	RCUIT	INFOID:00000006601615
CHECK LINE PRESS	URE SOLENOID VALVE CIR DFF.		INFOID:00000006601615
CHECK LINE PRESS Turn ignition switch C Disconnect TCM con Check resistance bet	URE SOLENOID VALVE CIR DFF. nector. ween TCM connector termin		INFOID:00000006601615
CHECK LINE PRESS Turn ignition switch C Disconnect TCM con Check resistance bet	URE SOLENOID VALVE CIR DFF. nector. ween TCM connector termin	al and ground.	INFOID:000000006601615 Resistance (Approx.)
CHECK LINE PRESS	URE SOLENOID VALVE CIR DFF. nector. ween TCM connector termin		
CHECK LINE PRESS Turn ignition switch C Disconnect TCM con Check resistance bet	URE SOLENOID VALVE CIR DFF. nector. ween TCM connector termin onnector Terminal 40	al and ground.	Resistance (Approx.)
CHECK LINE PRESS Turn ignition switch C Disconnect TCM con Check resistance bet TCM cc Connector F81 S the inspection result no YES >> GO TO 4.	URE SOLENOID VALVE CIR DFF. nector. ween TCM connector termin onnector Terminal 40	al and ground.	Resistance (Approx.)
CHECK LINE PRESS Turn ignition switch C Disconnect TCM con Check resistance bet TCM cc Connector F81 the inspection result no YES >> GO TO 4. NO >> GO TO 2.	URE SOLENOID VALVE CIR DFF. nector. ween TCM connector termin onnector Terminal 40 ormal?	al and ground.	Resistance (Approx.)
CHECK LINE PRESS Turn ignition switch C Disconnect TCM con Check resistance bet TCM cc Connector F81 the inspection result no YES >> GO TO 4. NO >> GO TO 2. CHECK LINE PRESS	URE SOLENOID VALVE CIR DFF. nector. ween TCM connector termin onnector Terminal 40 ormal? URE SOLENOID VALVE	al and ground. Ground	Resistance (Approx.)
CHECK LINE PRESS Turn ignition switch C Disconnect TCM con Check resistance bet TCM co Connector F81 Sthe inspection result no YES >> GO TO 4. NO >> GO TO 2. CHECK LINE PRESS Check line pressure soler	URE SOLENOID VALVE CIR OFF. nector. ween TCM connector termin onnector Terminal 40 ormal? URE SOLENOID VALVE noid valve. Refer to <u>TM-220,</u>	al and ground. Ground	Resistance (Approx.)
CHECK LINE PRESS Turn ignition switch C Disconnect TCM con Check resistance bet TCM cc Connector F81 s the inspection result no YES >> GO TO 4. NO >> GO TO 2. CHECK LINE PRESS Check line pressure soler s the inspection result no YES >> GO TO 3.	URE SOLENOID VALVE CIR DFF. nector. ween TCM connector termin onnector Terminal 40 ormal? URE SOLENOID VALVE noid valve. Refer to TM-220, ormal?	al and ground. Ground	Resistance (Approx.)
CHECK LINE PRESS Turn ignition switch C Disconnect TCM con Check resistance bet TCM cc Connector F81 sthe inspection result nc YES >> GO TO 4. NO >> GO TO 2. CHECK LINE PRESS Check line pressure soler the inspection result nc YES >> GO TO 3. NO >> Repair or rep	URE SOLENOID VALVE CIR OFF. nector. ween TCM connector termin onnector Terminal 40 ormal? URE SOLENOID VALVE noid valve. Refer to <u>TM-220,</u>	Ground	Resistance (Approx.) 3.0 – 9.0 Ω

2. Disconnect CVT unit harness connector and TCM connector.

3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

# TM-219

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INFOID:000000006601614

# P0745 PRESSURE CONTROL SOLENOID A

### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

INFOID:000000006601616

TCM co	onnector	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 <u>GI-42, "Intermittent Incident"</u>.

NO >> Replace the TCM. Refer to <u>TM-280, "Removal and Installation"</u>.

Component Inspection

### 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			Bosistance (Approx.)
Connector	Terminal	Ground	Resistance (Approx.)
F51	2		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the transaxle assembly. Refer to <u>TM-301, "Removal and Installation"</u>.

# **P0746 PRESSURE CONTROL SOLENOID A**

### < DTC/CIRCUIT DIAGNOSIS >

# P0746 PRESSURE CONTROL SOLENOID A

### Description

The line pressure solenoid valve regulates the oil pump discharge pressure to suit the driving condition in <sub>B</sub> response to a signal sent from the TCM.

# DTC Logic

INFOID:000000006601618

INFOID:000000006601617

# DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause	ΤM
P0746	Pressure Control Solenoid A Performance/Stuck Off	Unexpected gear ratio was de- tected in the LOW side due to excessively low line pressure.	<ul> <li>Line pressure control system</li> <li>secondary speed sensor</li> <li>primary speed sensor</li> </ul>	E
DTC CONFIRMATIO	N PROCEDURE			
CAUTION:				_
Always drive vehicle a NOTE:	at a safe speed.			F
If "DTC CONFIRMATI	ON PROCEDURE" has been		ways turn ignition switch	
	10 seconds before performing the following procedure to cor		nated	G
1.CHECK DTC DETE	• •			
				Н
With CONSULT-III Turn ignition switch	ι ON.			
2. Select "DATA MON	ITOR" in "TRANSMISSION"			
<ol> <li>Start engine and m km/h (0 MPH).</li> </ol>	naintain the following conditions	s for at least 10 consecutive	e seconds. Test start from 0	
ATF TEMP SEN	: 1.0 – 2.0 V			J
ACC PEDAL OPEN RANGE	N : More than 1.0/8 : "D" position			
VEHICLE SPEED	: 10 km/h (6 MPH)	More than		K
Driving location	: Driving the vehic			1
	creased engine lo maintain the drivi			
	required for this to	est.		L
With GST     Follow the procedure "\				
Is "P0746" detected?				N
YES >> Go to TM-2	221, "Diagnosis Procedure".			
NO >> Check inte	rmittent incident. Refer to GI-42	2, "Intermittent Incident".		Ν
Diagnosis Procedu	ure		INFOID:00000006601619	
1.CHECK LINE PRES	SURE			C
Perform line pressure to	est. Refer to TM-188, "Inspection	on and Judgment".		
Is the inspection result	normal?	-		
YES >> GO TO 2.			1	F
-	eplace damaged parts. Refer to	D <u>TIM-188, "Inspection and Ji</u>	<u>udgment"</u> .	
	SURE SOLENOID VALVE			
•	lenoid valve. Refer to TM-220,	"Component Inspection".		
Is the inspection result YES >> GO TO 3.	<u>nonnal (</u>			

NO >> Repair or replace damaged parts.

[CVT: RE0F10B]

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# **P0746 PRESSURE CONTROL SOLENOID A**

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

**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 <u>TM-207, "DTC Logic"</u>.

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 <u>TM-280, "Removal and Installation"</u>.

# **P0776 PRESSURE CONTROL SOLENOID B**

### < DTC/CIRCUIT DIAGNOSIS >

# P0776 PRESSURE CONTROL SOLENOID B

Trouble diagnosis name

### Description

The secondary pressure solenoid valve regulates the secondary pressure to suit the driving condition in <sub>B</sub> response to a signal sent from the TCM.

DTC is detected if...

# DTC Logic

INFOID:000000006601621

Possible cause

INFOID:000000006601620

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### DTC DETECTION LOGIC

DTC

	0		
P0776	Pressure Control Solenoid B Performance/Stuck Off	Secondary pressure is too high or too low compared with the commanded value while driv- ing.	<ul> <li>Harness or connectors (Solenoid circuit is open or shorted.)</li> <li>Secondary pressure solenoid valve system</li> <li>Line pressure control system</li> <li>Secondary pressure sensor</li> </ul>
DTC CONFIRMATION PI	ROCEDURE		
Always drive vehicle at a	safe speed.		
NOTE: If "DTC CONFIRMATION	PROCEDURE" has been	previously performed, al	ways turn ignition switch
OFF and wait at least 10 s	seconds before performin	g the next test.	
After the repair, perform the <b>1</b> .CHECK DTC DETECTION	e following procedure to con	ifirm the malfunction is elimi	nated.
	JN		
With CONSULT-III 1. Turn ignition switch ON	J		
2. Select "DATA MONITO	R" in "TRANSMISSION".		
<ol><li>Start engine and maintain</li></ol>	ain 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) l		
Driving location	: Driving the vehic creased engine loa		
	maintain the drivin	g conditions	
	required for this te	SI.	
With GST     Follow the procedure "With	CONSULT-III".		
Is "P0776" detected?			
YES >> Go to <u>TM-223</u> ,	"Diagnosis Procedure".		
NO >> Check intermitt	tent incident. Refer to GI-42	. "Intermittent Incident".	
Diagnosis Procedure			INFOID:00000006601622
1.CHECK LINE PRESSUR	RE		
Perform line pressure test.	Refer to TM-188, "Inspectic	on and Judgment".	
Is the inspection result norn		-	
YES >> GO TO 2.			
<b>^</b>	ce damaged parts. Refer to		<u>udgment"</u> .

2. CHECK SECONDARY PRESSURE SOLENOID VALVE

Check secondary pressure solenoid valve. Refer to TM-226, "Component Inspection".

# TM-223

[CVT: RE0F10B]

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# **P0776 PRESSURE CONTROL SOLENOID B**

< DTC/CIRCUIT DIAGNOSIS >

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 <u>TM-220, "Component Inspection"</u>.

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 <u>TM-164, "Reference Value"</u>.

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.

NO >> Replace the TCM. Refer to <u>TM-280</u>, "Removal and Installation".

# **P0778 PRESSURE CONTROL SOLENOID B**

< DTC/CIRCUIT DIAGNOSIS >

# P0778 PRESSURE CONTROL SOLENOID B

# DTC Logic

[CVT: RE0F10B]

INFOID:000000006601624

# DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0778	Pressure Control Solenoid B Electrical	<ul> <li>Normal voltage not applied to solenoid due to cut line, short, or the like.</li> <li>TCM detects as irregular by comparing target value with monitor value.</li> </ul>	<ul> <li>Harness or connectors (Sensor circuit is open or shorted.)</li> <li>Secondary pressure solenoid valve</li> </ul>
DTC CONFIRMATION	PROCEDURE		
NOTE:			
	ON PROCEDURE" has been 0 seconds before performing		ways turn ignition switch
· · ·	the following procedure to co	nfirm the malfunction is elimi	nated.
CHECK DTC DETEC	TION		
<ol> <li>Turn ignition switch</li> <li>Start engine.</li> </ol>	UN.		
	aintain the following conditior stic Results" in "TRANSMISS		econds.
Select Sell Diagnos     With GST			
Follow the procedure "W	/ith CONSULT-III".		
<u>ls "P0778" detected?</u> YES >> Go to TM-22	25, "Diagnosis Procedure".		
	mittent incident. Refer to GI-4	2, "Intermittent Incident".	
Diagnosis Procedu	re		INFOID:00000006601625
			INFOID:000000006601625
1.CHECK SECONDAR	Y PRESSURE SOLENOID V	ALVE CIRCUIT	INFOID:00000006601625
<b>1.</b> CHECK SECONDAR 1. Turn ignition switch 2. Disconnect TCM co	Y PRESSURE SOLENOID V OFF. nnector.		INFOID:00000006601625
L.CHECK SECONDAR I. Turn ignition switch 2. Disconnect TCM co	Y PRESSURE SOLENOID V OFF.		INFOID:00000006601625
<ol> <li>Turn ignition switch</li> <li>Disconnect TCM colors</li> <li>Check resistance be</li> </ol>	Y PRESSURE SOLENOID V OFF. nnector.		
<b>1</b> .CHECK SECONDAR 1. Turn ignition switch 2. Disconnect TCM co 3. Check resistance be	Y PRESSURE SOLENOID V OFF. nnector. etween TCM connector termir		INFOID:00000006601625 Resistance (Approx.)
1.CHECK SECONDAR 1. Turn ignition switch 2. Disconnect TCM co 3. Check resistance be TCI	Y PRESSURE SOLENOID V OFF. nnector. etween TCM connector termir	al and ground.	
1.CHECK SECONDAR 1. Turn ignition switch 2. Disconnect TCM col 3. Check resistance be TCI Connector F81 Is the inspection result n	Y PRESSURE SOLENOID V OFF. nnector. etween TCM connector termin M connector Terminal 39	al and ground.	Resistance (Approx.)
1.CHECK SECONDAR 1. Turn ignition switch 2. Disconnect TCM co 3. Check resistance be TCI Connector F81	Y PRESSURE SOLENOID V OFF. nnector. etween TCM connector termin M connector Terminal 39	al and ground.	Resistance (Approx.)
1.CHECK SECONDAR 1. Turn ignition switch 2. Disconnect TCM condition 3. Check resistance be          TCI         Connector         F81         s the inspection result n         YES       >> GO TO 4.         NO       >> GO TO 2.	Y PRESSURE SOLENOID V OFF. nnector. etween TCM connector termin M connector Terminal 39 ormal?	Ground	Resistance (Approx.)
CHECK SECONDAR     Turn ignition switch     Disconnect TCM col     Connector     F81     Sthe inspection result n     YES >> GO TO 4.     NO >> GO TO 2.     CHECK SECONDAR	Y PRESSURE SOLENOID V OFF. nnector. etween TCM connector termin M connector Terminal 39	al and ground. Ground	Resistance (Approx.) 3.0 – 9.0 Ω
1.CHECK SECONDAR 1. Turn ignition switch 2. Disconnect TCM col 3. Check resistance be TCI Connector F81 Is the inspection result n YES $>>$ GO TO 4. NO $>>$ GO TO 2. 2.CHECK SECONDAR Check secondary pressults Is the inspection result n	Y PRESSURE SOLENOID V OFF. nnector. etween TCM connector termin M connector Terminal 39 ormal? Y PRESSURE SOLENOID V ure solenoid valve. Refer to T	al and ground. Ground	Resistance (Approx.) 3.0 – 9.0 Ω
1.CHECK SECONDAR 1. Turn ignition switch 2. Disconnect TCM col 3. Check resistance be TCI Connector F81 Is the inspection result n YES >> GO TO 4. NO >> GO TO 2. 2.CHECK SECONDAR Check secondary pressult Is the inspection result n YES >> GO TO 3.	Y PRESSURE SOLENOID V OFF. nnector. etween TCM connector termin M connector V connector Terminal 39 ormal? Y PRESSURE SOLENOID V ure solenoid valve. Refer to I ormal?	al and ground. Ground	Resistance (Approx.) 3.0 – 9.0 Ω
1.CHECK SECONDAR 1. Turn ignition switch 2. Disconnect TCM color 3. Check resistance be TCI Connector F81 s the inspection result n YES >> GO TO 4. NO >> GO TO 2. 2.CHECK SECONDAR Check secondary pressu s the inspection result n YES >> GO TO 3. NO >> Repair or re	Y PRESSURE SOLENOID V OFF. nnector. etween TCM connector termin M connector Terminal 39 ormal? Y PRESSURE SOLENOID V ure solenoid valve. Refer to <u>T</u> ormal? place damaged parts.	ALVE	Resistance (Approx.) 3.0 – 9.0 Ω
1.CHECK SECONDAR 1. Turn ignition switch 2. Disconnect TCM color 3. Check resistance be TCI Connector F81 s the inspection result n YES >> GO TO 4. NO >> GO TO 2. 2.CHECK SECONDAR Check secondary pressu s the inspection result n YES >> GO TO 3. NO >> Repair or re	Y PRESSURE SOLENOID V OFF. nnector. etween TCM connector termin M connector Terminal 39 ormal? Y PRESSURE SOLENOID V ure solenoid valve. Refer to <u>T</u> ormal? place damaged parts.	ALVE	Resistance (Approx.) 3.0 – 9.0 Ω

3. Check continuity between TCM connector terminal and CVT unit harness connector terminal.

# TM-225

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# P0778 PRESSURE CONTROL SOLENOID B

### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

INFOID:000000006601626

TCM co	TCM connector		CVT unit harness connector	
Connector	Terminal	Connector Terminal		Continuity
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. СНЕСК ТСМ

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

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.

NO >> Replace the TCM. Refer to <u>TM-280</u>, "Removal and Installation".

Component Inspection

### 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			Resistance (Approx.)
Connector	Terminal	Ground	
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/CIRCUIT DIAGNOSIS >

# P0826 UP AND DOWN SHIFT SW

# DTC Logic

INFOID:000000006601628

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DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0826	Up and Down Shift Switch Cir- cuit	When an impossible pattern of switch signals is detected, a malfunction is detected.	<ul> <li>Harness or connectors</li> <li>(These switches circuit is open or shorted.)</li> <li>(TCM, and combination meter circuit are open or shorted.)</li> <li>(CAN communication line is open or shorted.)</li> <li>Manual mode select switch</li> <li>Manual mode position select switch</li> </ul>
TC CONFIRMATION <mark>AUTION:</mark> Iways drive vehicle at			
OTÉ:		providually conducted a	
			wave turn ignition ewitch
FF and wait at least 1 fter the repair, perform	0 seconds before conduction the following procedure to corr	g the next test.	ways turn ignition switch
FF and wait at least 1 ter the repair, perform CHECK DTC DETEC	0 seconds before conduction the following procedure to corr	g the next test.	
FF and wait at least 1 fter the repair, perform CHECK DTC DETEC With CONSULT-III Turn ignition switch (	0 seconds before conductin the following procedure to cor TION DN.	g the next test.	
FF and wait at least 1 fter the repair, perform .CHECK DTC DETEC With CONSULT-III Turn ignition switch ( Select "DATA MONI	0 seconds before conductin the following procedure to cor TION	g the next test.	
FF and wait at least 1 fter the repair, perform .CHECK DTC DETEC With CONSULT-III Turn ignition switch ( Select "DATA MONI Start engine.	0 seconds before conductin the following procedure to cor TION DN.	g the next test.	
<b>FF and wait at least 1</b> fter the repair, perform         .CHECK DTC DETEC         With CONSULT-III         . Turn ignition switch 0         . Select "DATA MONI"         . Start engine.	<b>0 seconds before conductin</b> the following procedure to cor TION DN. FOR" in "TRANSMISSION".	g the next test.	
<ul> <li><b>DFF and wait at least 1</b></li> <li>After the repair, perform</li> <li><b>.</b> CHECK DTC DETEC</li> <li><b>With CONSULT-III</b></li> <li>Turn ignition switch (</li> <li>Select "DATA MONI"</li> <li>Start engine.</li> <li>Drive vehicle for at le</li> <li>MMODE</li> <li>MMODE</li> </ul>	0 seconds before conductin the following procedure to con TION ON. FOR" in "TRANSMISSION". east 2 consecutive seconds. : ON	g the next test.	
<ul> <li><b>DFF and wait at least 1</b></li> <li>After the repair, perform</li> <li><b>CHECK DTC DETEC</b></li> <li><b>With CONSULT-III</b></li> <li>Turn ignition switch (</li> <li>Select "DATA MONI"</li> <li>Start engine.</li> <li>Drive vehicle for at less</li> <li>MMODE</li> <li><u>MMODE</u></li> <li><u>Select "P0826" detected?</u></li> <li>YES &gt;&gt; Go to <u>TM-22</u></li> </ul>	0 seconds before conductin the following procedure to cor TION ON. FOR" in "TRANSMISSION". east 2 consecutive seconds. : ON 7, "Diagnosis Procedure".	g the next test. firm the malfunction is elim	
<b>OFF and wait at least 1</b> After the repair, perform        CHECK DTC DETEC <b>With CONSULT-III</b> Turn ignition switch 0        Select "DATA MONI"         Start engine.        Drive vehicle for at letter <b>MMODE</b> s "P0826" detected?         YES       >> Go to TM-22         NO       >> Check intern	0 seconds before conductin the following procedure to cor TION ON. FOR" in "TRANSMISSION". east 2 consecutive seconds. : ON 7. "Diagnosis Procedure". hittent incident. Refer to <u>GI-42</u>	g the next test. firm the malfunction is elim	
<ul> <li><b>DFF and wait at least 1</b></li> <li>After the repair, perform</li> <li><b>.</b> CHECK DTC DETEC</li> <li><b>With CONSULT-III</b></li> <li>Turn ignition switch (</li> <li>Select "DATA MONIT</li> <li>Start engine.</li> <li>Drive vehicle for at less the second secon</li></ul>	0 seconds before conductin the following procedure to cor TION ON. FOR" in "TRANSMISSION". east 2 consecutive seconds. : ON 7. "Diagnosis Procedure". hittent incident. Refer to <u>GI-42</u> e	g the next test. firm the malfunction is elim	inated.
<ul> <li><b>FF and wait at least 1</b></li> <li>fter the repair, perform</li> <li>.CHECK DTC DETEC</li> <li><b>With CONSULT-III</b></li> <li>Turn ignition switch (</li> <li>Select "DATA MONI"</li> <li>Start engine.</li> <li>Drive vehicle for at legendation of the select of</li></ul>	0 seconds before conductin the following procedure to cor TION ON. FOR" in "TRANSMISSION". east 2 consecutive seconds. : ON 7. "Diagnosis Procedure". hittent incident. Refer to <u>GI-42</u> e	g the next test. firm the malfunction is elim	inated.
<ul> <li><b>DFF and wait at least 1</b></li> <li>After the repair, perform</li> <li>CHECK DTC DETEC</li> <li>With CONSULT-III</li> <li>Turn ignition switch (2)</li> <li>Select "DATA MONI"</li> <li>Start engine.</li> <li>Drive vehicle for at le</li> <li>MMODE</li> <li>S * * P0826" detected?</li> <li>YES &gt;&gt; Go to TM-22</li> <li>NO &gt;&gt; Check intern</li> <li>Diagnosis Procedur</li> <li>CHECK MANUAL MC</li> <li>With CONSULT-III</li> </ul>	0 seconds before conductin the following procedure to cor TION ON. TOR" in "TRANSMISSION". east 2 consecutive seconds. : ON 7. "Diagnosis Procedure". hittent incident. Refer to GI-42 Te DDE SWITCH CIRCUIT	g the next test. firm the malfunction is elim	inated.
OFF and wait at least 1 After the repair, perform 1.CHECK DTC DETEC With CONSULT-III 1. Turn ignition switch (2. Select "DATA MONIT 3. Start engine. 4. Drive vehicle for at least MMODE (1. Drive vehicle for at least MMODE (2. Select "DATA MONIT 1. CHECK MANUAL MC (2. Select "DATA MONIT (2. Select "DATA MONIT)	D seconds before conductin the following procedure to cor TION DN. TOR" in "TRANSMISSION". east 2 consecutive seconds. : ON 7. "Diagnosis Procedure". hittent incident. Refer to GI-42 COLE SWITCH CIRCUIT DN.	g the next test. firm the malfunction is elim	inated.

Item name	Condition	Display value	C
MMODE	Manual shift gate position (neutral)	On	
MMODE	Other than the above	Off	_
	Manual shift gate position	Off	P
NONMMODE	Other than the above	On	-
	Selector lever: UP (+ side)	On	-
UPLVR	Other than the above	Off	-
	Selector lever: DOWN (- side)	On	-
DOWNLVR	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  $\Leftrightarrow$  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 <u>TM-228, "Component Inspection"</u>.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

 $\mathbf{3}$ .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	Continuity
	7		40	
M57	8	8 M34	38	Existed
V CIVI	9		39	Existed
	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 har	elector harness connector Continuity		Continuity
Connector	Terminal	Ground	Continuity
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 <u>GI-42, "Intermittent Incident"</u>.

NO >> Replace the TCM. Refer to <u>TM-280, "Removal and Installation"</u>.

**Component Inspection** 

MANUAL MODE SWITCH

**1.**MANUAL MODE SWITCH

INFOID:000000006601630

# P0826 UP AND DOWN SHIFT SW

### < DTC/CIRCUIT DIAGNOSIS >

### [CVT: RE0F10B]

Check continuity between CVT shift selector connector terminals.

CVT	shift selector connect	or	Condition	Continuity	
Connector	Term	inal	Condition	Continuity	
	10	11	Manual shift gate position	Not existed	
	10	11	Other than the above	Existed	
	7	10	Manual shift gate position (neutral)	Existed	
M224	7	7 10	Other than the above	Not existed	
M324	0	10	Selector lever: UP (+ side)	Existed	
	9	10	Other than the above	Not existed	_
	0	10	Selector lever: DOWN (- side)	Existed	
	8	10	Other than the above	Not existed	_

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace damaged parts.

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# **P0840 TRANSMISSION FLUID PRESSURE SEN/SW A**

< DTC/CIRCUIT DIAGNOSIS >

# P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

# DTC Logic

INFOID:000000006601632

[CVT: RE0F10B]

### 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.	<ul> <li>Harness or connectors (Switch circuit is open or shorted.)</li> <li>Secondary pressure sensor</li> </ul>

### 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:000000006601633

# 1.CHECK INPUT SIGNAL

- 1. Start engine.
- 2. Check voltage between TCM connector terminal and ground.

TCM co	TCM connector		Condition	Voltage (Approx.)
Connector	Terminal Ground	Ground	Condition	vollage (Approx.)
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 co	TCM connector CVT unit harness connector		CVT unit harness connector		
Connector	Terminal	Connector	Terminal	Continuity	
F81	15	F51	23	Existed	

4. If OK, check harness for short to ground and short to power.

< DTC/CIRCUIT DIAGNOSIS > 5. Reinstall any part removed.		NA
		[CVT: RE0F10E
Is the inspection result normal?		
YES >> GO TO 3. NO >> Repair or replace damaged parts.		
<b>3.</b> CHECK SENSOR POWER AND SENSOR GROUND		
1. Connect TCM connector.		
2. Turn ignition switch ON.		
3. Check voltage between CVT unit harness connector terminals	í.	
CVT unit harness connector		
Connector Terminal		Voltage (Approx.)
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 HARNES		
SENSOR GROUND)	55 CONNECTOR (3	SENSOR POWER AN
1. Turn ignition switch OFF.		
2. Disconnect TCM connector.		
3. Check continuity between TCM connector terminals and CVT	unit harness connec	tor terminals.
TCM connector CVT unit harn	ess connector	
Connector Terminal Connector	Terminal	Continuity
25	19	Existed
F81 F51 F51	20	EXISIEO
4. If OK, check harness for short to ground and short to power.		
5. Reinstall any part removed.		
<u>Is the inspection result normal?</u> YES >> GO TO 5.		
NO >> Repair or replace damaged parts.		
ite s itepail el replace damagea parter		
5. CHECK THE TCM SHORT		
5. CHECK THE TCM SHORT	elf-diagnostic results	s and then start engin
	elf-diagnostic results	s and then start engin
5. CHECK THE TCM SHORT Replace same type TCM, perform self-diagnosis check. Erase s perform self-diagnosis check. Refer to <u>TM-230, "DTC Logic"</u> . Is "P0840" detected again?	-	-
5. CHECK THE TCM SHORT Replace same type TCM, perform self-diagnosis check. Erase s perform self-diagnosis check. Refer to <u>TM-230</u> , " <u>DTC Logic</u> ". <u>Is "P0840" detected again?</u> YES >> Replace the transaxle assembly. Refer to <u>TM-301</u> , "Reference of the transaxle assembly."	emoval and Installati	-
5. CHECK THE TCM SHORT         Replace same type TCM, perform self-diagnosis check. Erase s perform self-diagnosis check. Refer to TM-230, "DTC Logic".         Is "P0840" detected again?         YES       >> Replace the transaxle assembly. Refer to TM-301, "Refer to TM-280, "Removal and Insertion".	emoval and Installati	
5. CHECK THE TCM SHORT         Replace same type TCM, perform self-diagnosis check. Erase s perform self-diagnosis check. Refer to TM-230, "DTC Logic".         Is "P0840" detected again?         YES       >> Replace the transaxle assembly. Refer to TM-301, "Refer to TM-280, "Removal and Instance"         NO       >> Replace the TCM. Refer to TM-280, "Removal and Instance"         6.CHECK TCM	emoval and Installati stallation".	
5. CHECK THE TCM SHORT         Replace same type TCM, perform self-diagnosis check. Erase s perform self-diagnosis check. Refer to TM-230, "DTC Logic".         Is "P0840" detected again?         YES       >> Replace the transaxle assembly. Refer to TM-301, "Reformed and Instance of the transaction of tr	emoval and Installati stallation".	
5. CHECK THE TCM SHORT         Replace same type TCM, perform self-diagnosis check. Erase s perform self-diagnosis check. Refer to TM-230, "DTC Logic".         Is "P0840" detected again?         YES       >> Replace the transaxle assembly. Refer to TM-301, "Re NO         NO       >> Replace the TCM. Refer to TM-280, "Removal and Ins 6. CHECK TCM         Check TCM input/output signals. Refer to TM-164, "Reference Val Is the inspection result normal?	emoval and Installati stallation". ue".	
5. CHECK THE TCM SHORT         Replace same type TCM, perform self-diagnosis check. Erase s perform self-diagnosis check. Refer to TM-230, "DTC Logic".         Is "P0840" detected again?         YES       >> Replace the transaxle assembly. Refer to TM-301, "Reforming the transaction of transacti	emoval and Installati stallation". ue". nt Incident".	
<ul> <li>5. CHECK THE TCM SHORT</li> <li>Replace same type TCM, perform self-diagnosis check. Erase s perform self-diagnosis check. Refer to <u>TM-230</u>, "<u>DTC Logic</u>".</li> <li><u>Is "P0840" detected again?</u></li> <li>YES &gt;&gt; Replace the transaxle assembly. Refer to <u>TM-301</u>, "Re NO &gt;&gt; Replace the TCM. Refer to <u>TM-280</u>, "Removal and Ins 6.CHECK TCM</li> <li>Check TCM input/output signals. Refer to <u>TM-164</u>, "Reference Val Is the inspection result normal?</li> <li>YES &gt;&gt; Check intermittent incident. Refer to <u>GI-42</u>, "Intermitteend of the sector of</li></ul>	emoval and Installati stallation". ue". nt Incident".	

TM-231

# P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

### < DTC/CIRCUIT DIAGNOSIS >

# P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

### Description

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

INEOID:000000006601635

INFOID:00000006601634

# 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.	<ul> <li>Harness or connectors (Sensor circuit is open or shorted.)</li> <li>Secondary pressure sensor</li> </ul>

### 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

### (R) With CONSULT-III

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" in "TRANSMISSION". 2.
- 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".

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

# Diagnosis Procedure

INFOID:000000006601636

# 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.

>> Repair or replace damaged parts. NO

 ${f 3.}$ 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. [CVT: RE0F10B]

P0841 TRANSMISSION FLUID PRESSURE SEN/SW A	
< DTC/CIRCUIT DIAGNOSIS > [C]	/T: RE0F10B]
4.CHECK SECONDARY PRESSURE SOLENOID VALVE	
Check secondary pressure solenoid valve. Refer to TM-226, "Component Inspection".	A
Is the inspection result normal?	
YES >> GO TO 5.	E
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.	TN
NO >> Repair or replace damaged parts.	
6.снеск тсм	
Check TCM input/output signals. Refer to <u>TM-164. "Reference Value"</u> .	E
Is the inspection result normal?	
<ul> <li>YES &gt;&gt; Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.</li> <li>NO &gt;&gt; Replace the TCM. Refer to <u>TM-280, "Removal and Installation"</u>.</li> </ul>	F
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# P0868 TRANSMISSION FLUID PRESSURE

### Description

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:000000006601638

INFOID:000000006601637

### 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 com- manded value while driving.	<ul> <li>Harness or connectors (Solenoid circuit is open or shorted.)</li> <li>Line pressure control system</li> <li>Secondary pressure solenoid valve system</li> <li>Secondary pressure sensor</li> </ul>

# 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 $ ightarrow$ 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 <u>GI-42, "Intermittent Incident"</u>.

# **Diagnosis Procedure**

INFOID:000000006601639

**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?

# TM-234

# **P0868 TRANSMISSION FLUID PRESSURE**

FU000 I RAINSINISSION FLUID FRESSURE	
< DTC/CIRCUIT DIAGNOSIS >	[CVT: RE0F10B]
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.снеск тсм	
Check input/output signal. Refer to TM-164, "Reference Value"	
Is the inspection result normal?	
YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u> .	
NO >> Replace the TCM. Refer to <u>TM-280, "Removal and Installation"</u> .	

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# P1585 G SENSOR

# Description

- 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:000000006707373

INFOID:00000006707372

# DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1585	G Sensor Circuit	<ul> <li>G sensor voltage value that TCM receives is more than 3.13 V</li> <li>G sensor voltage value that TCM receives is less than 0.67 V</li> <li>G sensor voltage value that TCM receives is deviated from acceleration and deceleration speed</li> </ul>	<ul> <li>Harness or connectors (G sensor circuit is open or shorted.)</li> <li>G sensor characteristic malfunction (in- termediate sticking)</li> <li>G sensor</li> </ul>

# DTC CONFIRMATION PROCEDURE

### 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

# **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".
- Select "G SEN SLOPE".
- 5. Check display of "G SEN SLOPE".

Monitor item	Condition	Values to be displayed (reference)
	Ignition switch: ON (Level road)	0%
G SEN SLOPE	Ignition switch: ON (Uphill slope)	Positive value (maximum 40.45%)
	Ignition switch: ON (Downhill slope)	Negative value (minimum-40.45%)



INFOID:000000006707374

P1585	G SENSOR	
-------	----------	--

[CVT: RE0F10B]

	sor connector.		ector terminal and gr	ound.
Connector	Termina		Ground	Voltage (Approx.)
B32	3			5.0 V
Turn ignition switc Disconnect TCM c	connectors. Detween TCM vehicle			sensor vehicle side har
<b>TOM</b>	narness connector	G sensor vehicle si	de harness connector	
I CIVI vehicle side h				O and in sites
TCM vehicle side r	Terminal	Connector	Terminal	Continuity
	Terminal 7		Terminal 1	Existed
Connector F81	Terminal 7 44	Connector	Terminal	
Connector F81 s the inspection result YES >> GO TO 4. NO >> Repair or I.CHECK HARNESS Check continuity betwo	Terminal 7 44	Connector B32 S. D G SENSOR (PART harness connector te	Terminal 1 2 2 2 erminals and ground	Existed
Connector F81 s the inspection result YES >> GO TO 4. NO >> Repair or CHECK HARNESS Check continuity betwo TCM vehicle Connector	Terminal 7 44 normal? replace damaged part BETWEEN TCM ANI een TCM vehicle side	Connector B32 S. D G SENSOR (PART harness connector te	Terminal 1 2	Continuity
Connector F81 Sthe inspection result YES >> GO TO 4. NO >> Repair or CHECK HARNESS Check continuity betwo	Terminal 7 44 anormal? replace damaged part BETWEEN TCM ANI een TCM vehicle side e side harness connector 7 44	Connector B32 S. D G SENSOR (PART harness connector te	Terminal 1 2 2 2 erminals and ground	Existed

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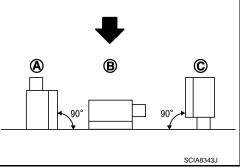
# P1585 G SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

#### Check voltage between TCM connector terminal and ground. 4.

: Direction of gravitational force

TCM co	nnector		Condition	Voltage (Ap-
Connector	Terminal		Condition	prox.)
		Ground	Vertical (-1G) (A)	1.17 V
F81	44		Horizontal (B)	2.5 V
			Vertical (1G) (C)	3.83 V



Is the inspection result normal?

YES >> GO TO 6.

>> Replace G sensor. Refer to TM-282, "Removal and Installation". NO

### 6.PERFORM CALIBRATION

- 1. Install G sensor. Refer to TM-282, "Removal and Installation".
- Select "Self Diagnostic Results" in "TRANSMISSION". 2.
- Select "Erase". 3.
- Perform "G SENSOR REMOVAL/INSTALLATION AND REPLACEMENT". Refer to TM-182, "Description". 4.

# 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.

- Disconnect TCM connectors. 2.
- Check continuity between TCM vehicle side harness connector terminal and G sensor vehicle side har-3. ness connector terminal.

TCM vehicle side	TCM vehicle side harness connector		G sensor vehicle side harness connector		
Connector	Terminal	Connector	Terminal	Continuity	
F81	26	B32	3	Existed	

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace damaged parts.

f 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		Continuity
Connector Terminal		Ground	Continuity
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:000000006707375

**1.**PERFORM G SENSOR CALIBRATION

Perform "G SENSOR REMOVAL/INSTALLATION AND REPLACEMENT".

>> Refer to TM-182, "Description".

# **TM-238**

# P1701 TCM

# Description

When the power supply to the TCM is cut OFF, for example because the battery is removed, and the self-diag-В nosis memory function stops, malfunction is detected. NOTE:

Since "P1701" will be indicated when replacing TCM, perform diagnosis after erasing "SELF-DIAG **RESULTS**"

# **DTC** Logic

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is dete	cted if	Possible cause
P1701	Power Supply Circuit	<ul> <li>When the power TCM is cut OFF because the ba moved, and the sis memory fun</li> <li>This is not a ma message (When OFF a power su TCM, this mess on the screen).</li> </ul>	; for example ttery is re- self-diagno- ction stops. Ilfunction never shutting upply to the	ess or connectors ery or ignition switch and circuit is open or short-
DTC CONFIRMAT	TION PROCEDURE			
f "DTC CONFIRM OFF and wait at le	ATION PROCEDURE" has been east 10 seconds before conducting form the following procedure to contend	ng the next test.	· · · · ·	ırn ignition switch
3. Select "Self Dia s "P1701" detected YES >> Go to ]	vitch ON. t 2 consecutive seconds. agnostic Results" in "TRANSMISSI		<u>cident"</u> .	
Diagnosis Proc	edure			INFOID:000000006601642
1. СНЕСК ТСМ РО	OWER SOURCE			
Check voltage betw	veen TCM connector terminals and	l ground.		
Name	TCM connector		Condition	Voltage (Approx.)
ivame	Connector Terminal		Condition	Voltage (Approx.)

Check voltage betw		ctor terminals an	a grouna.		
Name	TCM co	onnector		Condition	Voltago (Approx
Name	Connector	Terminal		Condition	Voltage (Approx
		46		Ignition switch ON	10 V – 16 V
Power supply		40	Ground	Ignition switch OFF	0 V
	F81	48		Ignition switch ON	10 V – 16 V

48

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Is the inspection result normal?

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

Power supply (mem-

ory back-up)

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0 V

10 V – 16 V

Ignition switch OFF

Always

INFOID:000000006601640

INFOID:000000006601641

# 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 co	onnector		Continuity
Connector	Terminal	Ground	Continuity
F81	5 42	Giouna	Existed

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 <u>GI-42, "Intermittent Incident"</u>.

NO >> Replace the TCM. Refer to <u>TM-280</u>, "Removal and Installation".

# P1705 TP SENSOR

# Description

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:000000006601644

# DTC DETECTION LOGIC

f "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch of F and wait at least 10 seconds before performing the next test. After the repair, perform the following procedure to confirm the malfunction is eliminated. ACHECK DTC DETECTION With CONSULT-III Turn ignition switch ON. Depress accelerator pedal fully and release it, then wait for 5 seconds. Select "Self Diagnostic Results" in "TRANSMISSION". Select "Self Diagnostic Results" in "TRANSMISSION". Select "Self Diagnostic Results" in "TRANSMISSION". Select "Detected? YES >> Go to TM-241, "Diagnosis Procedure". NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident". Diagnosis Procedure ACHECK INPUT SIGNAL With CONSULT-III Turn ignition switch ON. Select "DATA MONITOR" in "TRANSMISSION".	DTC	Trouble diagnosis name	DTC is detected if	Possible cause
NOTE:       f "DTC CONFIRMATION PROCEDURE" has been previously performed, always turn ignition switch of the repair, perform the following procedure to confirm the malfunction is eliminated.         After the repair, perform the following procedure to confirm the malfunction is eliminated.         Acter the repair, perform the following procedure to confirm the malfunction is eliminated.         Acter the repair, perform the following procedure to confirm the malfunction is eliminated.         Acter the repair, perform the following procedure to confirm the malfunction is eliminated.         Acter the repair, perform the following procedure to confirm the malfunction is eliminated.         Acter the repair, perform the following procedure to confirm the malfunction is eliminated.         Acter the repair, perform the following procedure to confirm the malfunction is eliminated.         Acter the repair, perform the following procedure to confirm the malfunction is eliminated.         Acter the repair, perform the following procedure to confirm the malfunction is eliminated.         B With CONSULT-III         No       >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".         Diagnosis Procedure       NFOR-2000000000000000000000000000000000000	P1705		er accelerator pedal position signals (input by CAN commu-	(CAN communication line is open or shorted.)
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". <u>s "P1705" detected?</u> YES       >> Go to <u>TM-241, "Diagnosis Procedure"</u> .         NO       >> Check intermittent incident. Refer to <u>G1-42, "Intermittent Incident"</u> .         Diagnosis Procedure       Information Suite Seconds.         I.CHECK INPUT SIGNAL       Intermittent ON.         With CONSULT-III       Intermittent Incident".         I. Turn ignition switch ON.       Select "DATA MONITOR" in "TRANSMISSION".	NOTE: If "DTC CONFIRMATIC OFF and wait at least 1 After the repair, perform	ON PROCEDURE" has been 10 seconds before performin the following procedure to co	ng the next test.	-
<ul> <li>Turn ignition switch ON.</li> <li>Depress accelerator pedal fully and release it, then wait for 5 seconds.</li> <li>Select "Self Diagnostic Results" in "TRANSMISSION".</li> <li><u>s "P1705" detected?</u></li> <li>YES &gt;&gt; Go to <u>TM-241, "Diagnosis Procedure"</u>.</li> <li>NO &gt;&gt; Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.</li> <li>Diagnosis Procedure</li> <li>CHECK INPUT SIGNAL</li> <li>With CONSULT-III</li> <li>Turn ignition switch ON.</li> <li>Select "DATA MONITOR" in "TRANSMISSION".</li> </ul>				
CHECK INPUT SIGNAL  With CONSULT-III  Turn ignition switch ON.  Select "DATA MONITOR" in "TRANSMISSION".	<ol> <li>Turn ignition switch</li> <li>Depress accelerator</li> <li>Select "Self Diagnos</li> <li><u>Is "P1705" detected?</u></li> <li>YES &gt;&gt; Go to <u>TM-24</u></li> </ol>	r pedal fully and release it, the stic Results" in "TRANSMISSI	ION".	
With CONSULT-III Turn ignition switch ON. Select "DATA MONITOR" in "TRANSMISSION".	Diagnosis Procedu	ire		INFOID:00000006601
<ul> <li>Turn ignition switch ON.</li> <li>Select "DATA MONITOR" in "TRANSMISSION".</li> </ul>	1.CHECK INPUT SIGN	JAL		
	2. Select "DATA MONI	ITOR" in "TRANSMISSION".		

Item name	Condition	Display value (Approx.)	111
ACC PEDAL OPEN	Released accelerator pedal - Fully de- pressed accelerator pedal	0.0/8 - 8.0/8	N

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.

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 <u>GI-42, "Intermittent Incident"</u>.

NO >> Check the DTC Detected Item.

INFOID:000000006601643

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# P1722 VEHICLE SPEED

# Description

The vehicle speed signal is transmitted from ABS actuator and electric unit (control unit) to TCM by CAN communication line.

# DTC Logic

INFOID:000000006601647

INFOID:00000006601646

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1722	Vehicle Speed Signal Circuit	<ul> <li>CAN communication with the ABS actuator and the electric unit (control unit) is malfunctioning.</li> <li>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.</li> </ul>	<ul> <li>Harness or connectors (Sensor circuit is open or shorted.)</li> <li>ABS actuator and electric unit (control unit)</li> </ul>

# 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 <u>GI-42, "Intermittent Incident"</u>.

### Diagnosis Procedure

INFOID:000000006601648

# 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".

# **P1722 VEHICLE SPEED**

### < DTC/CIRCUIT DIAGNOSIS >

Item name	Condition	Display value	А
ESTM VSP SIG	During driving	Approximately matches the speedometer	
VEHICLE SPEED		reading.	В
4. Check if there is a great differen	ce between the two values.		
Is the inspection result normal?	nt Defente Ol 40 Illuterreittent Inci	1	
YES >> Check intermittent incide NO >> GO TO 3.	ent. Refer to GI-42, "Intermittent Incic	<u>lent"</u> .	С
3.снеск тсм			
			ТМ
Check TCM input/output signals. Ret	rer to <u>TM-164. Reference value</u> .		
<u>Is the inspection result normal?</u> YES >> Check intermittent incide	ent. Refer to <u>GI-42, "Intermittent Incic</u>	lent"	
	TM-280, "Removal and Installation".	<u>ient</u> .	E
			F
			G
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			1.1
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			Κ
			L
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			Ν
			0
			Ρ

# P1723 SPEED SENSOR

# Description

INFOID:000000006601649

[CVT: RE0F10B]

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:000000006601650

INFOID:000000006601651

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1723	Speed Sensor Circuit	A rotation sensor error is de- tected because the gear does not change in accordance with the position of the stepping mo- tor. <b>CAUTION:</b> One of the "P0720", the "P0715" or the "P0725" is displayed with the DTC at the same time.	<ul> <li>Harness or connectors (Sensor circuit is open or shorted.)</li> <li>Engine speed signal system</li> <li>Secondary speed sensor</li> <li>Primary speed sensor</li> </ul>

### DTC CONFIRMATION PROCEDURE

### CAUTION:

Always drive vehicle at a safe speed.

#### NOTÉ:

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

### (B) 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 (in- creased 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 <u>GI-42, "Intermittent Incident"</u>.

### **Diagnosis** Procedure

**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 <u>TM-252</u>, "<u>DTC Logic</u>".) NO >> GO TO 2.

# TM-244

# **P1723 SPEED SENSOR**

[CVT:	RE0F10B]
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< DTC/CIRCUIT DIAGNOSIS > [CVT: RE0F10B]
2.CHECK SECONDARY SPEED SENSOR SYSTEM
Check secondary speed sensor system. Refer to <u>TM-209, "DTC Logic"</u> .
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 <u>TM-212, "DTC Logic"</u> .
Is the inspection result normal?
YES >> GO TO 5.
NO >> Repair or replace damaged parts.
5. СНЕСК ТСМ
Check TCM input/output signals. Refer to TM-164, "Reference Value".
Is the inspection result normal?
YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u> . NO >> Replace TCM.

# P1726 THROTTLE CONTROL SIGNAL

### Description

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:000000006601653

INFOID:000000006601654

INFOID:000000006601652

### 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 malfunction-ing.	Harness or connectors (Sensor circuit is open or short- ed.)

### 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

- 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 <u>GI-42, "Intermittent Incident"</u>.

### Diagnosis Procedure

# **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. СНЕСК ТСМ

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

### Is the inspection result normal?

- YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.
- NO >> Replace TCM.

DTC DETECTION LOGIC

# P1740 SELECT SOLENOID

# DTC Logic

[CVT: RE0F10B]

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INFOID:000000006601656

Trouble diagnosis name	DTC is detected if	Possible cause
Lock-up Select Solenoid Valve Circuit	<ul> <li>Normal voltage not applied to solenoid due to cut line, short, or the like.</li> <li>TCM detects as irregular by comparing target value with monitor value.</li> </ul>	<ul> <li>Harness or connectors (Solenoid circuit is open or shorted.)</li> <li>Lock-up select solenoid valve</li> </ul>
safe speed.		
seconds before performing	g the next test.	
ON		
N. DP" in "TRANSMISSION"		
	for at least 5 consecutive se	econds.
· "D" nosition and	"N" positions	
5 seconds.)	n positions	
ו CONSULT-III".		
"Diagnosis Procedure"		
tent incident. Refer to GI-42	, "Intermittent Incident".	
)		INFOID:00000006601657
	KUUII	
	al and ground.	
connector		
	Ground	Resistance (Approx.)
37	-	17.0 – 38.0 Ω
mal?	1	1
ECT SOLENOID VALVE		
	Lock-up Select Solenoid Valve Circuit PROCEDURE a safe speed. PROCEDURE" has been seconds before performin e following procedure to con ON N. DR" in "TRANSMISSION". tain the following conditions : "D" position and 5 seconds.) CONSULT-III". . "Diagnosis Procedure". ttent incident. Refer to GI-42 e ECT SOLENOID VALVE CII FF. ector. veen TCM connector terminal connector	Normal voltage not applied to solenoid due to cut line, short, or the like.         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.         PROCEDURE         • safe speed.         PROCEDURE" has been previously performed, all seconds before performing the next test.         • following procedure to confirm the malfunction is elimi         ON         N.         DR" in "TRANSMISSION".         tain the following conditions for at least 5 consecutive set         : "D" position and "N" positions         5 seconds.)         n CONSULT-III".         "Diagnosis Procedure".         ttent incident. Refer to GI-42, "Intermittent Incident".         etctr         ECT SOLENOID VALVE CIRCUIT         FF.         ector.         veen TCM connector terminal and ground.         xonnector         Terminal         37

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

# P1740 SELECT SOLENOID

### < DTC/CIRCUIT DIAGNOSIS >

INFOID:000000006601658

# **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 co	onnector	CVT unit harness connector		- Continuity	
Connector	Terminal	Connector Terminal		Continuity	
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 <u>TM-164, "Reference Value"</u>.

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.
- NO >> Replace TCM.

### Component Inspection

### 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			Resistance (Approx.)
Connector	Terminal	Ground	Resistance (Approx.)
F51	13		17.0 – 38.0 Ω

Is the inspection result normal?

### YES >> INSPECTION END

NO >> Replace the transaxle assembly. Refer to <u>TM-301, "Removal and Installation"</u>.

# P1745 LINE PRESSURE CONTROL

# Description

The line pressure solenoid valve regulates the oil pump discharge pressure to suit the driving condition in <sub>B</sub> response to a signal sent from the TCM.

# DTC Logic

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1745	Line Pressure Control Circuit	TCM detects the unexpected line pressure.	ТСМ
<b>DFF and wait at least 10</b> fter the repair, perform t	N PROCEDURE" has been D seconds before performin he following procedure to cor	g the next test.	
.CHECK DTC DETEC	TION		
	DN FOR" in "TRANSMISSION". It voltage of CVT fluid temper	ature sensor is within the ra	ange below.
	: 1.0 – 2.0 V the vehicle to decrease the voltag to increase the voltage (cool dow		
	9, "Diagnosis Procedure". hittent incident. Refer to <u>GI-42</u>	2, "Intermittent Incident"	
iagnosis Procedur	e		INFOID:00000006601661
.CHECK DTC			
	RESULTS" in "TRANSMISSIC	DN".	
<ul> <li>Erase self-diagnostic</li> <li>Turn ignition switch C</li> <li>Start engine.</li> <li>Confirm self-diagnos</li> </ul>	DFF, and wait for 10 seconds	or more.	
the "P1745" displayed? YES >> Replace TCM	? //. Refer to <u>TM-280, "Remova</u>		
NO >> Check interm	nittent incident. Refer to <u>GI-42</u>	<ol> <li>"Intermittent Incident".</li> </ol>	

INFOID:000000006601660

INFOID:000000006601659

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# P1777 STEP MOTOR

# DTC Logic

INFOID:000000006601663

INFOID:000000006601664

### 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.	<ul> <li>Harness or connectors (Step motor circuit is open or shorted.)</li> <li>Step motor</li> </ul>

# 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

**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		0 step – 177 step
SMCOIL A	_	
SMCOIL B	During driving	
SMCOIL C		Changes ON⇔OFF.
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.

# **P1777 STEP MOTOR**

### < DTC/CIRCUIT DIAGNOSIS >

# [CVT: RE0F10B]

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	27	- F51	9	
504	28		8	
F81	29		7	Existed
	30		6	
<ol> <li>Reinstall any particle for the inspection results in the inspection result of the inspection of the inspection results in the inspection results in the inspection of the former of the inspection of</li></ol>	<u>It normal?</u> replace damaged par TOR fer to <u>TM-251, "Comp</u> <u>It normal?</u>	rts. ponent Inspection".	assembly.	
Check TCM input/out	put signals. Refer to <u>T</u>	M-164, "Reference V	alue".	
Is the inspection resu				
	termittent incident. Re the TCM. Refer to <u>TM</u>			
Component Insp			<u>lotanation</u> .	
	GOUOT			INFOID:00000006601665
STEP MOTOR				
<b>1.</b> STEP MOTOR				
	ch OFF. unit harness connecto between CVT unit ha		inals and ground.	
	CVT unit harnes	s connector		
				Resistance (Approx.)
Connector		Terminal		Resistance (Approx.)
Connector F51	6	Terminal	7	30.0 Ω

CVT unit harness connector				Ν
Connector	Terminal	Resistance (Approx.)	Resistance (Approx.)	
	6	Ground	15.0 Ω	0
F51	7			0
	8			
	9			Ρ

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace the transaxle assembly. Refer to <u>TM-301, "Removal and Installation"</u>.

# TM-251

# P1778 STEP MOTOR

# Description

- 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:000000006601667

INFOID:00000006601668

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1778	Step Motor Circuit Intermittent	There is a great difference be- tween 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.

### CHECK DTC DETECTION

### (P)With CONSULT-III

- 1. Turn ignition switch ON.
- Select "Self Diagnostic Results" in "TRANSMISSION". 2.
- 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)

Start engine and maintain the following conditions for at least 30 consecutive seconds. 4.

TEST START FROM 0 km/h (0 M	PH)
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".

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

# Diagnosis Procedure

CHECK STEP MOTOR

With CONSULT-III

# TM-252

INFOID:000000006601666

#### P1778 STEP MOTOR

#### < DTC/CIRCUIT DIAGNOSIS >

#### [CVT: RE0F10B]

It is monitoring whether "GEAR RATIO: 2.34 – 0.39" changes similarly to "STM STEP: 0 – 177" by "DATA MONITOR" mode.	А
Without CONSULT-III Inspect the engine speed (rise and descend), vehicle speed, throttle position, and check shift change. Refer to TM-308, "Shift Characteristics".	В
Is the inspection result normal?	D
<ul> <li>YES &gt;&gt; Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.</li> <li>NO &gt;&gt; Replace the transaxle assembly. Refer to <u>TM-301, "Removal and Installation"</u>.</li> </ul>	С
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TM-253

#### SHIFT POSITION INDICATOR CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

#### SHIFT POSITION INDICATOR CIRCUIT

#### Description

• 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:000000006601670

INFOID:00000006601669

#### **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.
- 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:000000006601671

#### **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 <u>TM-228, "Component Inspection"</u>.
  - Check CVT main system (Fail-safe function actuated).
  - Perform "SELF-DIÁG RESULTS" mode for "TRANSMISSION". Refer to <u>TM-159</u>, "<u>CONSULT-III</u> <u>Function (TRANSMISSION)</u>".
- NO 2 >> The actual gear position changes, but the shift position indicator is not indicated.
  - Perform "SELF-DIAG RESULTS" mode for "TRANSMISSION". Refer to <u>TM-159</u>, "CONSULT-III <u>Function (TRANSMISSION)"</u>.
- 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 <u>MWI-23, "CONSULT-III Function"</u>.

#### SHIFT LOCK SYSTEM

		DSIS >		[CVT: RE0F10E
SHIFT LOC	K SYS	TEM		
Component F	unctior	ו Check		INFOID:0000000660
1.CHECK SHIF	T LOCK (	OPERATION	I (PART 1)	
<ol> <li>Turn ignition</li> <li>Shift the sele</li> <li>Attempt to s</li> <li>Can the selector</li> <li>YES &gt;&gt; Go t</li> <li>NO &gt;&gt; GO</li> <li>CHECK SHIF</li> <li>Attempt to shift ti</li> <li>Can the selector</li> <li>YES &gt;&gt; INSI</li> <li>NO &gt;&gt; Go t</li> <li>Diagnosis Propriation</li> <li>CHECK POW</li> <li>Turn ignition</li> <li>Disconnect s</li> <li>Turn ignition</li> </ol>	switch O ector leve hift the se lever be o TM-255 TO 2. T LOCK ( he selecto lever be PECTION o TM-255 OCEDURE /ER SOUL	N. r to "P" posit elector lever to shifted to any 5, "Diagnosis OPERATION or lever to any shifted to any I END 5, "Diagnosis E RCE (PART FF. switch conn N.	ion. to any other to <u>y other positi</u> <u>Procedure</u> ". I (PART 2) by other than <u>y other positi</u> <u>Procedure</u> ". 1) ector	position with the brake pedal depressed.
Stop lamp switch connecto	r	Ground	Voltage	
Connector E102	Terminal 3	Ground	Battery voltag	ge
Is the inspection         YES       >> GO         NO       >> GO         2       CUECK STOR	TO 2. TO 9.	<u>rmal?</u> SWITCH (PA	RT 1)	
Check stop lamp Is the inspection YES >> GO NO >> GO 3.CHECK CIRC 1. Disconnect C 2. Check the co	result no TO 3. TO 10. CUIT BET CVT shift continuity t	rmal? WEEN STOI selector con petween the	258, "Compo P LAMP SWI nector	onent Inspection (Stop Lamp Switch)". ITCH AND CVT SHIFT SELECTOR (PART 1) witch harness connector terminal and the CVT shift select
Check stop lamp Is the inspection YES >> GO NO >> GO 3.CHECK CIRC 1. Disconnect O	result no TO 3. TO 10. CUIT BET CVT shift ontinuity k nector ter	rmal? WEEN STOI selector con petween the	258, "Compo P LAMP SWI nector stop lamp sw	ITCH AND CVT SHIFT SELECTOR (PART 1) witch harness connector terminal and the CVT shift select
Check stop lamp Is the inspection YES >> GO NO >> GO 3.CHECK CIRC 1. Disconnect O 2. Check the con- harness con Stop lamp switch connector	result no TO 3. TO 10. CUIT BET CVT shift ontinuity k nector ter	rmal? WEEN STOI selector con petween the rminal. CVT shift sele	258, "Compo P LAMP SWI nector stop lamp sw	ITCH AND CVT SHIFT SELECTOR (PART 1)

**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.

#### SHIFT LOCK SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

	witch harness nector	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.

	ector harness nector	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 <u>TM-257</u>, "Component Inspection (CVT Shift Selector Harness)". Is the inspection result normal?

- YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.
- 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 <u>PG-15</u>, <u>"Wiring Diagram - IGNITION POWER SUPPLY -"</u>.

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 <u>GI-42, "Intermittent Incident"</u>.

NO >> Repair or replace the malfunctioning parts.

10. CHECK INSTALLATION POSITION OF STOP LAMP SWITCH

Adjust stop lamp switch position. Refer to <u>BR-9</u>, "Inspection and Adjustment" (LHD) or <u>BR-77</u>, "Inspection and <u>Adjustment"</u> (RHD).

>> GO TO 11.

#### TM-256

#### SHIFT LOCK SYSTEM

[CVT: RE0F10B] < DTC/CIRCUIT DIAGNOSIS > 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? >> INSPECTION END YES В NO >> Repair or replace the malfunctioning parts. Component Inspection (Shift Lock Solenoid) INFOID:000000006601677 1. CHECK SHIFT LOCK SOLENOID Apply voltage to terminals of shift lock solenoid connector and check that shift lock solenoid is activated. ТΜ **CAUTION:**  Connect the fuse between the terminals when applying the voltage. Never cause shorting between terminals. E Shift lock solenoid connector Terminal Condition Status + (fuse) Apply battery voltage be-2 1 Shift lock solenoid operates tween terminals 1 and 2. Is the inspection result normal? >> INSPECTION END YES >> Replace the shift lock unit. Refer to TM-271, "Disassembly and Assembly". NO Н Component Inspection (Park Position Switch) INFOID:000000006752450 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. Κ Park position switch connector Condition Continuity Terminal Shift the selector lever to "P" position. Existed 1 2 Other than above Not existed Is the inspection result normal? Μ YES >> INSPECTION END >> Replace the park position switch. Refer to TM-271, "Disassembly and Assembly". NO Component Inspection (CVT Shift Selector Harness) INFOID:000000006752451 Ν **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 Shift lock solenoid harness Ρ connector 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 <u>TM-271, "Disassembly and Assembly"</u>.

#### TM-257

#### < DTC/CIRCUIT DIAGNOSIS >

## **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 conr	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 <u>TM-271, "Disassembly and Assembly"</u>.

#### **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 ha	mess connector	CVT shift sel conr	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 <u>TM-271, "Disassembly and Assembly"</u>.

**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 <u>TM-271, "Disassembly and Assembly"</u>.

#### Component Inspection (Stop Lamp Switch)

INFOID:000000006601676

#### **1.**CHECK STOP LAMP SWITCH

Check the continuity between the stop lamp switch connector terminals.

Stop lamp switch connector Terminal		Condition	Continuity
		Condition	Continuity
3	4	Depressed brake pedal	Existed
3	4	Released brake pedal	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-21, "Removal and Installation"</u> (LHD) or <u>BR-89, "Removal and Installation"</u> (RHD).

#### < SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS SYSTEM SYMPTOM

#### Symptom Table

The diagnostics item numbers show the sequence for inspection. Inspect in order from item 1.

No.	Item	Symptom	Condition	Diagnostic Item	Reference	C
				1. Engine idle speed	<u>EC-443</u>	
				2. Engine speed signal	<u>TM-212</u>	ΤN
				3. Accelerator pedal position sensor	<u>TM-241</u>	
				4. CVT position	<u>TM-194</u>	-
				5. CVT fluid temperature sensor	<u>TM-202</u>	E
			ON vehicle	6. CAN communication line	<u>TM-195</u>	-
1	Shift Shock	Large shock. ("N" $\rightarrow$ "D" position)	ON vehicle	7. CVT fluid level and state	<u>TM-184</u>	F
		D poonion)		8. Line pressure test	<u>TM-188</u>	
				9. Torque converter clutch solenoid valve	<u>TM-215</u>	-
				10. Lock-up select solenoid valve	<u>TM-247</u>	G
				11. Transmission range switch	<u>TM-200</u>	-
				12. Control valve	<u>TM-284</u>	
			OFF vehicle	13. Forward clutch	<u>TM-301</u>	-  -
		ck Large shock. ("N"→ "R" position)	ON vehicle	1. Engine idle speed	<u>EC-443</u>	- - - - - - - - - - - - - - - - - - -
				2. Engine speed signal	<u>TM-212</u>	
				3. Accelerator pedal position sensor	<u>TM-241</u>	
				4. CVT position	<u>TM-194</u>	
				5. CVT fluid temperature sensor	<u>TM-202</u>	
				6. CAN communication line	<u>TM-195</u>	
2	Shift Shock			7. CVT fluid level and state	<u>TM-184</u>	
				8. Line pressure test	<u>TM-188</u>	
				9. Torque converter clutch solenoid valve	<u>TM-215</u>	
				10. Lock-up select solenoid valve	<u>TM-247</u>	
				11. Transmission range switch	<u>TM-200</u>	
				12. Control valve	<u>TM-284</u>	
			OFF vehicle	13. Reverse brake	<u>TM-301</u>	
				1. CVT position	<u>TM-194</u>	-
				2. Engine speed signal	<u>TM-212</u>	1
~		Shock is too large for	ON vehicle	3. CAN communication line	<u>TM-195</u>	-
3	Shift Shock	lock-up.		4. CVT fluid level and state	<u>TM-184</u>	-
				5. Control valve	<u>TM-284</u>	- (
		-	OFF vehicle	6. Torque converter	<u>TM-306</u>	-

INFOID:000000006601683

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#### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference
110.				1. CVT fluid level and state	<u>TM-184</u>
				2. CVT position	<u>TM-194</u>
				3. CAN communication line	<u>TM-195</u>
				4. Line pressure test	<u>TM-188</u>
				5. Stall test	<u>TM-186</u>
				6. Step motor	<u>TM-250</u>
			ON vehicle	7. Primary speed sensor	<u>TM-204</u>
4		Vehicle cannot be		8. Secondary speed sensor	<u>TM-209</u>
		started from "D" posi- tion.		9. Accelerator pedal position sensor	<u>TM-241</u>
				10. CVT fluid temperature sensor	<u>TM-202</u>
				11. Secondary pressure sensor	<u>TM-230</u>
				12. Power supply	<u>TM-239</u>
				13. Control valve	<u>TM-284</u>
	Slips/Will Not Engage		OFF vehicle	14. Oil pump assembly	
				15. Forward clutch	<u>TM-301</u>
				16. Parking components	
				1. CVT fluid level and state	<u>TM-184</u>
				2. CVT position	<u>TM-194</u>
				3. CAN communication line	<u>TM-195</u>
				4. Line pressure test	<u>TM-188</u>
				5. Stall test	<u>TM-186</u>
				6. Step motor	<u>TM-250</u>
			ON vehicle	7. Primary speed sensor	<u>TM-204</u>
5		Vehicle cannot be started from "R" posi-		8. Secondary speed sensor	<u>TM-209</u>
		tion.		9. Accelerator pedal position sensor	<u>TM-241</u>
				10. CVT fluid temperature sensor	<u>TM-202</u>
				11. Secondary pressure sensor	<u>TM-230</u>
				12. Power supply	<u>TM-239</u>
				13. Control valve	<u>TM-284</u>
				14. Oil pump assembly	
			OFF vehicle	15. Reverse brake	<u>TM-301</u>
				16. Parking components	

#### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference	•
				1. CVT fluid level and state	<u>TM-184</u>	A
				2. Line pressure test	<u>TM-188</u>	-
				3. Engine speed signal	<u>TM-212</u>	В
				4. Primary speed sensor	<u>TM-204</u>	-
				5. Torque converter clutch solenoid valve	<u>TM-215</u>	-
				6. CAN communication line	<u>TM-195</u>	С
			ON vehicle	7. Stall test	<u>TM-186</u>	-
6		Doop not look up		8. Step motor	<u>TM-250</u>	ТМ
0		Does not lock-up.		9. Transmission range switch	<u>TM-200</u>	-
				10. Lock-up select solenoid valve	<u>TM-247</u>	-
				11. CVT fluid temperature sensor	<u>TM-202</u>	E
				12. Secondary speed sensor	<u>TM-209</u>	-
				13. Secondary pressure sensor	<u>TM-230</u>	- - F
				14. Control valve	<u>TM-284</u>	- F
	Slips/Will		OFF vehicle	15. Torque converter	<u>TM-306</u>	-
				16. Oil pump assembly	<u>TM-301</u>	G
	Not Engage	ot Engage		1. CVT fluid level and state	<u>TM-184</u>	-
				2. Line pressure test	<u>TM-188</u>	
				3. Engine speed signal	<u>TM-212</u>	- H
				4. Primary speed sensor	<u>TM-204</u>	-
				5. Torque converter clutch solenoid valve	TM-215	-
				6. CAN communication line	<u>TM-195</u>	-
			ON vehicle	7. Stall test	<u>TM-186</u>	
7		Does not hold lock-up		8. Step motor	<u>TM-250</u>	J
1		condition.		9. Transmission range switch	<u>TM-200</u>	-
				10. Lock-up select solenoid valve	<u>TM-247</u>	K
				11. CVT fluid temperature sensor	<u>TM-202</u>	-
				12. Secondary speed sensor	TM-209	-
				13. Secondary pressure sensor	TM-230	L
				14. Control valve	<u>TM-284</u>	-
			OFF vehicle	15. Torque converter	<u>TM-306</u>	Μ
				16. Oil pump assembly	<u>TM-301</u>	1 1 1

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#### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference
				1. CVT fluid level and state	<u>TM-184</u>
				2. Line pressure test	<u>TM-188</u>
				3. Engine speed signal	<u>TM-212</u>
			ON vehicle	4. Primary speed sensor	<u>TM-204</u>
8		Lock-up is not re-	On vehicle	5. Torque converter clutch solenoid valve	<u>TM-215</u>
0		leased.		6. CAN communication line	<u>TM-195</u>
				7. Stall test	<u>TM-186</u>
				8. Control valve	<u>TM-284</u>
		-	OFF vehicle	9. Torque converter	<u>TM-306</u>
			OFF vehicle	10. Oil pump assembly	<u>TM-301</u>
				1. CVT fluid level and state	<u>TM-184</u>
		e	ON vehicle	2. Line pressure test	<u>TM-188</u>
				3. Stall test	<u>TM-186</u>
	Slips/Will			4. Accelerator pedal position sensor	<u>TM-241</u>
	Not Engage			5. CAN communication line	<u>TM-195</u>
				6. Transmission range switch	<u>TM-200</u>
				7. CVT position	<u>TM-194</u>
				8. Step motor	<u>TM-250</u>
9		With selector lever in		9. Primary speed sensor	<u>TM-204</u>
9		"D" position, accelera- tion is extremely poor.		10. Secondary speed sensor	<u>TM-209</u>
				11. Accelerator pedal position sensor	<u>TM-241</u>
				12. Secondary pressure sensor	<u>TM-230</u>
				13. CVT fluid temperature sensor	<u>TM-202</u>
				14. Power supply	<u>TM-239</u>
				15. Control valve	<u>TM-284</u>
				16. Torque converter	<u>TM-306</u>
			OFF vehicle	17. Oil pump assembly	TM 204
				18. Forward clutch	<u>TM-301</u>

#### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F10B]

10         With selector lever in "R" position accelera- tion is extremely poor.         1. CVT fluid level and state         11	No.	Item	Symptom	Condition	Diagnostic Item	Reference	
10       Number of the sector lever in the sec					1. CVT fluid level and state	<u>TM-184</u>	A
10         With selector lever in "R" position, accelera- tion is extremely poor.         0 N vehicle         4. Accelerator pedal position sensor         1M-221         1           10         With selector lever in "R" position, accelera- tion is extremely poor.         0 N vehicle         8. Step motor         1M-200					2. Line pressure test	<u>TM-188</u>	
10       With selector lever in "R" position, accelera- tion is extremely poor.       0N vehicle       5. CAN communication line       TM-195       C         10       With selector lever in "R" position, accelera- tion is extremely poor.       0N vehicle       5. CAN communication line       TM-195       TM         10. Secondary speed sensor       TM-200       TM-200       TM       TM         11. Accelerator pedal position sensor       TM-201       E       E         12. Secondary pressure sensor       TM-202       TM-202       F         13. CVT fluid temperature sensor       TM-203       F         14. Not Engage       OFF vehicle       16. Torque converter       TM-306       G         11. Accelerator pedal position sensor       TM-202       F       F         12. Sips/Will Not Engage       OFF vehicle       16. Torque converter       TM-301       F         14. OV fluid level and state       TM-184       TM-184       F       F         15. Control valve       TM-184       1M-184       F       F         11. Accelerator pedal position sensor       TM-184       TM-306       F         12. Line pressure test       TM-184       TM-184       F       F         13. Signs at lock-up.       I. ON vehicle       6. CAN comm					3. Stall test	<u>TM-186</u>	В
10       With selector lever in "R" position, acceleration is extremely poor.       6. Transmission range switch       TM-200       TM         10       With selector lever in "R" position, acceleration is extremely poor.       9. Primary speed sensor       TM-204       TM         10. Secondary speed sensor       TM-204       TM       10. Secondary speed sensor       TM-204       TM         11. Accelerator pedal position sensor       TM-204       11. Accelerator pedal position sensor       TM-204       F         11. Accelerator pedal position sensor       TM-204       TM-204       F       F         11. Accelerator pedal position sensor       TM-204       F       F       F         11. Accelerator pedal position sensor       TM-204       F       F       F         11. Accelerator pedal position sensor       TM-204       F       F       F         11. Accelerator pedal position sensor       TM-204       F       F       F         12. Secondary pressure sensor       TM-204       F<					4. Accelerator pedal position sensor	<u>TM-241</u>	
10         With selector lever in "R" position, accelera- tion is extremely poor.         0 N vehicle         7. CVT position         11.194         11.194           10         With selector lever in "R" position, accelera- tion is extremely poor.         9. Primary speed sensor         11.200         11.4201         11.202           10. Secondary speed sensor         11.4201         11.4201         11.4201         11.4201         11.4201           11. Accelerator pedal position sensor         11.4201         11					5. CAN communication line	<u>TM-195</u>	
10     With selector lever in "R" position, accelera- tion is extremely poor.     0N vehicle     8. Step motor     IM-204     IM       10. Secondary speed sensor     IM-204     10. Secondary speed sensor     IM-209     E       11. Accelerator pedal position sensor     IM-204     E       12. Secondary pressure sensor     IM-203     F       13. CVT fluid temperature sensor     IM-202     F       14. Power supply     IM-203     IM-204       15. Control valve     IM-203     F       16. Torque converter     IM-306     G       0FF vehicle     0FF vehicle     10. Other supply     IM-301       18. Reverse brake     IM-301     IM-301     H       19. ON vehicle     10. CVT fluid level and state     IM-301     H       10. Stips at lock-up.     0FF vehicle     1. CVT fluid level and state     IM-184       11. CVT fluid level and state     IM-185     J       11. CVT fluid level and state     IM-185     J       12. Sips at lock-up.     0F vehicle     6. CAN communication line     IM-202       11. CVT fluid temperature sensor     IM-203     I       12. Secondary speed sensor     IM-204     I       13. Stips at lock-up.     0F     1. CVT fluid temperature sensor     IM-204       14. Control valve     <					6. Transmission range switch	<u>TM-200</u>	С
10       With selector lever in "R" position, accelera- tion is extremely poor.       9. Primary speed sensor       TM-204         10. Secondary speed sensor       TM-204         11. Accelerator pedal position sensor       TM-204         12. Secondary pressure sensor       TM-204         13. CVT fluid temperature sensor       TM-202         14. Power supply       TM-204         Slips/Will       OFF vehicle         16. Torque converter       TM-306         0FF vehicle       10. CVT fluid level and state         11. CVT fluid level and state       TM-184         12. Line pressure test       TM-188         3. Engine speed signal       TM-215         6. CAN communication line       TM-185         7. Stall test       TM-185         8. Step motor       TM-204         10. Lock-up select solenoid valve       TM-225         11. CVT fluid temperature sensor       TM-264					7. CVT position	<u>TM-194</u>	
10       With selector lever in "R" position, acceleration is extremely poor.       9. Primary speed sensor       IM-204         10. Secondary speed sensor       IM-209       11. Accelerator pedal position sensor       IM-209         11. Accelerator pedal position acceleration is extremely poor.       11. Accelerator pedal position sensor       IM-200         13. CVT fluid temperature sensor       IM-200       14. Power supply       IM-230         13. CVT fluid temperature sensor       IM-204       14. Power supply       IM-230         14. Power supply       IM-230       F         15. Control valve       IM-204       IM-230         16. Torque converter       IM-306       G         0FF vehicle       17. Oil pung assembly       IM-301         18. Reverse brake       IM-184       H         2. Line pressure test       IM-184       H         3. Engine speed signal       IM-212       I         4. Primary speed sensor       IM-204       S         5. Torque converter clutch solenoid valve       IM-205       J         9. Transmission range switch       IM-202       IM-203         10. Corque sensor       IM-204       S       Step motor         11. CVT fluid temperature sensor       IM-202       I       Scondary pressure sensor <td></td> <td></td> <td></td> <td>ON vehicle</td> <td>8. Step motor</td> <td><u>TM-250</u></td> <td>ТМ</td>				ON vehicle	8. Step motor	<u>TM-250</u>	ТМ
10       tion is extremely poor.       10. Secondary speed sensor       TM-209         11. Accelerator pedal position sensor       TM-230       11. Accelerator pedal position sensor       TM-230         12. Secondary pressure sensor       TM-230       11. Accelerator pedal position sensor       TM-230         13. CVT fluid temperature sensor       TM-230       11. Accelerator pedal position sensor       TM-230         13. CVT fluid temperature sensor       TM-230       11. Accelerator pedal position sensor       TM-230         14. Power supply       TM-230       TM-230       G         15. Control valve       TM-306       G         0FF vehicle       17. Oil pump assembly       TM-301       H         18. Reverse brake       TM-184       H       11. CVT fluid level and state       TM-184         14. Primary speed sensor       TM-204       5. Torque converter clutch solenoid valve       TM-212       I         14. Primary speed sensor       TM-186       8. Step motor       TM-250       K         10. Lock-up select solenoid valve       TM-220       I       I       I       I         10. Lock-up select solenoid valve       TM-230       I       I       I       I       I       I       I       I         11. CVT fluid temperatur					9. Primary speed sensor	<u>TM-204</u>	
11       11 <td< td=""><td>10</td><td></td><td></td><td></td><td>10. Secondary speed sensor</td><td><u>TM-209</u></td><td></td></td<>	10				10. Secondary speed sensor	<u>TM-209</u>	
11       13. CVT fluid temperature sensor       IM-202       F         14. Power supply       IM-239       IM-239         15. Control valve       IM-230       G         16. Torque converter       IM-306       G         17. Oil pump assembly       IM-301       IM-301         18. Reverse brake       IM-301       H         2. Line pressure test       IM-184       H         2. Line pressure test       IM-184       IM-202         4. Primary speed sensor       IM-204       J         5. Torque converter clutch solenoid valve       IM-212       J         6. CAN communication line       IM-195       J         7. Stall test       IM-186       S         8. Step motor       IM-202       L         10. Lock-up select solenoid valve       IM-202       L         11. CVT fluid temperature sensor       IM-202       L         12. Secondary speed sensor       IM-202       L         13. Secondary pressure sensor       IM-202       L         14. Control valve       IM-203       IM-203         15. Torque converter       IM-204       IM-204         14. Control valve       IM-202       L         15. Secondary pressure sensor					11. Accelerator pedal position sensor	<u>TM-241</u>	E
11         Slips/Will Not Engage         14. Power supply         IM-239         F           15. Control valve         IM-239         IS. Control valve         IM-284           16. Torque converter         IM-306         G           17. Oil pump assembly         IM-301         IS. Reverse brake         H           18. Reverse brake         IS. CVT fluid level and state         IM-184         H           2. Line pressure test         IM-204         IM-204         IS. Engine speed signal         IM-212         I           4. Primary speed sensor         IM-205         J         IS. Torque converter clutch solenoid valve         IM-204         J           5. Torque converter clutch solenoid valve         IM-205         J         J         IM-186         J           6. CAN communication line         IM-186         8. Step motor         IM-200         J         IM-200         J           10. Lock-up select solenoid valve         IM-202         I         L         IM-202         L           12. Secondary speed sensor         IM-202         I         IM-202         L         IM-202         L           13. Secondary pressure sensor         IM-202         IM-202         IM-202         IM-202         IM-202         IM-202         IM-202					12. Secondary pressure sensor	<u>TM-230</u>	
11       Not Engage       14. Power supply       TM-239         15. Control valve       TM-284         16. Torque converter       TM-306       G         17. Oil pump assembly       TM-301         18. Reverse brake       TM-301         18. Reverse brake       TM-184         2. Line pressure test       TM-184         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-186         8. Step motor       TM-204         9. Transmission range switch       TM-202         10. Lock-up select solenoid valve       TM-202         11. CVT fluid temperature sensor       TM-202         12. Secondary speed sensor       TM-202         13. Secondary pressure sensor       TM-202         14. Control valve       TM-203         15. Torque converter       TM-204					13. CVT fluid temperature sensor	<u>TM-202</u>	F
Slips/Will Not Engage         Interface         Interface <td></td> <td></td> <td rowspan="2"></td> <td rowspan="2"></td> <td>14. Power supply</td> <td><u>TM-239</u></td> <td>1</td>					14. Power supply	<u>TM-239</u>	1
Slips/Will Not Engage       OFF vehicle       17. Oil pump assembly       TM-301       TM-301         18. Reverse brake       11. CVT fluid level and state       TM-184       1         2. Line pressure test       TM-188       TM-204       1         3. Engine speed signal       TM-204       1       1         4. Primary speed sensor       TM-186       TM-186       1         5. Torque converter clutch solenoid valve       TM-204       1       1         7. Stall test       TM-186       1       1       1         10. Lock-up select solenoid valve       TM-202       1       1       1         11. CVT fluid temperature sensor       TM-202       1       1       1         11. CVT fluid temperature sensor       TM-202       1       1       1         11. CVT fluid temperature sensor       TM-202       1       1       1       1         11. CVT fluid temperature sensor       TM-202       1<					15. Control valve	<u>TM-284</u>	
Not Engage       IM-301       IM-301         Not Engage       18. Reverse brake       IM-301         1       1. CVT fluid level and state       IM-184         2. Line pressure test       IM-188         3. Engine speed signal       IM-212         4. Primary speed sensor       IM-204         5. Torque converter clutch solenoid valve       IM-125         6. CAN communication line       IM-186         7. Stall test       IM-186         8. Step motor       IM-200         9. Transmission range switch       IM-200         10. Lock-up select solenoid valve       IM-202         11. CVT fluid temperature sensor       IM-202         12. Secondary speed sensor       IM-202         13. Secondary pressure sensor       IM-202         14. Control valve       IM-203         14. Control valve       IM-203         15. Torque converter       IM-306				OFF vehicle	16. Torque converter	<u>TM-306</u>	G
11       Not Engage       18. Reverse brake       H         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-186         8. Step motor       TM-200         10. Lock-up select solenoid valve       TM-202         11. CVT fluid temperature sensor       TM-202         12. Secondary speed sensor       TM-202         13. Secondary pressure sensor       TM-202         14. Control valve       TM-203         14. Control valve       TM-203         14. Control valve       TM-203         15. Torque converter       TM-204					17. Oil pump assembly	TM-301	
11Neise1. CVT fluid level and stateTM-1842. Line pressure testTM-1883. Engine speed signalTM-2124. Primary speed sensorTM-2045. Torque converter clutch solenoid valveTM-2156. CAN communication lineTM-1957. Stall testTM-1868. Step motorTM-2009. Transmission range switchTM-22010. Lock-up select solenoid valveTM-22111. CVT fluid temperature sensorTM-20012. Secondary speed sensorTM-20213. Secondary pressure sensorTM-20014. Control valveTM-23015. Torque converterTM-306		Not Engage			18. Reverse brake	<u></u>	Ц
11       Slips at lock-up. <ul> <li>ON vehicle</li> <li>ON vehicle</li> <li>Stips at lock-up.</li> </ul> 3. Engine speed signal <ul> <li>4. Primary speed sensor</li> <li>5. Torque converter clutch solenoid valve</li> <li>TM-204</li> <li>5. Torque converter clutch solenoid valve</li> <li>TM-215</li> <li>6. CAN communication line</li> <li>TM-186</li> <li>8. Step motor</li> <li>9. Transmission range switch</li> <li>TM-200</li> <li>10. Lock-up select solenoid valve</li> <li>TM-202</li> <li>12. Secondary speed sensor</li> <li>TM-209</li> <li>13. Secondary pressure sensor</li> <li>TM-204</li> <li>M</li> </ul> <li>OFF vehicle</li> <li>OFF vehicle</li>					1. CVT fluid level and state	<u>TM-184</u>	
11       Slips at lock-up. <ul> <li>A. Primary speed sensor</li> <li>TM-204</li> <li>Torque converter clutch solenoid valve</li> <li>TM-215</li> <li>G. CAN communication line</li> <li>TM-195</li> <li>Stall test</li> <li>Step motor</li> <li>TM-250</li> <li>Step motor</li> <li>TM-200</li> <li>Lock-up select solenoid valve</li> <li>TM-250</li> <li>Lock-up select solenoid valve</li> <li>TM-200</li> <li>Lock-up select solenoid valve</li> <li>TM-202</li> <li>Secondary speed sensor</li> <li>Secondary pressure sensor</li> <li>Secondary pressure sensor</li> <li>TM-200</li> <li>Secondary pressure sensor</li> <li>TM-200</li> <li>TM-200</li> <li>Secondary pressure sensor</li> <li>TM-200</li> <li>Secondary pressure sensor</li> <li>TM-200</li> <li>Secondary pressure sensor</li> <li>Secondary speed sensor</li></ul>					2. Line pressure test	<u>TM-188</u>	
11Slips at lock-up.5. Torque converter clutch solenoid valveTM-215 6. CAN communication lineJ6. CAN communication lineTM-1957. Stall testTM-186 8. Step motorK9. Transmission range switchTM-20010. Lock-up select solenoid valveTM-247 11. CVT fluid temperature sensorL11. CVT fluid temperature sensorTM-202 12. Secondary speed sensorTM-202 13. Secondary pressure sensorM0FF vehicle0FF vehicle15. Torque converterTM-306					3. Engine speed signal	<u>TM-212</u>	
Image: Normal Sign at lock-up.ON vehicle6. CAN communication lineTM-195J0. N vehicle6. CAN communication lineTM-1957. Stall testTM-1868. Step motorTM-2509. Transmission range switchTM-20010. Lock-up select solenoid valveTM-24710. Lock-up select solenoid valveTM-24711. CVT fluid temperature sensorTM-20212. Secondary speed sensorTM-20913. Secondary pressure sensorTM-230M14. Control valveTM-284TM-306					4. Primary speed sensor	<u>TM-204</u>	
11Slips at lock-up.ON vehicle7. Stall testIM-1868. Step motorIM-250K9. Transmission range switchIM-20010. Lock-up select solenoid valveIM-24711. CVT fluid temperature sensorIM-20212. Secondary speed sensorIM-20913. Secondary pressure sensorIM-23014. Control valveIM-28415. Torque converterIM-306					5. Torque converter clutch solenoid valve	<u>TM-215</u>	
11       Slips at lock-up.       ON vehicle       8. Step motor       TM-250       K         9. Transmission range switch       TM-200       10. Lock-up select solenoid valve       TM-247       L         10. Lock-up select solenoid valve       TM-202       L       11. CVT fluid temperature sensor       TM-202       L         12. Secondary speed sensor       TM-209       13. Secondary pressure sensor       TM-230       M         0FF vehicle       OFF vehicle       15. Torque converter       TM-306       M					6. CAN communication line	<u>TM-195</u>	J
11Slips at lock-up.8. Step motorTM-250K9. Transmission range switchTM-20010. Lock-up select solenoid valveTM-24711. CVT fluid temperature sensorTM-20212. Secondary speed sensorTM-20913. Secondary pressure sensorTM-23014. Control valveTM-28415. Torque converterTM-306				ON vehicle	7. Stall test	<u>TM-186</u>	
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       15. Torque converter     TM-306	11		Sline at lock-up	ON Venicie	8. Step motor	<u>TM-250</u>	K
11. CVT fluid temperature sensor     TM-202       12. Secondary speed sensor     TM-209       13. Secondary pressure sensor     TM-230       14. Control valve     TM-284       15. Torque converter     TM-306					9. Transmission range switch	<u>TM-200</u>	
12. Secondary speed sensor     TM-209       13. Secondary pressure sensor     TM-230       14. Control valve     TM-284       0FF vehicle     15. Torque converter     TM-306					10. Lock-up select solenoid valve	<u>TM-247</u>	
13. Secondary pressure sensor     TM-230       14. Control valve     TM-284       OFF vehicle     15. Torque converter					11. CVT fluid temperature sensor	<u>TM-202</u>	L
Image: Control value     Image: Control value       14. Control value     Image: Control value       OFF vehicle     15. Torque converter					12. Secondary speed sensor	<u>TM-209</u>	
14. Control valve     TM-284       OFF vehicle     15. Torque converter     TM-306					13. Secondary pressure sensor	<u>TM-230</u>	NЛ
OFF vehicle					14. Control valve	<u>TM-284</u>	
16. Oil pump assembly <u>TM-301</u> N				OFF vehicle	15. Torque converter	<u>TM-306</u>	
					16. Oil pump assembly	<u>TM-301</u>	Ν

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### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference
				1. CVT fluid level and state	<u>TM-184</u>
				2. Line pressure test	<u>TM-188</u>
				3. Accelerator pedal position sensor	<u>TM-241</u>
				4. Transmission range switch	<u>TM-200</u>
				5. CAN communication line	<u>TM-195</u>
				6. Stall test	<u>TM-186</u>
				7. CVT position	<u>TM-194</u>
			ON vehicle	8. Step motor	<u>TM-250</u>
				9. Primary speed sensor	<u>TM-204</u>
10				10. Secondary speed sensor	<u>TM-209</u>
12		No creep at all.		11. Accelerator pedal position sensor	<u>TM-241</u>
				12. CVT fluid temperature sensor	<u>TM-202</u>
				13. Secondary pressure sensor	<u>TM-230</u>
				14. Power supply	<u>TM-239</u>
				15. Control valve	<u>TM-284</u>
				16. Torque converter	<u>TM-306</u>
				17. Oil pump assembly	
			OFF vehicle	18. Gear system	
	Other			19. Forward clutch	<u>TM-301</u>
				20. Reverse brake	
		Vehicle cannot run in all positions.	ON vehicle	1. CVT fluid level and state	<u>TM-184</u>
				2. Line pressure test	<u>TM-188</u>
				3. Transmission range switch	<u>TM-200</u>
				4. Stall test	<u>TM-186</u>
				5. CVT position	<u>TM-194</u>
				6. Step motor	<u>TM-250</u>
				7. Primary speed sensor	<u>TM-204</u>
				8. Secondary speed sensor	<u>TM-209</u>
				9. Accelerator pedal position sensor	<u>TM-241</u>
13				10. CVT fluid temperature sensor	<u>TM-202</u>
				11. Secondary pressure sensor	<u>TM-230</u>
				12. Power supply	<u>TM-239</u>
				13. Control valve	<u>TM-284</u>
				14. Torque converter	<u>TM-306</u>
				15. Oil pump assembly	
			OFF vehicle	16. Gear system	
				17. Forward clutch	<u>TM-301</u>
				18. Reverse brake	
				19. Parking components	

#### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference	
				1. CVT fluid level and state	<u>TM-184</u>	- /
				2. Line pressure test	<u>TM-188</u>	-
				3. Transmission range switch	<u>TM-200</u>	E
				4. Stall test	<u>TM-186</u>	-
				5. CVT position	<u>TM-194</u>	-
				6. Step motor	<u>TM-250</u>	(
			ON vehicle	7. Primary speed sensor	<u>TM-204</u>	-
				8. Secondary speed sensor	<u>TM-209</u>	Т
		With selector lever in		9. Accelerator pedal position sensor	<u>TM-241</u>	
14		"D" position, driving is not possible.		10. CVT fluid temperature sensor	<u>TM-202</u>	-
				11. Secondary pressure sensor	<u>TM-230</u>	- 1
				12. Power supply	<u>TM-239</u>	-
				13. Control valve	<u>TM-284</u>	-
		-		14. Torque converter	<u>TM-306</u>	- 1
			OFF vehicle	15. Oil pump assembly		
				16. Gear system		
				17. Forward clutch	<u>TM-301</u>	
	0.1			18. Parking components		
	Other	With selector lever in	ON vehicle	1. CVT fluid level and state	<u>TM-184</u>	-
				2. Line pressure test	<u>TM-188</u>	-
				3. Transmission range switch	<u>TM-200</u>	-
				4. Stall test	<u>TM-186</u>	-
				5. CVT position	<u>TM-194</u>	-
				6. Step motor	<u>TM-250</u>	_
				7. Primary speed sensor	<u>TM-204</u>	-
				8. Secondary speed sensor	<u>TM-209</u>	-
				9. Accelerator pedal position sensor	<u>TM-241</u>	_
15		"R" position, driving is not possible.		10. CVT fluid temperature sensor	<u>TM-202</u>	-
				11. Secondary pressure sensor	<u>TM-230</u>	_
				12. Power supply	<u>TM-239</u>	-
				13. Control valve	<u>TM-284</u>	_
		-		14. Torque converter	<u>TM-306</u>	
				15 Oil pump assembly		-
			OFF vehicle	16. Gear system	<b>Th4</b> 004	
				17. Reverse brake	<u>— TM-301</u>	
				18. Parking components		

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# < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Referenc	
				1. CVT fluid level and state	<u>TM-184</u>	
				2. Engine speed signal	<u>TM-212</u>	
				3. Primary speed sensor	<u>TM-204</u>	
				4. Secondary speed sensor	<u>TM-209</u>	
16		Judder occurs during lock-up.	ON vehicle	5. Accelerator pedal position sensor	<u>TM-241</u>	
				6. CAN communication line	<u>TM-195</u>	
				7. Torque converter clutch solenoid valve	<u>TM-215</u>	
				8. Control valve	<u>TM-284</u>	
			OFF vehicle	9. Torque converter	<u>TM-306</u>	
				1. CVT fluid level and state	<u>TM-184</u>	
				2. Engine speed signal	<u>TM-212</u>	
			ON vehicle	3. CAN communication line	<u>TM-19</u>	
		Strange noise in "D" position.		4. Control valve	<u>TM-28</u> 4	
17			OFF vehicle	5. Torque converter	<u>TM-306</u>	
				6. Oil pump assembly		
	Other			7. Gear system		
				8. Forward clutch	<u>TM-30′</u>	
				9. Bearing		
		Strange noise in "R"	ON vehicle	1. CVT fluid level and state	<u>TM-184</u>	
				2. Engine speed signal	<u>TM-21</u> 2	
				3. CAN communication line	<u>TM-19</u>	
10				4. Control valve	<u>TM-284</u>	
18		position.	OFF vehicle	5. Torque converter	<u>TM-306</u>	
				6. Oil pump assembly	<u>TM-301</u>	
				7. Gear system		
				8. Reverse brake		
				1. CVT fluid level and state	<u>TM-184</u>	
			<u></u>	2. Engine speed signal	<u>TM-21</u> 2	
			ON vehicle	3. CAN communication line	<u>TM-19</u>	
19		Strange noise in "N" position.		4. Control valve	<u>TM-284</u>	
				5. Torque converter	<u>TM-306</u>	
			OFF vehicle	6. Oil pump assembly	<b>T</b> M 000	
				7. Gear system	<u>TM-30</u>	

#### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference	_
				1. CVT fluid level and state	<u>TM-184</u>	-
				2. CVT position	<u>TM-194</u>	-
				3. CAN communication line	<u>TM-195</u>	-
				4. Step motor	<u>TM-250</u>	-
20		Vehicle does not de- celerate by engine	ON vehicle	5. Primary speed sensor	<u>TM-204</u>	C
20		brake.	ON Vehicle	6. Secondary speed sensor	<u>TM-209</u>	
				7. Line pressure test	<u>TM-188</u>	
				8. Engine speed signal	<u>TM-212</u>	
				9. Accelerator pedal position sensor	<u>TM-241</u>	
				10. Control valve	<u>TM-301</u>	-
				1. CVT fluid level and state	<u>TM-184</u>	-
				2. Line pressure test	<u>TM-188</u>	-
				3. Accelerator pedal position sensor	<u>TM-241</u>	-
			ON vehicle	4. CAN communication line	<u>TM-195</u>	-
		Maximum speed low.		5. Stall test	<u>TM-186</u>	-
				6. Step motor	<u>TM-250</u>	
				7. Primary speed sensor	<u>TM-204</u>	
21	Other			8. Secondary speed sensor	<u>TM-209</u>	
				9. Secondary pressure sensor	<u>TM-230</u>	-
				10. CVT fluid temperature sensor	<u>TM-202</u>	-
				11. Control valve	<u>TM-284</u>	-
				12. Torque converter	<u>TM-306</u>	-
				13. Oil pump assembly		
				14. Gear system	<u>TM-301</u>	
				15. Forward clutch		
			ON vehicle	1. Transmission range switch	<u>TM-200</u>	-
		"P" position, vehicle does not enter park-		2. CVT position	<u>TM-194</u>	-
22		ing condition or, with selector lever in an- other position, park- ing condition is not cancelled.	OFF vehicle	3. Parking components	<u>TM-301</u>	_
				1. Transmission range switch	<u>TM-200</u>	_
			ON vehicle	2. CVT fluid level and state	<u>TM-184</u>	_
23		Vehicle runs with CVT	ON vehicle	3. CVT position	<u>TM-194</u>	-
20		in "P" position.		4. Control valve	<u>TM-284</u>	-
				5. Parking components	TM 204	-
			OFF vehicle	6. Gear system	<u>TM-301</u>	

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#### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference
			ONuchicle	1. Transmission range switch	<u>TM-200</u>
				2. CVT fluid level and state	<u>TM-184</u>
			ON vehicle	3. CVT position	<u>TM-194</u>
24		Vehicle runs with CVT in "N" position.		4. Control valve	<u>TM-284</u>
				5. Gear system	
			OFF vehicle	6. Forward clutch	<u>TM-301</u>
				7. Reverse brake	
				1. CVT fluid level and state	<u>TM-184</u>
				2. Engine speed signal	<u>TM-212</u>
			ON vehicle	3. Primary speed sensor	<u>TM-204</u>
				4. Torque converter clutch solenoid valve	<u>TM-215</u>
25		Engine stall.		5. CAN communication line	<u>TM-195</u>
				6. Stall test	<u>TM-186</u>
	Other			7. Secondary pressure sensor	<u>TM-230</u>
				8. Control valve	<u>TM-284</u>
			OFF vehicle	9. Torque converter	<u>TM-306</u>
		Engine stalls when selector lever shifted "N"→"D"or "R".	ON vehicle	1. CVT fluid level and state	<u>TM-184</u>
				2. Engine speed signal	<u>TM-212</u>
				3. Primary speed sensor	<u>TM-204</u>
26				4. Torque converter clutch solenoid valve	<u>TM-215</u>
20				5. CAN communication line	<u>TM-195</u>
				6. Stall test	<u>TM-186</u>
				7. Control valve	<u>TM-284</u>
			OFF vehicle	8. Torque converter	<u>TM-306</u>
			ON vehicle	1. CVT fluid level and state	<u>TM-184</u>
		Engine speed does not return to idle.		2. Accelerator pedal position sensor	<u>TM-241</u>
27				3. Secondary speed sensor	<u>TM-209</u>
				4. CAN communication line	<u>TM-195</u>
				5. Control valve	<u>TM-301</u>

#### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference	
				1. CVT fluid level and state	<u>TM-184</u>	
				2. CVT position	<u>TM-194</u>	
				3. Line pressure test	<u>TM-188</u>	
				4. Engine speed signal	<u>TM-212</u>	
			ON vehicle	5. Accelerator pedal position sensor	<u>TM-241</u>	
28		CVT does not shift	On venicie	6. CAN communication line	<u>TM-195</u>	
				7. Primary speed sensor	<u>TM-204</u>	
				8. Secondary speed sensor	<u>TM-209</u>	Т
				9. Step motor	<u>TM-250</u>	Ľ
				10. Control valve	<u>TM-284</u>	
			OFF vehicle	11. Oil pump assembly	<u>TM-301</u>	
		Engine does not start		1. Ignition switch and starter	<u>PG-15,</u> <u>STR-14</u>	
29		in "N" or "P" position.	ON vehicle	2. CVT position	<u>TM-194</u>	
				3. Transmission range switch	<u>TM-200</u>	
	Other	Engine starts in posi- tions other than "N" or "P".	ON vehicle	1. Ignition switch and starter	<u>PG-15,</u> <u>STR-14</u>	
30				2. CVT position	<u>TM-194</u>	
				3. Transmission range switch	<u>TM-200</u>	
		When brake pedal is depressed with igni- tion switch ON, selec- tor lever cannot be shifted from "P" posi- tion to other position.		1. Stop lamp switch		
				2. Shift lock solenoid		
31			3. CVT shift selector	<u>TM-255</u>		
		When brake pedal is		1. Stop lamp switch		
		not depressed with ig- nition switch ON, se-		2. Shift lock solenoid		
32		lector lever can be shifted from "P" posi- tion to other position.	ON vehicle	3. CVT shift selector	<u>TM-255</u>	
		Cannot be changed to manual mode.		1. Manual mode switch	<u>TM-227</u>	
33			ON vehicle	2. CAN communication line	<u>TM-195</u>	
				3. Combination meters	<u>MWI-7</u>	
				1. CAN communication line	<u>TM-195</u>	
34		CVT indicator lamp does not come on.	ON vehicle	2. Combination meters	<u>MWI-7</u>	
				3. TCM power supply and ground	<u>TM-239</u>	

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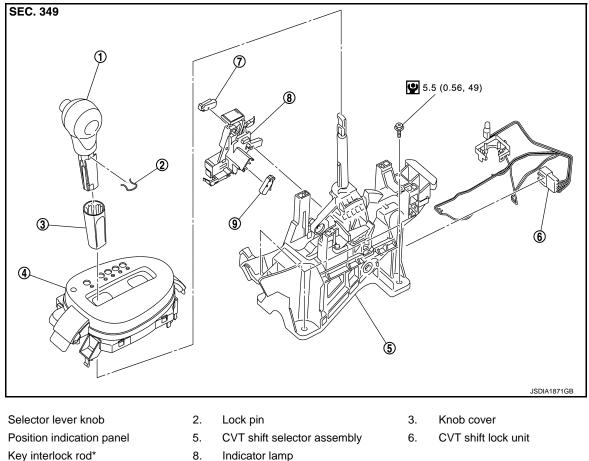
Ρ

# < REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION CVT SHIFT SELECTOR

#### Exploded View

INFOID:000000006601958

INFOID:000000006601959



- 7. Key interlock rod
- :N·m (kg-m, it-lb)

\*: Without push engine starter

#### Removal and Installation

#### REMOVAL

1.

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#### **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.
- Remove the key interlock cable from the CVT shift selector assembly. Refer to <u>TM-276</u>, "<u>Removal and</u> <u>Installation</u>" (Without push stater system).
- Remove the control cable from the CVT shift selector assembly. Refer to <u>TM-273</u>, "<u>Removal and Installa-</u> tion".
- 8. Remove the CVT shift selector assembly.

#### INSTALLATION

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

TM-270

#### **CVT SHIFT SELECTOR**

#### < REMOVAL AND INSTALLATION >

• 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.

#### [CVT: RE0F10B]

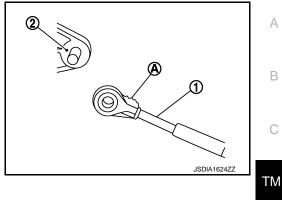
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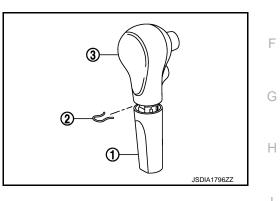


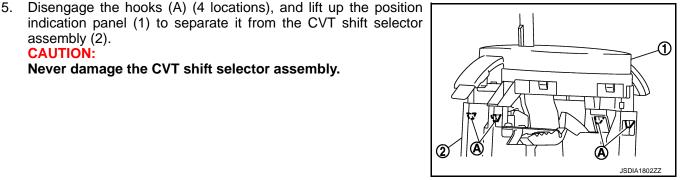
#### **Disassembly and Assembly**

#### 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.
- Remove the position lamp.

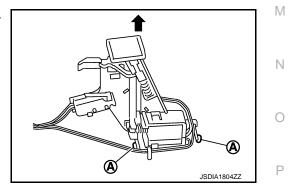
assembly (2). **CAUTION:** 





- Shift the selector lever to "N" position. 6.
- 7. Remove the shift lock unit from the CVT shift selector assembly.

Never damage 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.

**TM-271** 

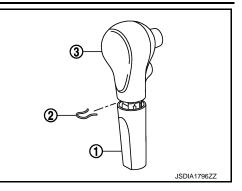
#### **CVT SHIFT SELECTOR**

#### < REMOVAL AND INSTALLATION >

- 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

INSPECTION AFTER INSTALLATION

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to <u>TM-194</u>, "Inspection and <u>Adjustment</u>".

#### [CVT: RE0F10B]

INFOID:000000006601961

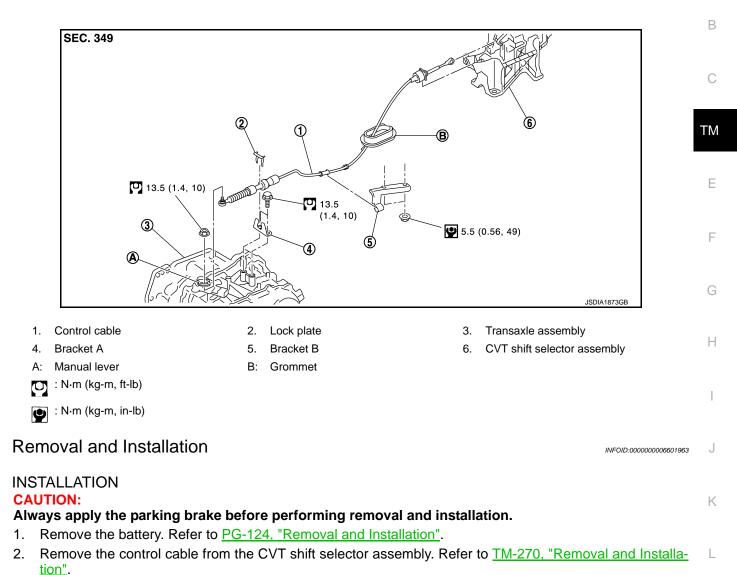
#### **CONTROL CABLE**

# < REMOVAL AND INSTALLATION > CONTROL CABLE

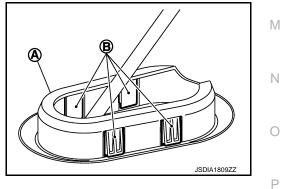
#### [CVT: RE0F10B]

#### Exploded View

INFOID:000000006601962



- Disengage the pawls (B) of the grommet (A), and pull downwards to remove.
- 4. Remove the control cable installation nut from the manual lever.

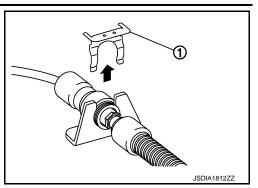


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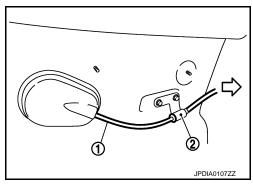
#### **CONTROL CABLE**

#### < REMOVAL AND INSTALLATION >

5. Remove the lock plate (1).



- 6. Remove center muffler from the mounting rubber and lower the center muffler downward. Refer to <u>EX-6.</u> <u>"Removal and Installation"</u>.
- 7. Lift up the heat plate.
- 8. Remove the control cable (1) from the bracket (2).



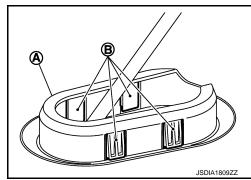
9. Remove the control cable from the vehicle.

#### 10. Remove bracket.

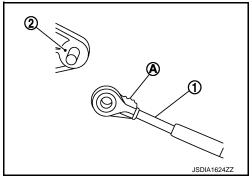
#### INSTALLATION

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.



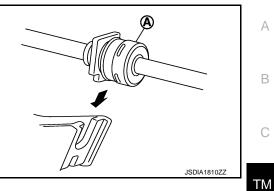
- Pay attention to the following when connecting the control cable to the CVT shift selector.
- 1. When connecting the control cable (1) to the CVT shift selector assembly (2), face the grooved surface of the rib (A) up and insert the control cable until it stops.



#### **CONTROL CABLE**

#### < REMOVAL AND INSTALLATION >

- 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.



[CVT: RE0F10B]

Inspection

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**INSPECTION AFTER INSTALLATION** 

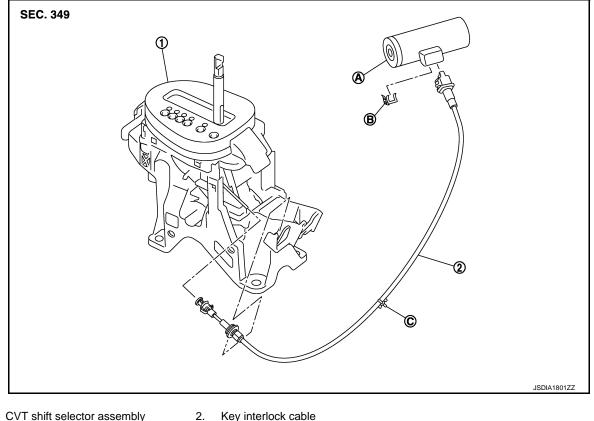
Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to <u>TM-194, "Inspection and</u> <u>Adjustment"</u>.

#### < REMOVAL AND INSTALLATION >

#### **KEY INTERLOCK CABLE**

#### **Exploded View**

INFOID:00000006601965



- 1. CVT shift selector assembly Key cylinder
- Key interlock cable B: Clip
- C: Clip

#### **Removal and Installation**

INFOID:000000006601966

#### REMOVAL

#### **CAUTION:**

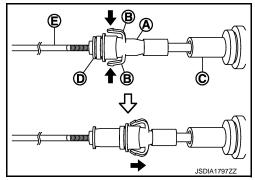
A:

#### 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".
- 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.

#### Е :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".



#### **KEY INTERLOCK CABLE**

#### < REMOVAL AND INSTALLATION >

- Lift clip (A) in the direction of the arrow (**C**) and remove in the 7. direction of the arrow (
  - :Key interlock cable 1
  - В :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.

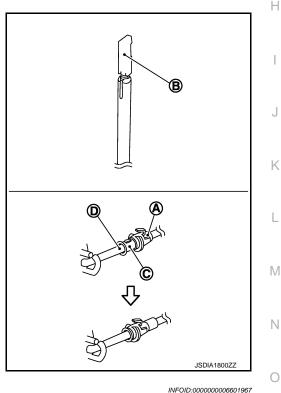
#### **INSTALLATION**

 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.

C (A) (1) В B JSDIA1798ZZ ТΜ Ε C



Inspection

INFOID:000000006601967

#### 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.

#### [CVT: RE0F10B]

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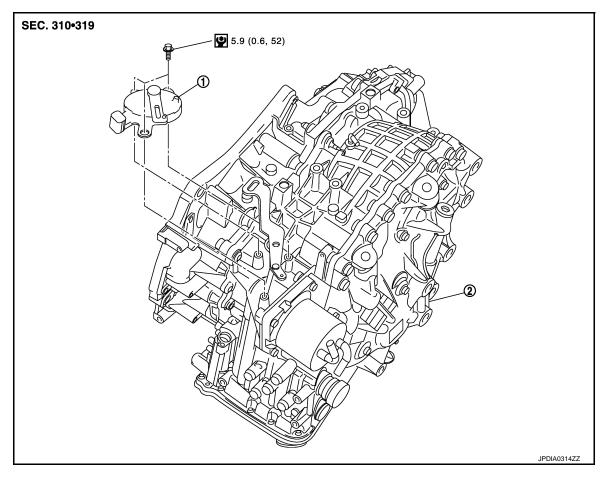
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#### < REMOVAL AND INSTALLATION >

#### TRANSMISSION RANGE SWITCH

#### **Exploded View**

INFOID:000000006601717



Transmission range switch 2. Transaxle assembly

#### **Removal and Installation**

#### REMOVAL

1.

- 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

#### ADJUSTMENT OF TRANSMISSION RANGE SWITCH

- 1. Move selector lever to "N" position.
- 2. Remove control cable from manual lever.

INFOID:000000006601718

INFOID:000000006601719

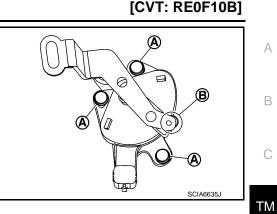
#### TM-278

[CVT: RE0F10B]

#### TRANSMISSION RANGE SWITCH

#### < REMOVAL AND INSTALLATION >

- 3. Loosen mounting bolts (A) of transmission range switch. Insert a pin (\u00f64 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".



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#### ADJUSTMENT AFTER INSTALLATION

Adjust the CVT positions after installing the CVT shift selector. Refer to TM-194, "Inspection and Adjustment".

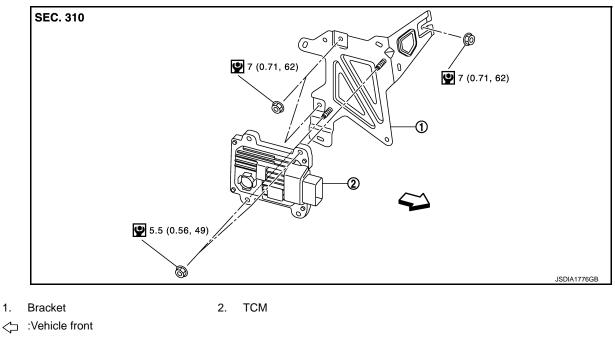
#### **INSPECTION AFTER INSTALLAION**

Check the CVT positions after adjusting the CVT positions. Refer to TM-194, "Inspection and Adjustment".

#### TCM

Exploded View

INFOID:000000006601941



● : N·m (kg-m, in-lb)

#### **Removal and Installation**

#### NOTE:

When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM. Refer to <u>TM-374</u>, "<u>Description</u>".

#### 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:000000006601943

INFOID:000000006601942

ADJUSTMENT AFTER INSTALLATION Perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to <u>TM-374</u>, "<u>Description</u>".

#### < REMOVAL AND INSTALLATION >

#### AIR BREATHER HOSE

#### Removal and Installation

#### 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.

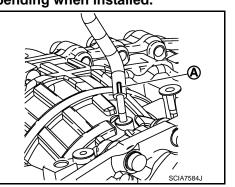
#### INSTALLATION

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.

**TM-281** 

• 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.



[CVT: RE0F10B]

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INFOID:000000006601734

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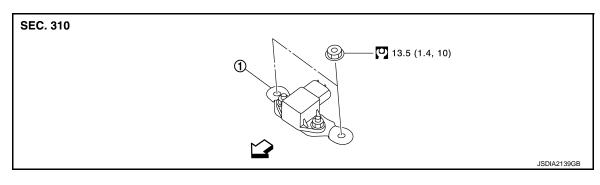
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### G SENSOR

**Exploded View** 

INFOID:000000006601944

[CVT: RE0F10B]



- 1. G sensor
- $\triangleleft$ : Vehicle front

j : N⋅m (kg-m, in-lb)

#### Removal and Installation

INFOID:000000006601945

#### **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 <u>INT-20, "CENTER</u> <u>PILLAR LOWER GARNISH : Removal and Installation"</u> (center pillar lower garnish) and <u>INT-20, "DASH</u> <u>SIDE FINISHER : Removal and Installation"</u> (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:000000006601946

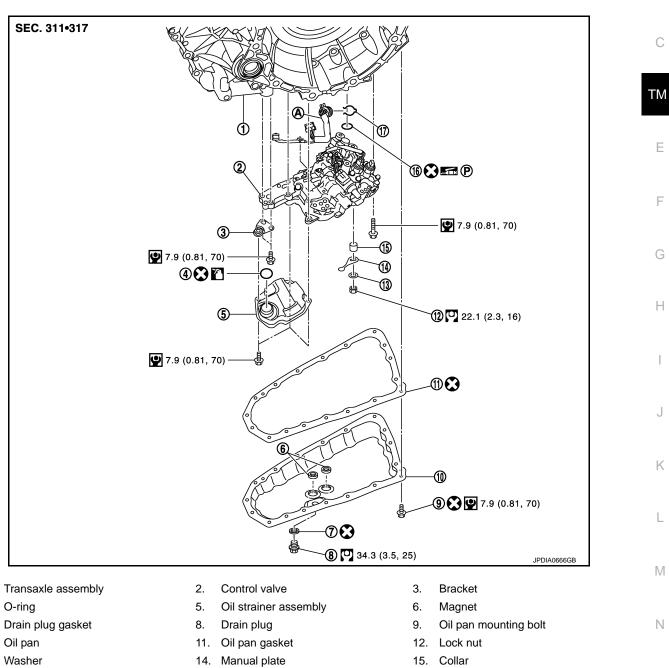
ADJUSTMENT AFTER INSTALLATION Perform "G SENSOR CALIBRATION". Refer to <u>TM-377, "Description"</u>. < REMOVAL AND INSTALLATION >

## CONTROL VALVE

#### Exploded View

#### COMPONENT PARTS LOCATION

INFOID:000000006707486



16. Lip seal

1.

4.

7.

10.

13.

- 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

TM-283

17. Snap ring

[CVT: RE0F10B]

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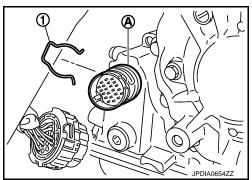
#### CONTROL VALVE

#### < REMOVAL AND INSTALLATION >

#### Removal and Installation

#### REMOVAL

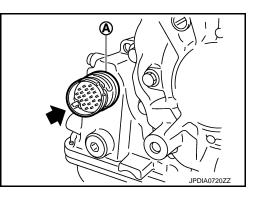
- 1. Disconnect battery cable from negative terminal. Refer to PG-124. "Removal and Installation".
- 2. Remove drain plug from oil pan and then drain the CVT fluid.
- 3. Remove drain plug gasket.
- 4. Disconnect the CVT unit connector. Refer to <u>TM-125</u>, "Removal and Installation Procedure for CVT Unit <u>Connector</u>".
- 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.

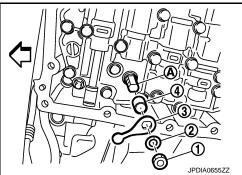


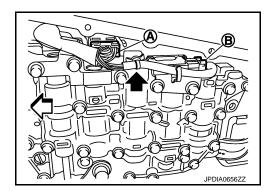
- 7. Remove the oil pan mounting bolts, and then remove the oil pan and oil pan gasket.
- 8. Remove the magnets from the oil pan.
- 9. Remove the lock nut (1) and washer (2), and then remove the manual plate (3).

- 10. Remove the collar (4) from the manual shaft (A). CAUTION: Never drop the collar.
- 11. Disconnect the connectors (A) and (B).



<□ : Vehicle front





#### **CONTROL VALVE**

#### < REMOVAL AND INSTALLATION >

12. Remove the oil strainer assembly mounting bolts (A) and (B), and then remove the oil strainer assembly (1).

- 13. Remove O-ring from oil strainer assembly.
- 14. Remove the bracket (1).
  - : Bolt
  - : Vehicle front 勹

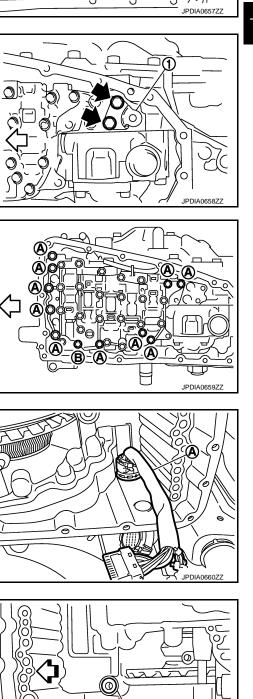
- 15. Remove the control valve mounting bolts (A) and (B), and then remove the control valve from the transaxle case.

#### **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.



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#### [CVT: RE0F10B]

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#### < REMOVAL AND INSTALLATION >

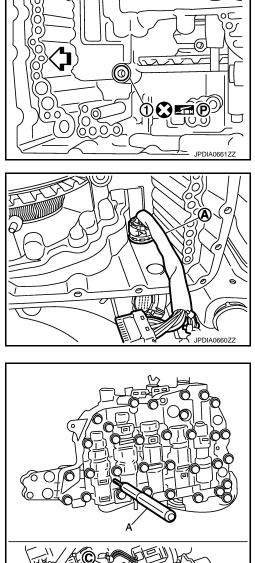
#### INSTALLATION

- 1. Install the lip seal (1) to the transaxle case.

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.

- 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.



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#### **CONTROL VALVE**

#### < REMOVAL AND INSTALLATION >

- 6. Fix the control valve using the control valve mounting bolts (A) and (B).
  - : Vehicle front

Bolt	Bolt length (mm)	Number of bolts	
А	54	10	
В	44	1	

- 7. Pull the linkage fixing pin out.
- 8. Connect the connectors (A) and (B).



#### **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).



- 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).

Bolt	Bolt length (mm)	Number of bolts	
A	12	2	
В	44	1	
NATE		·	

#### NOTE:

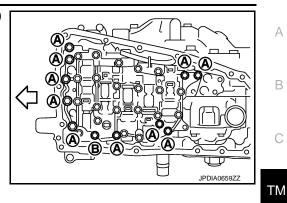
Remove the bracket and adjust the position again if the bolt hole positions are not aligned.

TM-287

12. Install the collar to the manual shaft.

#### CAUTION:

Never drop the collar.



[CVT: RE0F10B]

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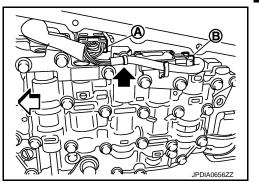
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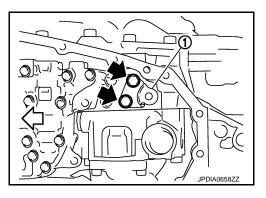
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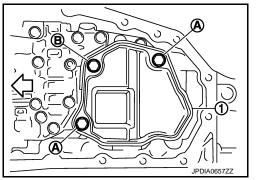
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#### **CONTROL VALVE**

#### < REMOVAL AND INSTALLATION >

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.

- 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 <u>TM-125</u>, "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 Specifica-<br/>tion".Fluid capacity: Refer to TM-308, "General Specifica-<br/>tion".

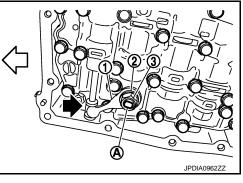
#### **CAUTION:**

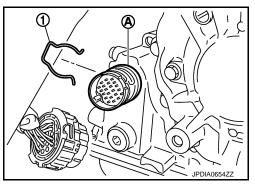
- Use only Genuine NISSAN CVT Fluid NS-2. Never mix with other fluid.
- Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.
- When filling CVT fluid, take care not to scatter heat generating 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 <u>TM-159</u>, <u>"CONSULT-III Function (TRANSMISSION)"</u>.
- 22. With the engine warmed up, drive the vehicle in an urban area. **NOTE:**

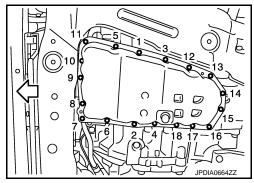
When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to80°C (122 to 176°F).

23. Check CVT fluid level and condition. Refer to TM-184, "Inspection".

#### [CVT: RE0F10B]







CONTROL VALVE		
< REMOVAL AND INSTALLATION > [0	CVT: RE0F10B]	
24. Connect battery cable to negative terminal. Refer to PG-124, "Removal and Installation".		
Inspection and Adjustment	INFOID:000000006707488	A
<ul> <li>INSPECTION AFTER REMOVAL</li> <li>Check oil pan for foreign material.</li> <li>If a large amount of worn material is found, clutch plate may be worn.</li> <li>If iron powder is found, bearings, gears, or clutch plates may be worn.</li> <li>If aluminum powder is found, bushing may be worn, or chips or burrs of aluminum casting p Check points where wear is found in all cases.</li> </ul>	oarts may enter.	B
INSPECTION AFTER REMOVAL Check the CVT fluid level and leakage. Refer to <u>TM-184, "Inspection"</u> .		ТМ
INSPECTION AFTER INSTALLATION Erase the TCM data. • Erase the CVT fluid degradation data. Refer to <u>TM-159, "CONSULT-III Function (TRANSM</u> • When replacing the control valve, erase EEP ROM in TCM. Refer to <u>TM-180, "Description"</u>	ISSION)"	E
		F
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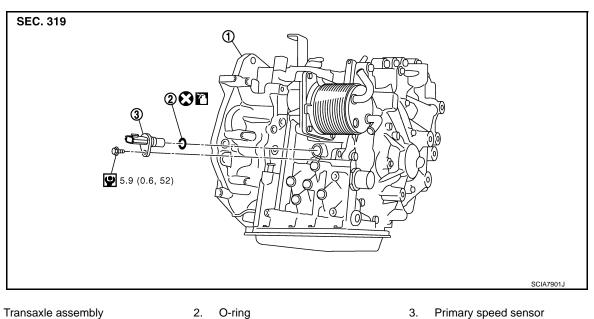
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# < REMOVAL AND INSTALLATION >

# PRIMARY SPEED SENSOR

# **Exploded View**

INFOID:000000006601720



3.

- Transaxle assembly 2.
- : Always replace after every disassembly.
- : N·m (kg-m, in-lb) Y
- : Genuine NISSAN CVT Fluid NS-2  $\mathbf{x}$

# **Removal and Installation**

#### REMOVAL

1.

- 1. Remove the battery. Refer to PG-124, "Removal and Installation".
- Remove ECM bracket. Refer to EC-447, "Removal and Installation". 2.
- 3. Remove primary speed sensor connector.
- 4. Remove primary speed sensor.
- Remove O-ring from primary speed sensor. 5.

#### 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

INSPECTION AFTER INSTALLATION Check for CVT fluid leakage. Refer to TM-480, "Inspection".

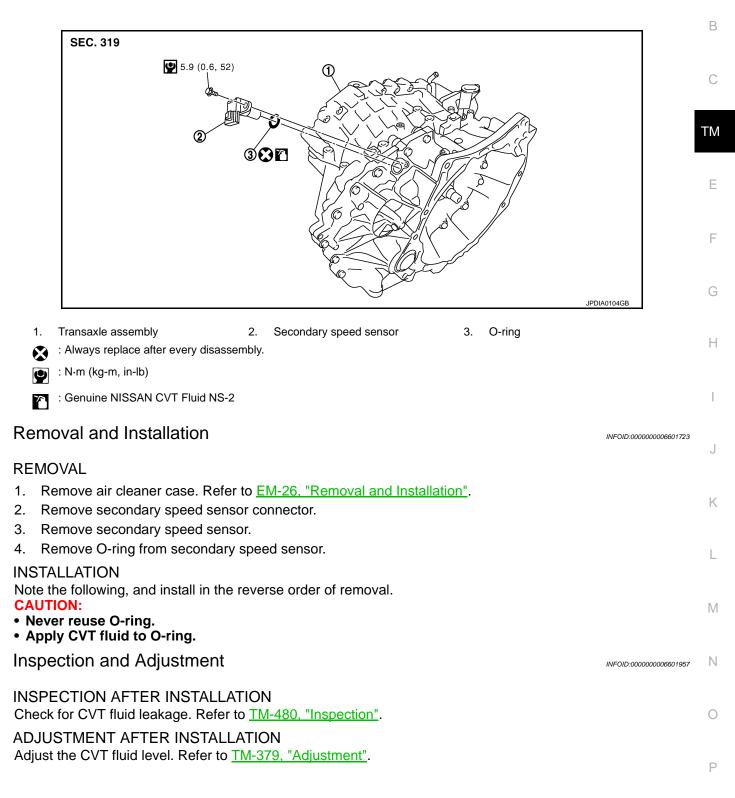
ADJUSTMENT AFTER INSTALLATION Adjust the CVT fluid level. Refer to TM-379, "Adjustment". INFOID:000000006601721

# < REMOVAL AND INSTALLATION >

# SECONDARY SPEED SENSOR

# **Exploded View**

INFOID:000000006601722



A

# DIFFERENTIAL SIDE OIL SEAL

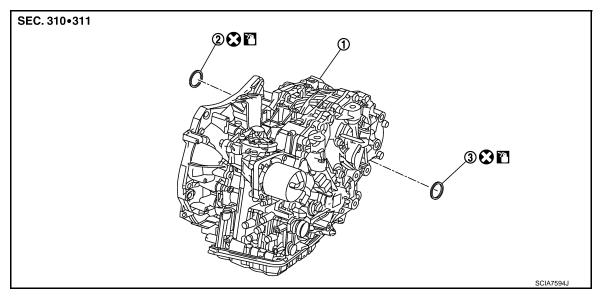
# < REMOVAL AND INSTALLATION >

# DIFFERENTIAL SIDE OIL SEAL

# Exploded View

INFOID:000000006628058

[CVT: RE0F10B]



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:000000006628059

#### 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:** 

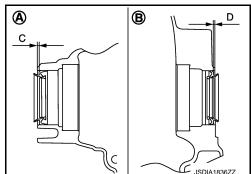
- Never reuse differential side oil seal.
- Apply Genuine NISSAN CVT Fluid NS-2 to the differential side oil seal lip and around the oil seal.
- When inserting the drive shaft, be sure to use a protector (SST: KV38107900). Refer to <u>FAX-22, "LEFT</u> <u>SIDE : Removal and Installation"</u>.

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)



# DIFFERENTIAL SIDE OIL SEAL

#### < REMOVAL AND INSTALLATION >

Dimension "C"	:Height difference from case end surface is within 1.8 $\pm$ 0.5 mm (0.071 $\pm$ 0.020 in).
Dimension "D"	:Height difference from case end surface is within 1.0 $\pm$ 0.5 mm (0.039 $\pm$ 0.020 in).
IOTE:	
	ection 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 (2.26 in) and inner dia. 55 mm (2.17 in)
Inspection	INFOID:0000000660172
After completing installa	tion, check for CVT fluid leakage and CVT fluid level. Refer to <u>TM-184. "Inspection"</u> .

# TM-293

# OIL PUMP FITTING BOLT

# < REMOVAL AND INSTALLATION >

# **OIL PUMP FITTING BOLT**

# Description

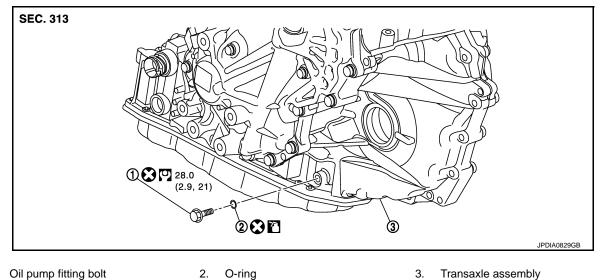
INFOID:000000006601730

Replace the oil pump fitting bolt and the O-ring if oil leakage or exudes from the oil pump fitting bolt.

# Exploded View

INFOID:000000006601731

INFOID:000000006601732

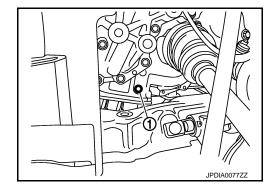


- Oil pump fitting bolt
   Always replace after every disassembly.
- : Always replace after of
   : N·m (kg-m, ft-lb)
- ⊖ : N•m (k
- : Genuine NISSAN CVT Fluid NS-2

# Removal and Installation

#### 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 <u>TM-184, "Inspection"</u>.
 CAUTION:

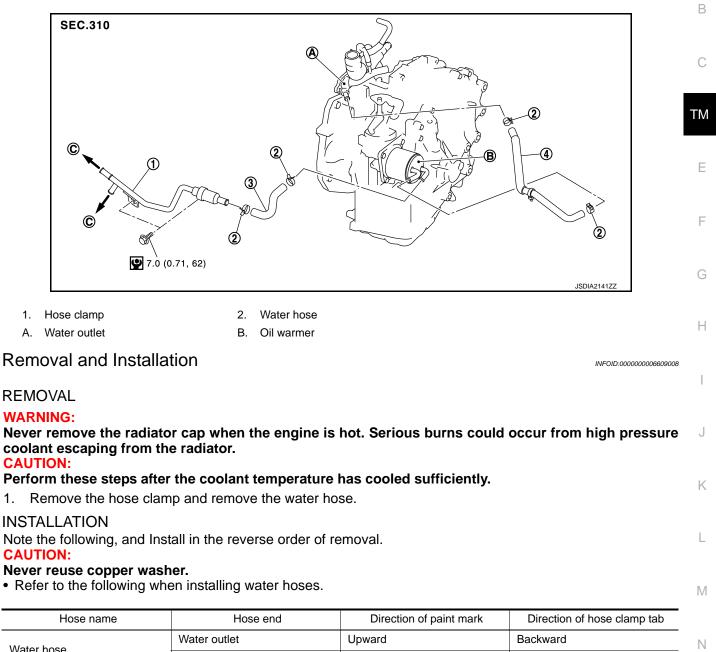
- Never reuse O-ring.
- Apply CVT fluid to O-ring.

# < REMOVAL AND INSTALLATION > WATER HOSE

Exploded View

INFOID:000000006608932

А

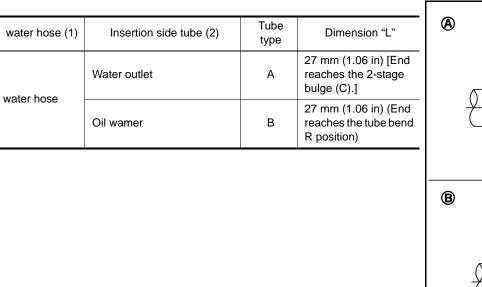


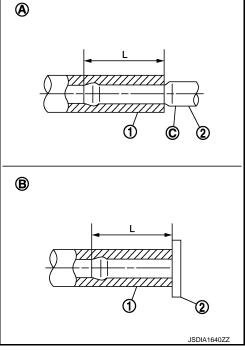
Water hose	Water outlet	Upward	Backward
	Oil wamer	Leftward	Upward

- Insert water hose according to dimension "L" described below.



#### < REMOVAL AND INSTALLATION >

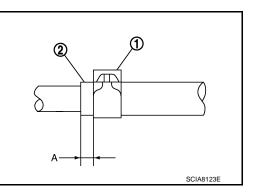




- Set hose clamps (1) at the both ends of water hoses (2) with dimension "A" from the hose edge.

Dimension "A" : 5 – 7 mm (0.20 – 0.28 in)

- Hose clamp should not interfere with the bulge of fluid cooler tube.



Inspection

INFOID:000000006608934

INSPECTION AFTER INSTALLATION Start the engine, and check the joints for coolant leakage. Refer to <u>CO-11, "Inspection"</u>.

# < REMOVAL AND INSTALLATION >

# FLUID COOLER SYSTEM

# Exploded View

INFOID:000000006601950

А

В

С

Е

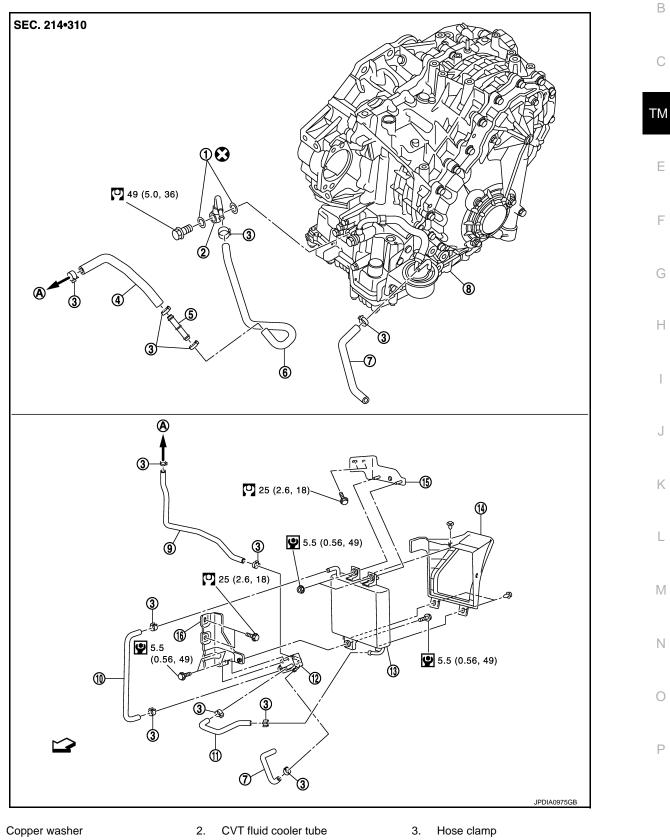
F

J

Κ

L

Ρ



4. Fluid cooler hose A

1.

- Fluid cooler hose C 7.
- 5. Fluid cooler tube
- 8.
  - Transaxle assembly

TM-297

- 6. Fluid cooler hose B
- 9. Fluid cooler hose D

11. Fluid cooler hose F

14. Air guide

#### < REMOVAL AND INSTALLATION >

- 10. Fluid cooler hose E
- 13. Fluid cooler
- 16. Bracket B
- A. To radiator
- <⊐: Vehicle side

# Removal and Installation

#### REMOVAL

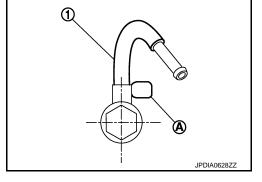
- 1. Remove engine under cover.
- 2. Remove front bumper assembly. Refer to EXT-13, "Removal and Installation".
- 3. Remove air guide from fluid cooler.
- 4. Remove fluid cooler hose E and fluid cooler hose F.
- 5. Remove fluid cooler.
- 6. Remove air duct (inlet). Refer to EM-26, "Removal and Installation".
- 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*
	Radiator assembly side	Facing upward	А
A	Fluid cooler tube side	Facing upward	А
P	Fluid cooler tube side	Facing upward	А
В	CVT fluid cooler tube side	Facing upward	А
С	Transaxle assembly side	Facing upward	В
	Bypass valve side	Facing to the left of the vehicle	В
D	Radiator assembly side	Facing to the left of the vehicle	С
D	Bypass valve side	Facing backward	D
E	Fluid cooler side	Facing upward	А
	Bypass valve side	Facing downward	E

# TM-298

- 12. Bypass valve
- 15. Bracket A
- INFOID:000000006601951

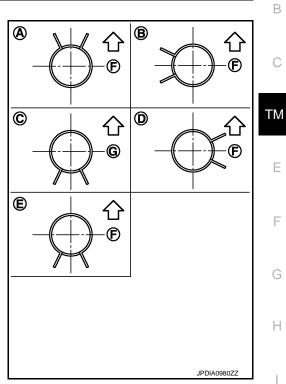
#### < REMOVAL AND INSTALLATION >

[CVT: RE0F10B]

Fluid cooler hose	Hose end	Paint mark	Position of hose clamp*	Δ
E	Bypass valve side	Facing downward	E	
	Fluid cooler side	Facing forward	В	

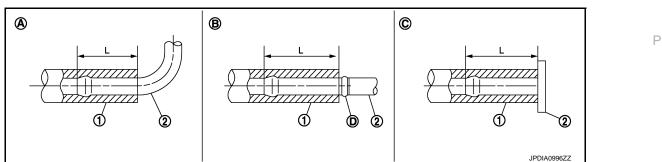
 $\space{1.5}$  \*: Refer to the illustrations for the specific position each hose clamp tab.

- 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.

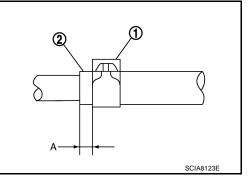
(1)	(2)	Tube type	Dimension L	
	Radiator assembly side	С	Insert the hose until the hose touches the radiator.	
Fluid cooler hose A Fluid	Fluid cooler tube side	В	20 mm (4.40 in) [End reaches the speed parties (D)]	
Fluid cooler hose B	Fluid cooler tube side	В	28 mm (1.10 in) [End reaches the spool portion (D).]	
FILIO COOIEI NOSE B	CVT fluid cooler tube side	А		
Fluid cooler hose C Fluid cooler hose D	Transaxle assembly side	А	End reaches the radius curve end.	
	Bypass valve side	А		
	Radiator assembly side	А		
	Bypass valve side	А		
	Fluid cooler side	А		
Fluid cooler hose E	Bypass valve side	С	28 mm (1.10 in) (Insert the hose until the hose touches	
	Bypass valve side	С	the bypass valve.)	
Fluid cooler hose F	Fluid cooler side	A	End reaches the radius curve end.	



#### < REMOVAL AND INSTALLATION >

- Set hose clamps (1) at the both ends of fluid cooler hose (2) with dimension (A) from the hose edge.

(1)	(2)	Dimension A	
	Radiator assembly side	5 – 9 mm (0.20 – 0.35 in)	
Fluid cooler hose A	Fluid cooler tube side		
Fluid cooler hose B	Fluid cooler tube side	•	
Fiuld Coolei Hose B	CVT fluid cooler tube side	5 mm (0.20 in)	
Fluid cooler hose C	Transaxle assembly side		
Fiuld Cooler Hose C	Bypass valve side	-	
Fluid cooler hose D	Radiator assembly side	5 – 9 mm (0.20 – 0.35 in)	
Think cooler hose D	Bypass valve side		
Fluid cooler hose F	Fluid cooler side		
	Bypass valve side	5 mm (0.20 in)	
Fluid cooler hose F	Bypass valve side		
	Fluid cooler side		



[CVT: RE0F10B]

- Hose clamp should not interfere with the bulge of fluid cooler tube.

## Inspection

INFOID:000000006601952

#### INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage and CVT fluid level. Refer to TM-184, "Inspection".

# TRANSAXLE ASSEMBLY

# < UNIT REMOVAL AND INSTALLATION >

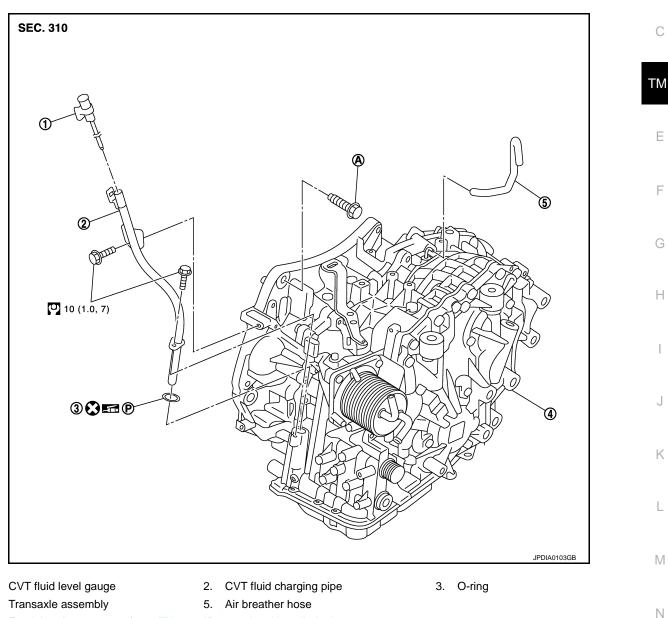
# UNIT REMOVAL AND INSTALLATION TRANSAXLE ASSEMBLY

# Exploded View

INFOID:000000006601747 B

INFOID:000000006601748

А



A. For tightening torque, refer to TM-301, "Removal and Installation".

# Removal and Installation

#### REMOVAL

1. 4.

#### WARNING:

Never remove the reservoir tank cap when the engine is hot. Serious burns could occur from highpressure 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 <u>TM-180, "Description"</u>.

#### NOTE:

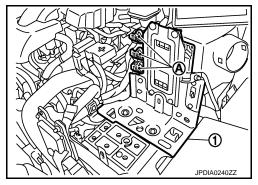
Cap or cover any transaxle openings to prevent transaxle fluid from spiling.

# TM-301

# TRANSAXLE ASSEMBLY

#### < UNIT REMOVAL AND INSTALLATION >

- 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 <u>EM-26, "Removal and Instal-</u> <u>lation"</u>.
- 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.



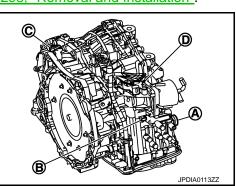
- 11. Disconnect fluid cooler hose from transaxle assembly. Refer to TM-298, "Removal and Installation".
- 12. Disconnect following harness connector and wire harness.
  - CVT unit harness connector (A).
  - Primary speed sensor harness connector (B).
  - Secondary speed sensor harness connector (C).
  - Transmission range switch connector (D).
- 13. Remove harness and clip from the transaxle assembly.
- 14. Remove water hose. Refer to <u>TM-295. "Removal and Installa-</u> tion".
- 15. Remove control cable from transaxle assembly. Refer to <u>TM-</u> <u>273. "Removal and Installation"</u>.
- 16. Remove starter motor. Refer to <u>STR-29</u>, "<u>MR16DDT : Removal</u> <u>and Installation</u>".
- 17. Remove engine under cover with power tool.
- Turn crankshaft, and remove the four tightening nuts (+) for drive plate and torque converter.
   CAUTION:
   When turning crankshaft, turn it clockwise as viewed from

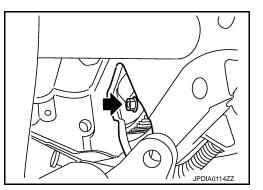
# When turning crankshaft, turn it clockwise as viewed from the front of the engine.

- 19. Remove exhaust front tube. Refer to <u>EX-6. "Removal and Instal-</u> lation".
- 20. Separate the propeller shaft. Refer to <u>DLN-121</u>, "Removal and <u>Installation"</u>.
- 21. Remove front drive shafts. Refer to <u>FAX-21, "Exploded View"</u>.
- 22. Remove front suspension member from vehicle. Refer to <u>FSU-18, "Removal and Installation"</u>.
- 23. Remove transfer assembly from transaxle assembly with power tool. Refer to <u>DLN-93, "Removal and</u> <u>Installation"</u>.
- 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.
  - Secure torque converter to prevent it from dropping.





#### < UNIT REMOVAL AND INSTALLATION >

#### • Secure transaxle assembly to a transmission jack.

29. Remove heater thermostat. Refer to TM-295, "Removal and Installation".

#### INSTALLATION

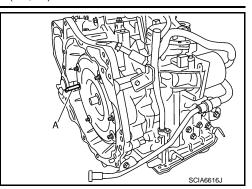
Note following, and install in the reverse order of removal. **CAUTION:** 

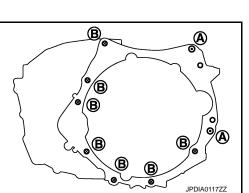
• Check fitting of dowel pin (+) when installing transaxle assembly to engine assembly.

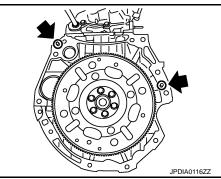
• When installing transaxle assembly to the engine assembly, attach the fixing bolts in accordance with the following.

Insertion direction	Transaxle to engine	Engine to transaxle
Bolt No.	A	В
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.







В

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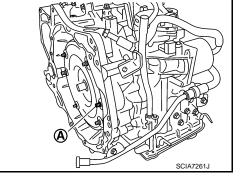
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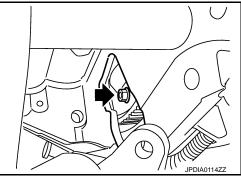
А

Ρ

#### < UNIT REMOVAL AND INSTALLATION >

• When not using drive plate location guide, rotate torgue 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 torgue 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 torgue 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.

#### U) :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

#### **INSPECTION BEFORE INSTALLATION**

After inserting a torque converter to the CVT, check dimension (A) with in the reference value limit.

- В : Scale
- С : Straightedge

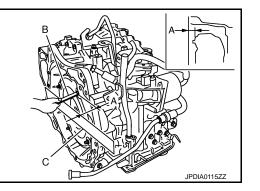
Dimension (A) : Refer to TM-308, "Torque Converter".

#### **INSPECTION AFTER INSTALLATION**

Check the following.

- Check for CVT fluid leakage and check CVT fluid level. Refer to <u>TM-184</u>, "Inspection".
- Check CVT position. Refer to TM-194, "Inspection and Adjustment".

# **TM-304**





INFOID:000000006601749

SCIA6617J

# TRANSAXLE ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >	[CVT: RE0F10B]
• Start and warm up the engine. Visually check that there is no leakage of engine coolant	
ADJUSTMENT AFTER INSTALLATION When replacing the transaxle assembly, • Erase CVT fluid degradation level data. Refer to <u>TM-159</u> , <u>"CONSULT-III Function (TRAN</u>	A NSMISSION)".
• Erase EEP ROM in TCM. Refer to <u>TM-180, "Description"</u> .	В
	C
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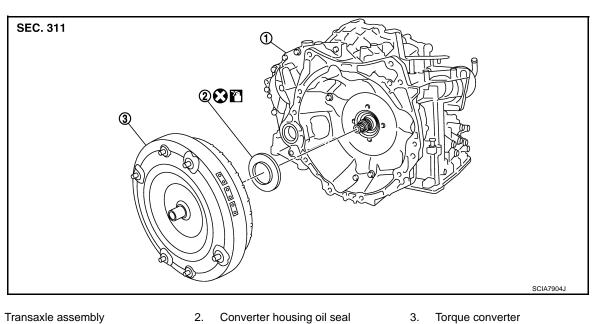
Ρ

# TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL < UNIT DISASSEMBLY AND ASSEMBLY > [CVT: RE0F10B]

# UNIT DISASSEMBLY AND ASSEMBLY TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

# Exploded View

INFOID:000000006601750



- Always replace after every disassembly.
- : Apply CVT Fluid NS-2.

# Disassembly

1.

INFOID:000000006601751

- 1. Remove transaxle assembly. Refer to <u>TM-301, "Removal and Installation"</u>.
- Remove torque converter from transaxle assembly.
   CAUTION:
   Never demons hugh on the incide of torque converter clocks with

#### Never damage bush on the inside of torque converter sleeve when removing torque converter.

 Remove converter housing oil seal using a flat-bladed screwdriver. CAUTION: Be careful not to scratch converter housing.

# Assembly

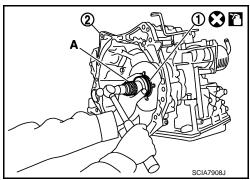
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Note the following, and install in the reverse order of removal.

• 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



# TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

Unit: mm (in)

#### < UNIT DISASSEMBLY AND ASSEMBLY >

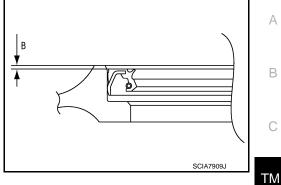
[CVT: RE0F10B]

Dimension B  $1.0 \pm 0.5 (0.039 \pm 0.020)$ 

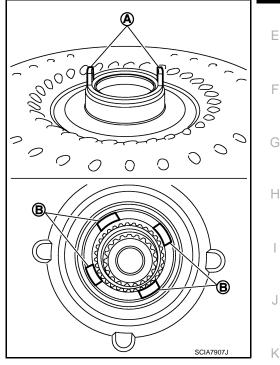
#### NOTE:

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 <u>TM-184</u>, "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.

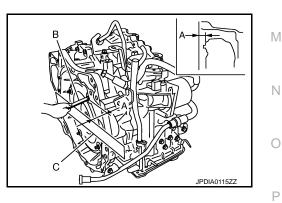


#### Inspection

#### 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".



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# < SERVICE DATA AND SPECIFICATIONS (SDS)</p> SERVICE DATA AND SPECIFICATIONS (SDS) SERVICE DATA AND SPECIFICATIONS (SDS)

# **General Specification**

Applied model		MR16DDT	
		4WD	
CVT model		RE0F10B	
CVT assembly	Model code number	3TX0E	
	D range	2.349 - 0.394	
Transmission gear ratio	Reverse	1.750	
	Final drive	6.466	
Recommended fluid		NISSAN CVT Fluid NS-2 <sup>*1</sup>	
Fluid capacity		8.5 liter (7-1/2 Imp qt) <sup>*2</sup>	

#### 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

Numerical value data are reference values.

				e ini ipin
Engine type	Throttle position	Shift pattern Engine	Shift pattorn	e speed
Engine type		Shin patient	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
MICZODE	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

Stall speed

2,500 – 3,000 rpm

## Line Pressure

Unit: kPa (bar, kg/cm<sup>2</sup>, psi)

Line pressure
"R" and "D" positions
750 (7.50, 7.65, 108.8)
5,700 (57.00, 58.14, 826.5) <sup>*</sup>
-

\*: Reference values

## Torque Converter

Dimension between end of converter housing and torque converter

[CVT: RE0F10B]

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14.4 mm (0.567 in)

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11) to 50 kingin (50 kin 11).

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Unit: rom

# < PRECAUTION > PRECAUTION PRECAUTIONS

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. 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

#### 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.

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#### **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.)
- Disconnect both battery cables. The steering lock will remain released with both battery cables discon-3. nected and the steering wheel can be turned.
- Perform the necessary repair operation. 4.
- When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn 5. 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

#### **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

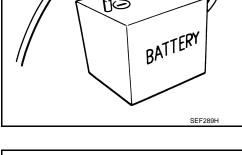
#### **CAUTION:**

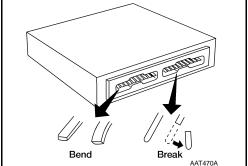
To remove/install or replace G sensor, refer to TM-377, "Description".

**General Precautions** 

• 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.





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# PRECAUTIONS

< PRECAUTION >

PROCEDURE".

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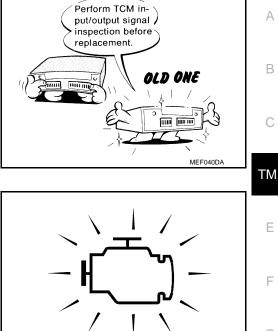
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• Perform TCM input/output signal inspection and check whether TCM functions normally or not before replacing TCM. Refer to TM-354, "Reference Value".



If the repair is completed DTC should not be displayed in the "DTC CONFIRMATION PROCEDURE".

Perform "DTC (Diagnostic Trouble Code) CONFIRMATION

- 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

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 Μ 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

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REMOVAL

**TM-311** 

# PRECAUTIONS

#### < PRECAUTION >

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

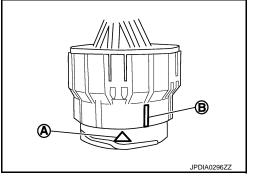
# INSTALLATION

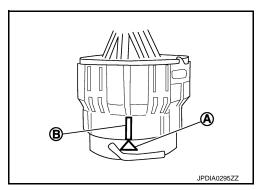
- 1. Align marking (A) on CVT unit harness connector terminal with marking (B) on bayonet ring. Insert CVT unit harness connector.
- 2. Rotate bayonet ring clockwise.

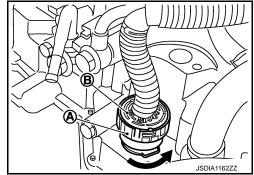
3. Rotate bayonet ring clockwise until marking (A) on CVT unit harness connector terminal body is aligned with the slit (B) on bayonet ring as shown in the figure (correctly fitting condition).

# 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.







#### [CVT: RE0F11A]

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# PREPARATION

# [CVT: RE0F11A]

# < PREPARATION > PREPARATION PREPARATION

# Special Service Tools

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Tool number Tool name	Description
<ol> <li>KV311039S0 Charging pipe set</li> <li>KV31103920* O-ring</li> </ol>	CVT fluid changing and adjustment
	2 JSDIA1844ZZ
<v38107900 protector<="" td=""><td>Installing drive shaft</td></v38107900>	Installing drive shaft
a: \$ 32 mm	
	PDIA1183J
	INFOID:0000000648754
ommercial Service Tools	INFOID:0000000648754 Description
Tool number Tool name 31197EU50A Drive plate location guide	
Tool number Tool name 31197EU50A Drive plate location guide	Description Installing transaxle assembly
Tool number Tool name 31197EU50A Drive plate location guide a: \$ 25 mm	Description           Installing transaxle assembly
The O-ring as an unit part is set as a SST. <b>commercial Service Tools</b> Tool number Tool name 31197EU50A Drive plate location guide a: \u03c6 25 mm Drift a: \u03c6 56 mm b: \u03c6 50 mm	Description           Installing transaxle assembly           JPDIA0676ZZ

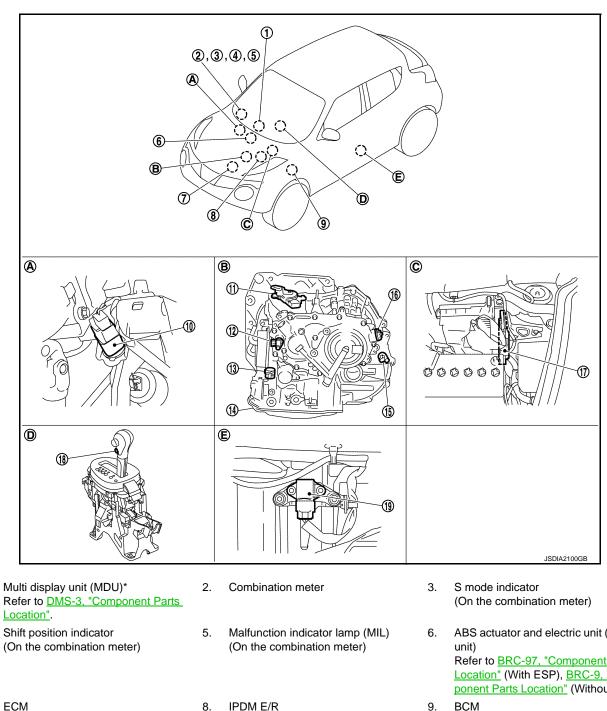
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#### < SYSTEM DESCRIPTION >

# SYSTEM DESCRIPTION **COMPONENT PARTS CVT CONTROL SYSTEM**

**CVT CONTROL SYSTEM : Component Parts Location** 

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- 7. ECM Refer to EC-455, "ENGINE CONTROL SYSTEM : Component Parts Location".
- IPDM E/R 9. Refer to PCS-5, "Component Parts Location" (With Intelligent Key system), PCS-5, "Component Parts Location" (Without Intelligent Key system).
- ABS actuator and electric unit (control Refer to BRC-97, "Component Parts Location" (With ESP), BRC-9, "Component Parts Location" (Without ESP). 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)

12. Primary speed sensor

10. Stop lamp switch

1.

4.

- 11. Transmission range switch
  - TM-314

YSTEM DESCRIPTION >				[CVT: RE0F11A]	
CVT unit connector	14.	Control valve assembly	15.	Output speed sensor	
Secondary speed sensor	17.	ТСМ	18.	S mode switch	А
G sensor					
Brake pedal, upper	В.	Transaxle assembly	C.	Engine room	_
CVT shift selector assembly	E.	Driver seat (LHD) or passenger seat (RHD), under			В
ith Nissan Dynamic Control System					
E:					С
following components are included in co	ontrol	valve assembly (14).			
/T fluid temperature sensor					<b>TN</b> 4
econdary pressure sensor					ТМ
DM assembly					
ne pressure solenoid valve					_
w brake solenoid valve					E
gh clutch & reverse brake solenoid valv	е				
rque converter clutch solenoid valve					_
	Secondary speed sensor G sensor Brake pedal, upper CVT shift selector assembly /ith Nissan Dynamic Control System TE: following components are included in co VT fluid temperature sensor econdary pressure sensor OM assembly ne pressure solenoid valve ow brake solenoid valve	CVT unit connector       14.         Secondary speed sensor       17.         G sensor       Brake pedal, upper       B.         CVT shift selector assembly       E.         /ith Nissan Dynamic Control System         TE:       following components are included in control         VT fluid temperature sensor       condary pressure sensor         OM assembly       ne pressure solenoid valve         w brake solenoid valve       gh clutch & reverse brake solenoid valve	CVT unit connector       14. Control valve assembly         Secondary speed sensor       17. TCM         G sensor       B. Transaxle assembly         Brake pedal, upper       B. Transaxle assembly         CVT shift selector assembly       E. Driver seat (LHD) or passenger seat (RHD), under         /ith Nissan Dynamic Control System       TE:         following components are included in control valve assembly (14).         VT fluid temperature sensor         econdary pressure sensor         OM assembly         ne pressure solenoid valve         w brake solenoid valve	CVT unit connector       14. Control valve assembly       15.         Secondary speed sensor       17. TCM       18.         G sensor       B. Transaxle assembly       C.         Brake pedal, upper       B. Transaxle assembly       C.         CVT shift selector assembly       E. Driver seat (LHD) or passenger seat (RHD), under       7.         //ith Nissan Dynamic Control System       TE:       7.       7.         following components are included in control valve assembly (14).       7.       7.         VT fluid temperature sensor       7.       7.       7.         OM assembly       7.       7.       7.         Pressure solenoid valve       7.       7.       7.         W brake solenoid valve       7.       7.       7.	CVT unit connector       14. Control valve assembly       15. Output speed sensor         Secondary speed sensor       17. TCM       18. S mode switch         G sensor       B. Transaxle assembly       C. Engine room         CVT shift selector assembly       E. Driver seat (LHD) or passenger seat (RHD), under       Fereing         following components are included in control valve assembly (14).       VT fluid temperature sensor         CM assembly       New Secondary pressure sensor         OM assembly       New Secondary versure solenoid valve         wb trake solenoid valve       gh clutch & reverse brake solenoid valve

# **CVT CONTROL SYSTEM : Component Description**

Name Function тсм TM-316, "CVT CONTROL SYSTEM : TCM" Transmission range switch TM-316, "CVT CONTROL SYSTEM : Transmission Range Switch" Н TM-316, "CVT CONTROL SYSTEM : Primary Speed Sensor" Primary speed sensor TM-317, "CVT CONTROL SYSTEM : Secondary Speed Sensor" 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" TM-318, "CVT CONTROL SYSTEM : Secondary Pressure Sensor" Secondary pressure sensor TM-319, "CVT CONTROL SYSTEM : Primary Pressure Solenoid Valve" Primary pressure solenoid valve Low brake solenoid valve TM-319, "CVT CONTROL SYSTEM : Low Brake Solenoid Valve" Κ 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" TM-320, "CVT CONTROL SYSTEM : Line Pressure Solenoid Valve" Line pressure solenoid valve EC-459, "Accelerator Pedal Position Sensor" Accelerator pedal position sensor G sensor TM-320, "CVT CONTROL SYSTEM : G Sensor" S mode switch TM-320, "CVT CONTROL SYSTEM : S Mode Switch" Μ S mode indicator TM-320, "CVT CONTROL SYSTEM : S Mode Indicator" Shift position indicator TM-320, "CVT CONTROL SYSTEM : Shift Position Indicator" Ν Malfunction indicator lamp (MIL) EC-466, "Malfunction Indicator" BRC-104, "Stop Lamp Switch" Stop lamp switch

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#### < SYSTEM DESCRIPTION >

Name	Function				
ECM	<ul> <li>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)</li> <li>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.</li> <li>The TCM receives the following signal via CAN communications from the ECM for judging the vehicle driving conditions.</li> <li>Engine speed signal</li> <li>Accelerator pedal position signal</li> <li>TCM sends and receives the following signals with ECM through CAN communication to perform D position N idle control.</li> <li>N idle instruction signal</li> </ul>				
BCM	<ul><li>The TCM receives the following signal via CAN communications from the BCM for judging the vehicle driving conditions.</li><li>Stop lamp switch signal</li><li>Turn indicator signal</li></ul>				
ABS actuator and electric unit (control unit)	<ul> <li>The TCM receives the following signal via CAN communications from the ABS actuator and electric unit (control unit) for judging the vehicle driving conditions.</li> <li>Vehicle speed signal (ABS)</li> <li>ABS operation signal</li> <li>TCS operation signal</li> <li>ESP operation signal</li> </ul>				
Combination meter	<ul><li>The TCM receives the following signal via CAN communications from the combination meter for judging the driving request from the driver.</li><li>S mode switch signal</li></ul>				
IPDM E/R	<ul><li>The TCM receives the following signal via CAN communications from the IPDM E/R for judging the driving request from the driver.</li><li>A/C compressor feedback signal</li></ul>				
MDU*	<ul> <li>The TCM receives the following signals from MDU via CAN communication to switch driving mode of the Nissan Dynamic Control System.</li> <li>NORMAL mode signal</li> <li>ECO mode signal</li> <li>SPORT mode signal</li> </ul>				

\*: With Nissan Dynamic Control System

## CVT CONTROL SYSTEM : TCM

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- 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 <u>TM-329</u>, "CVT CONTROL SYSTEM : System Description".

## **CVT CONTROL SYSTEM : Transmission Range Switch**

- 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**

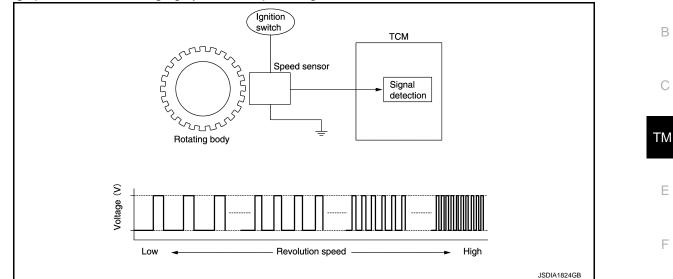
- The primary speed sensor is installed to side cover of transaxle.
- The primary speed sensor detects primary pulley speed.

#### < SYSTEM DESCRIPTION >

#### [CVT: RE0F11A]

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• 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.

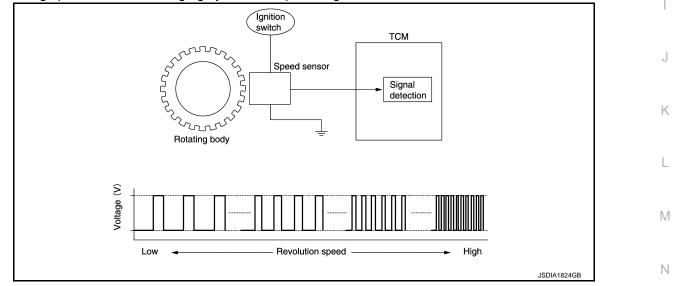


# CVT CONTROL SYSTEM : Secondary Speed Sensor

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- 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

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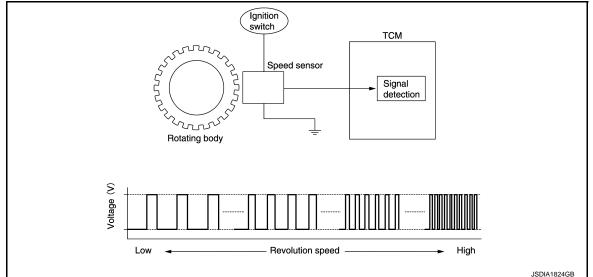
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- The output speed sensor is installed to the back side of transaxle case.
- The output speed sensor detects final gear speed. TCM evaluates the vehicle speed from the final gear revolution.

#### < SYSTEM DESCRIPTION >

#### [CVT: RE0F11A]

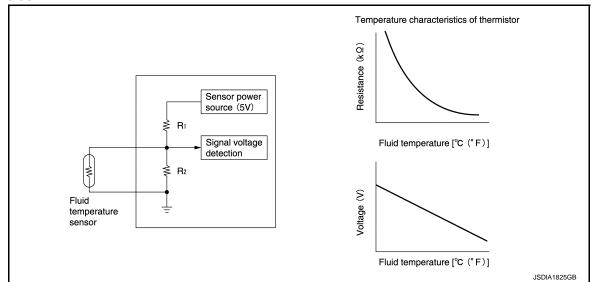
• The output speed sensor generates the ON-OFF pulse (short waveform) in proportion to the rotating body speed which is "The higher the rotating body speed is, the faster the change cycle is". The TCM judges the rotating speed from the changing cycle of this pulse signal.



# CVT CONTROL SYSTEM : CVT Fluid Temperature Sensor

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- 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

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

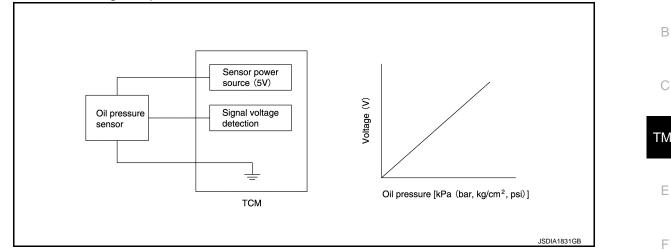
#### < SYSTEM DESCRIPTION >

# [CVT: RE0F11A]

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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

- The primary pressure solenoid value is installed to control value.
- 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

- 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 INFOLD:000000006487557

- 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

Ρ INFOID:000000006487558

- The torgue 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:

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# CVT CONTROL SYSTEM : Line Pressure Solenoid Valve

- 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 N/L (normal low) type does not produce hydraulic control when the coil is not energized.

- 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

< SYSTEM DESCRIPTION >

proportional to this pressing force.

- · 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

- 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

- · 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 in- dicator 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**

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

• 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

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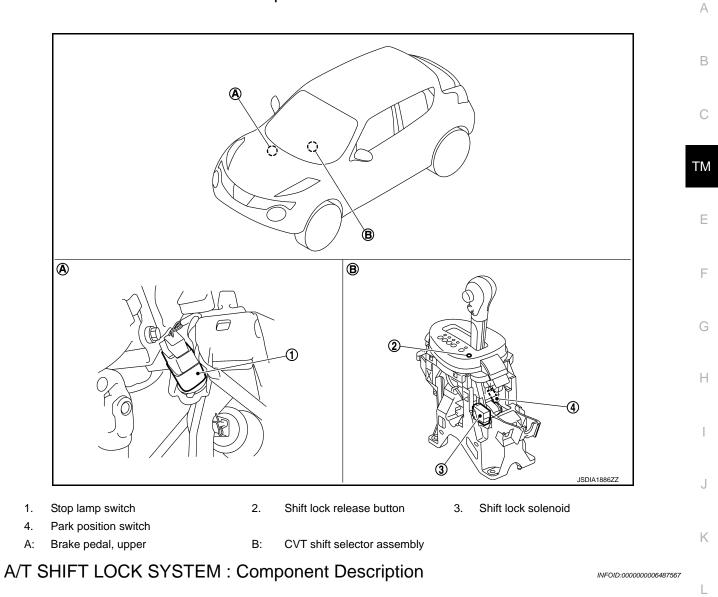
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#### < SYSTEM DESCRIPTION >

# A/T SHIFT LOCK SYSTEM : Component Parts Location

# [CVT: RE0F11A]

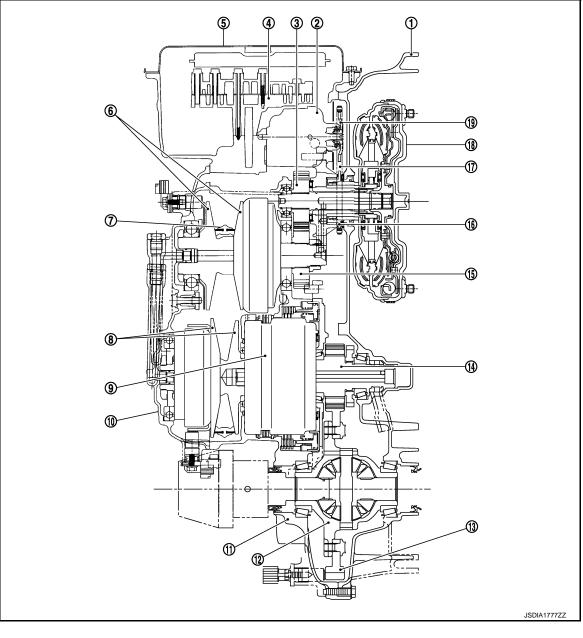


Component	Function
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
Lock lever	<ul> <li>Rotates according to shift lock solenoid activation and releases the shift lock.</li> <li>If shift lock solenoid does not activate, lock lever can be rotated when shift lock release button is pressed and shift lock is released.</li> </ul>
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	<ul> <li>The stop lamp switch turns ON when the brake pedal is depressed.</li> <li>When the stop lamp switch turns ON, the shift lock solenoid is energized.</li> </ul>

< SYSTEM DESCRIPTION >

# STRUCTURE AND OPERATION TRANSAXLE

TRANSAXLE : Cross-Sectional View



- 1. Converter housing
- 4. Control valve
- 7. Steel belt
- 10. Side cover
- 13. Final gear
- 16. Drive sprocket
- 19. Driven sprocket

- 2. Oil pump
- 5. Oil pan
- 8. Secondary pulley
- 11. Transaxle case
- 14. Reduction gear
- 17. Oil pump chain

- 3. Counter drive gear
- 6. Primary pulley
- 9. Planetary gear (auxiliary gearbox)
- 12. Differential case
- 15. Counter driven gear
- 18. Torque converter

# STRUCTURE AND OPERATION

#### < SYSTEM DESCRIPTION >

#### **TRANSAXLE** : Operation Status

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[CVT: RE0F11A]

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×: Engaged or applied.

Slector le- ver posi- tion	Parking mecha- nism	Counter gear set	Low brake	High clutch	Reverse brake	Primary pulley	Secondary pulley	Steel belt	Reduction gear set	В
Р	×	×				×	×	×		
R		×			×	×	×	×	×	С
Ν		×				×	×	×		
D		×	$\times$ (1GR)	imes (2GR)		×	×	×	×	тм
L		×	$\times$ (1GR)	imes (2GR)		×	×	×	×	- TM

# TRANSAXLE : Transaxle Mechanism

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#### **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.  $\Rightarrow$ The plate is pushed and extended outward.  $\Rightarrow$ The steel ring shows withstands.  $\Rightarrow$ Pulling force is generated on the steel ring.  $\Rightarrow$ The plate of the primary pulley is nipped between the pulley.  $\Rightarrow$ Friction force is generated between the steel belt and the pulley.

Therefore, responsibilities are divided by the steel plate that trans-

mits 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

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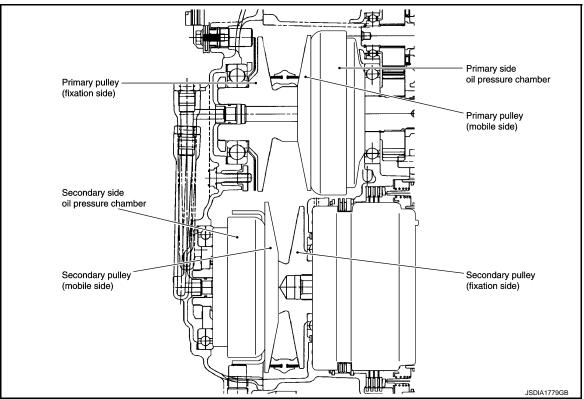


# STRUCTURE AND OPERATION

#### < SYSTEM DESCRIPTION >

#### [CVT: RE0F11A]

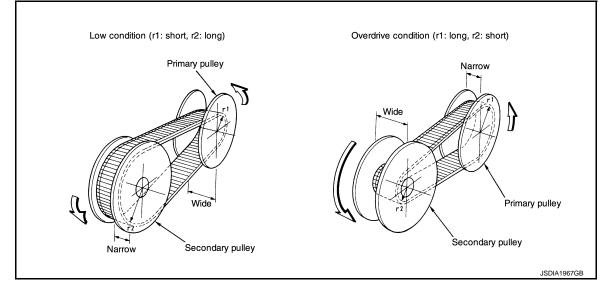
The primary pulley (input shaft side) and the secondary pulley (output shaft side) have the shaft with slope (fixed cone surface), movable sheave (movable cone surface that can move in the axial direction) and oil pressure chamber at the back of the movable sheave.



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.

# TM-324

## STRUCTURE AND OPERATION

#### < SYSTEM DESCRIPTION >

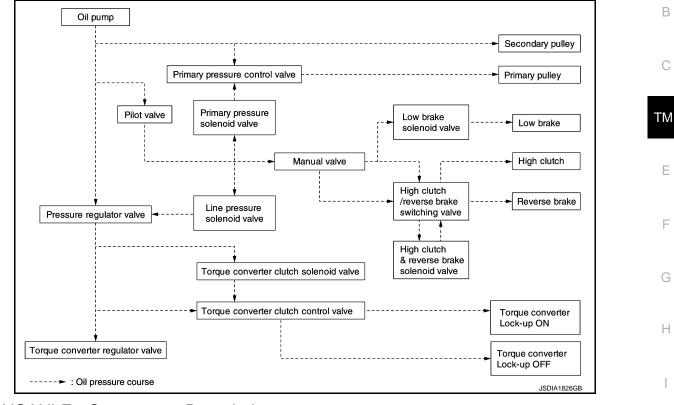
## [CVT: RE0F11A]

## TRANSAXLE : Oil Pressure System

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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

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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 gen- erates 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 transmis- sion)	It is composed of the primary pulley, secondary pulley, steel belt, etc. and the mecha- nism 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 (in- tegrated 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 pres- sure) corresponding to the driving condition.
Torque converter regulator valve	Adjusts the feed pressure to the torque converter to the optimum pressure correspond- ing to the driving condition.

## STRUCTURE AND OPERATION

#### < SYSTEM DESCRIPTION >

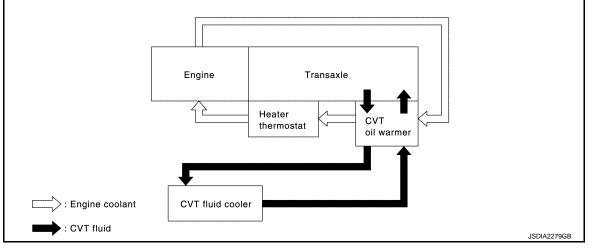
Part name	Function
Pilot valve	Adjusts line pressure and produces a constant pressure (pilot pressure) necessary for activating each solenoid valve.
Manual valve	Distributes the clutch and brake operation pressures (pilot pressure) corresponding to each shift position.
High clutch/reverse brake switching 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 tighten- ing 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

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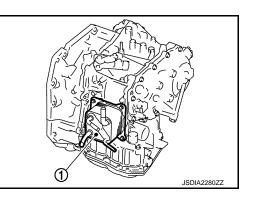
## CVT FLUID COOLER SCHEMATIC



## 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.

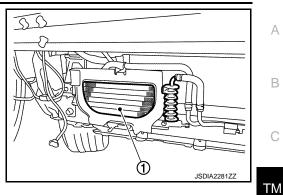


CVT Fluid Cooler

## STRUCTURE AND OPERATION

#### < SYSTEM DESCRIPTION >

#### • 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.

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CVT CONTROL SYSTEM

CVT CONTROL SYSTEM : System Diagram

\*: With Nissan Dynamic Control System Combination Ĩ Engine ECM BCM ABS actuator and electric unit (control unit) Line pressure solenoid valve Pressure regulator valve Torque converter Torque converter IPDM E/R Oil pump-Pilot valve Torque converter clutch solenoid valve Counter gear Primary pressure solenoid valve Primary pressure control valve Secondary pressure sensor MDU\* Torque converter Secondary pulley Belt & pulley Primary pulley High clutch & reverse brake solenoid valve ł I Transaxle G sensor Reverse brake High clutch/ reverse brake switching valve Manual valve Auxiliary gearbox ROM ASSY CAN communication line High clutch, TCM (Low brake) Mechanical system CVT fluid temperature sensor Low brake solenoid valve Control vaive Parking system Reduction gear Secondary speed sensor Final gear Primary speed sensor Electric signal Oil pressure Output speed sensor Wheel 4 Transmission range switch Selector lever

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#### < SYSTEM DESCRIPTION >

## CVT CONTROL SYSTEM : System Description

## INPUT/OUTPUT SIGNAL TABLE

Sensor (or signal)	TCM function	Actuator
<ul> <li>Engine and CVT integrated control signal</li> <li>Engine speed signal</li> <li>Accelerator pedal position signal</li> <li>Closed throttle position signal</li> <li>Stop lamp switch signal</li> <li>Secondary pressure sensor</li> <li>CVT fluid temperature sensor</li> <li>Primary speed sensor</li> <li>Secondary speed sensor</li> <li>Output speed sensor</li> <li>Transmission range switch signal</li> <li>Vehicle speed signal (ABS)</li> <li>ABS operation signal</li> <li>ESP operation signal</li> <li>A/C compressor feedback signal</li> <li>G sensor</li> <li>N idle instruction signal</li> <li>Turn indicator signal</li> <li>NORMAL mode signal*</li> <li>SPORT mode signal*</li> </ul>	<ul> <li>Line pressure control (<u>TM-334, "LINE</u> <u>PRESSURE CONTROL : System Description</u>")</li> <li>Shift change control (<u>TM-335, "SHIFT</u> <u>CHANGE CONTROL : System Description</u>")</li> <li>Select control (<u>TM-337, "SELECT CONTROL : System Description</u>")</li> <li>Lock-up control (<u>TM-338, "LOCK-UP</u> <u>CONTROL : System Description</u>")</li> <li>Lock-up control (<u>TM-339, "IDLE NEU- TRAL CONTROL : System Description</u>")</li> <li>Idle neutral control (<u>TM-339, "IDLE NEU- TRAL CONTROL : System Description</u>")</li> <li>Nissan Dynamic Control System (<u>TM-341, "NISSAN DYNAMIC CONTROL SYSTEM : System Description</u>")</li> <li>Fail-safe mode (<u>TM-362, "Fail-Safe</u>")</li> <li>Self-diagnosis function (<u>TM-344, "Description</u>")</li> <li>Communication function with CONSULT-III (<u>TM-347, "CONSULT-III Function (TRANS- MISSION</u>)")</li> <li>CAN communication control (<u>TM-390, "Description</u>")</li> </ul>	<ul> <li>Line pressure solenoid valve</li> <li>Primary pressure solenoid valve</li> <li>Torque converter clutch solenoid valve</li> <li>High clutch &amp; reverse brake solenoid valve</li> <li>Low brake solenoid valve</li> <li>S mode indicator</li> <li>Shift position indicator</li> </ul>
*: 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 J 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

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## [CVT: RE0F11A]

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### < SYSTEM DESCRIPTION >

## [CVT: RE0F11A]

Control Item		Gear shift con- trol	Line pressure control	Shift control	Lock-up con- trol	Fail-safe func- tion *
	Engine torque signal (CAN communication)	×	×	×	×	×
	Engine speed signal (CAN communication)	×	×	×	×	×
	Accelerator pedal position signal (CAN communication)	×	×	×	×	×
	Closed throttle position signal (CAN communication)	×	×		×	
Input	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)	×				
	Line pressure solenoid valve	×	×	×		×
	Primary pressure solenoid valve	×	×			×
	Torque converter clutch solenoid valve				×	×
Output	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

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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	<ul> <li>Shift position indicator on combination meter is not displayed.</li> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_

#### < SYSTEM DESCRIPTION >

DTC	Vehicle behavior	Conditions of vehicle
P0706	<ul> <li>Shift position indicator on combination meter is not displayed.</li> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
	Acceleration is slow	Engine coolant temperature when engine starts is 10°C or more.
P0711	<ul><li>Selector shock is large</li><li>Start is slow</li></ul>	Engine coolant temperature when engine starts is less than $-10^{\circ}$ C
	<ul><li>Selector shock is large</li><li>Start is slow</li></ul>	Engine coolant temperature when engine starts is less than $-35^{\circ}$ C
	Acceleration is slow	Engine coolant temperature when engine starts is 10°C or more.
P0712	<ul><li>Selector shock is large</li><li>Start is slow</li></ul>	Engine coolant temperature when engine starts is less than $-10^{\circ}$ C
	<ul><li>Selector shock is large</li><li>Start is slow</li></ul>	Engine coolant temperature when engine starts is less than $-35^{\circ}$ C
	Acceleration is slow	Engine coolant temperature when engine starts is 10°C or more.
P0713	<ul><li>Selector shock is large</li><li>Start is slow</li></ul>	Engine coolant temperature when engine starts is less than $-10^{\circ}$ C
	<ul><li>Selector shock is large</li><li>Start is slow</li></ul>	Engine coolant temperature when engine starts is less than $-35^{\circ}$ C
P0715	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Vehicle speed is not increased</li> <li>Lock-up is not performed.</li> </ul>	_
P0720	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
P0740	Lock-up is not performed.	_
P0743	Lock-up is not performed.	_
P0744	Lock-up is not performed.	-
P0746	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Vehicle speed is not increased</li> <li>Lock-up is not performed.</li> </ul>	_
P0846	<ul><li>Start is slow</li><li>Acceleration is slow</li></ul>	_
P0847	<ul><li>Start is slow</li><li>Acceleration is slow</li></ul>	
P0848	<ul><li>Start is slow</li><li>Acceleration is slow</li></ul>	_
P0863	Not changed from normal driving	
P0962	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_

#### < SYSTEM DESCRIPTION >

DTC	Vehicle behavior	Conditions of vehicle
P0963	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
P1586	Not changed from normal driving	
P1588	Not changed from normal driving	
P1701	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
P1739	Start is slow	
P173A	Vehicle speed is not increased	-
P173B	Start is slow	
P173C	Vehicle speed is not increased	_
P17B4	Start is slow	_
D	Start is slow	Wire disconnection
P17B5	Vehicle speed is not increased	Voltage shorting
P17B7	Start is slow	_
	Start is slow	Wire disconnection
P17B8	Vehicle speed is not increased	Voltage shorting
P17BA	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	-
P17BB	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
P2765	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Vehicle speed is not increased</li> <li>Lock-up is not performed.</li> </ul>	_
U0073	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
U0100	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
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**

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.	С
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.	ТМ
Normal return condi- tion	Wheel spin convergence returns the control to the normal control.	I IVI
CONTROL WHEN FLUID TEMPERATURE IS HIGH		Е

## 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.	F
Vehicle behavior in control	Power performance may be lowered, compared to normal control.	_
Normal return condi- tion	The control returns to the normal control when CVT fluid temperature is lowered.	G

## 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.	1
Normal return condi- tion	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.	ŀ
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 condi- tion	The control returns to normal control when the vehicle is driven at low speeds. (The reverse brake becomes engaged.)	

## LINE PRESSURE CONTROL

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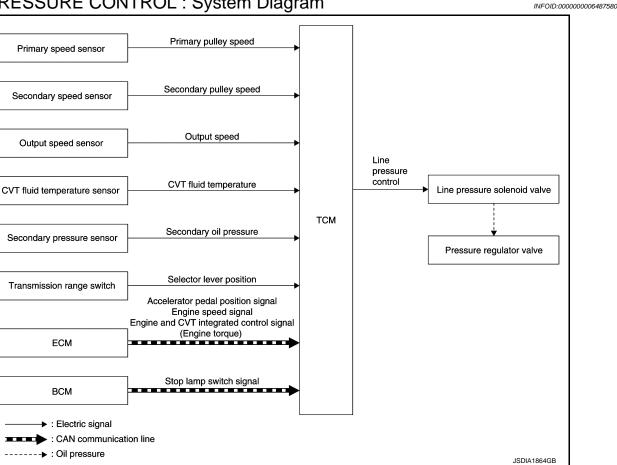
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## **SYSTEM**

### < SYSTEM DESCRIPTION >

## [CVT: RE0F11A]

## LINE PRESSURE CONTROL : System Diagram



## LINE PRESSURE CONTROL : System Description

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

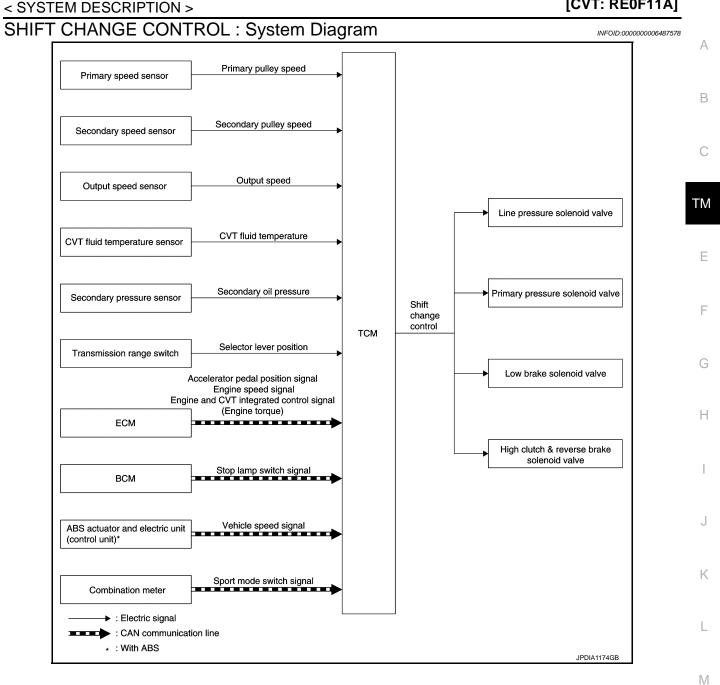
#### NORMAL OIL PRESSURE CONTROL

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

## [CVT: RE0F11A]



## SHIFT CHANGE CONTROL : System Description

To select the gear ratio that can give the driving force to meet driver's intent or vehicle situation, the vehicle Ν 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)**

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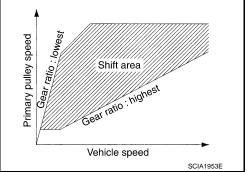
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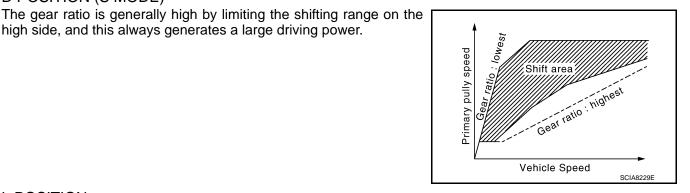
#### < SYSTEM DESCRIPTION >

**D POSITION (S MODE)** 

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







lowest

ratio

zear

Primary Pulley Speed

Shift area

highes

SCIA8240E

ratio

Vehicle speed

## L POSITION

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

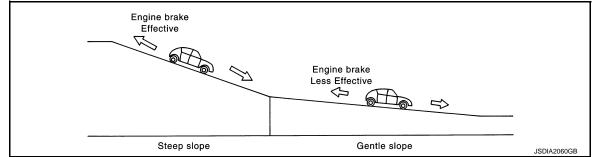
high side, and this always generates a large driving power.



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

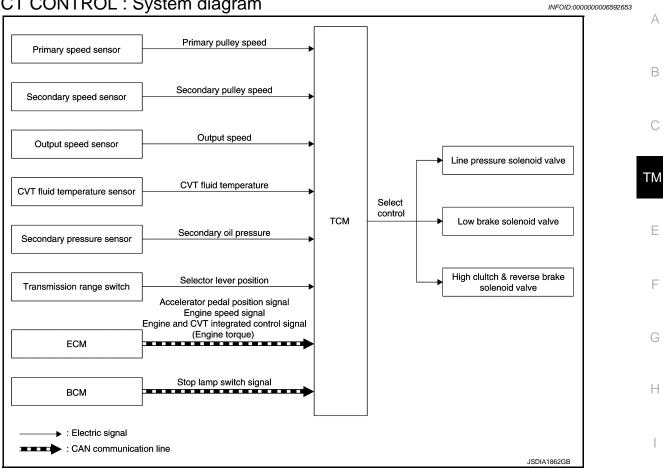
From change of the vehicle speed or accelerator pedal position, the acceleration request level of the driver or driving scene is evaluated. In start or acceleration during driving, the gear shift characteristics with linearity of revolution increase and vehicle speed increase are gained to improve the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

## SELECT CONTROL

#### < SYSTEM DESCRIPTION >

## [CVT: RE0F11A]





## **SELECT CONTROL : System Description**

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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

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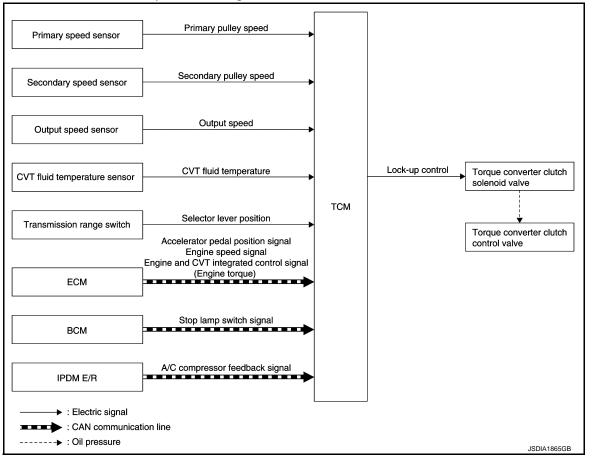
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#### < SYSTEM DESCRIPTION >

## [CVT: RE0F11A]

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## LOCK-UP CONTROL : System Diagram



## LOCK-UP CONTROL : System Description

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- 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.

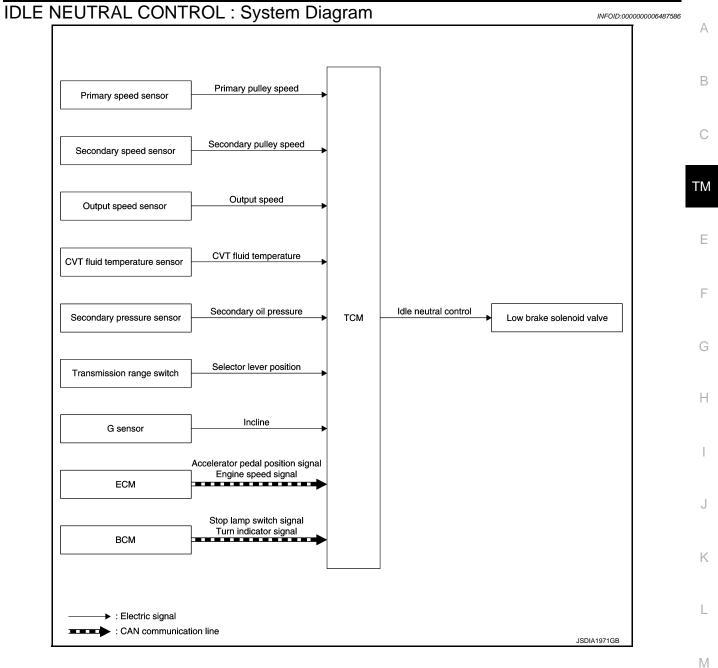
Lock-up release condition

• 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

#### < SYSTEM DESCRIPTION >

## [CVT: RE0F11A]



## IDLE NEUTRAL CONTROL : System Description

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

0

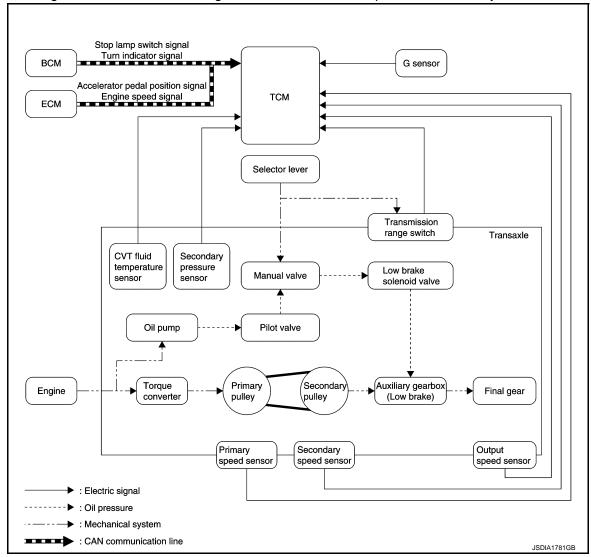
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#### < SYSTEM DESCRIPTION >

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.

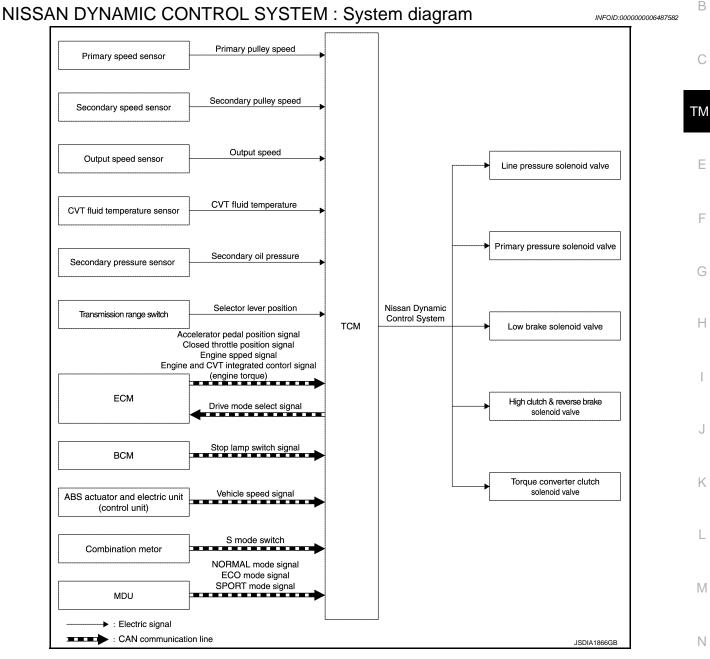
- Engine coolant temperature and CVT fluid temperature are the specified temperature or more, or the specified temperature or less.
- When a transaxle malfunction occurs.
- When the vehicle detects DTC and is in the fail-safe mode.

#### IDLE NEUTRAL CONTROL RESUME CONDITION

#### < SYSTEM DESCRIPTION >

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 Description

- 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

## TM-341

### [CVT: RE0F11A]

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INFOID:000000006487583

#### < SYSTEM DESCRIPTION >

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 revo- lution.

#### 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

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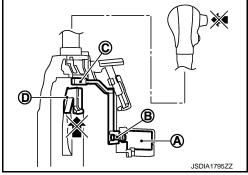
- The shift lock is the mechanism provided to prevent quick start of a vehicle by incorrect operation of a drive when the selector lever is in "P" position.
- Selector lever can be shifted from the "P" position to another position when the following conditions are satisfied.
- Ignition switch is ON.
- Stop lamp switch ON (brake pedal is depressed)
- Press the selector button.

#### SHIFT LOCK OPERATION AT P POSITION

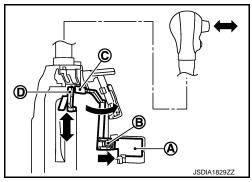
When brake pedal is not depressed (no selector operation allowed)

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)

#### < SYSTEM DESCRIPTION >

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.

> 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**

#### **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.

SYSTEM

#### Key lock status

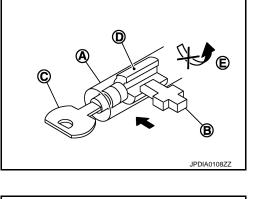
The slider (B) in the key cylinder (A) is moved to the left side of the figure when the selector lever is in any position other than P position. The rotator (D) that rotates together with the key (C) cannot be rotated for this reason. The key cannot be removed from the key cylinder because it cannot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

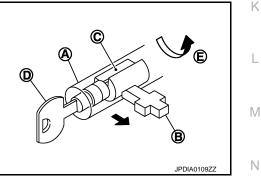
> B JPDIA0108ZZ

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).

# [CVT: RE0F11A] D JSDIA1830ZZ ТΜ







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## ON BOARD DIAGNOSTIC (OBD) SYSTEM

#### < SYSTEM DESCRIPTION >

## ON BOARD DIAGNOSTIC (OBD) SYSTEM

## Description

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

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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 <u>GI-50</u>, "<u>Description</u>".

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### < SYSTEM DESCRIPTION > DIAGNOSIS SYSTEM (TCM)

## DIAGNOSIS DESCRIPTION

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

#### 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 <u>TM-366, "DTC Index"</u>.

#### 2 TRIP DETECTION DIAGNOSIS

Item

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

DTC

Display at the

2nd trip

Display at the

1st 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

Display at the

2nd trip

DTC at the 1st trip

## 2 TRIP DETECTION DIAGNOSIS THAT ILLUMINATES MIL

Display at the

1st trip

- 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 <u>TM-347</u>, "CONSULT-III Function (TRANS-<u>MISSION)"</u>.
- If DTC of the 1st trip is detected, it is necessary to check the cause according to the "Diagnosis flow". Refer to <u>TM-371. "Flowchart of Trouble Diagnosis"</u>.

DIAGNOSIS DESCRIPTION : Malfunction Indicator Lamp (MIL)

- 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 <u>EC-466. "Malfunction Indicator"</u>.

**DIAGNOSIS DESCRIPTION : Counter System** 

#### RELATION BETWEEN DTC AT 1ST TRIP/DTC/MIL AND DRIVING CONDITIONS (FOR 2 TRIP DE-TECTION 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.

MIL

Illumination at

the 2nd trip

×

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Illumination at

the 1st trip

С

E

F

Н

L

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А

В

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INFOID:00000006601243

#### < SYSTEM DESCRIPTION >

• 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)	В	3
DTC (clear)	А	40
DTC at 1st trip (clear)	В	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.

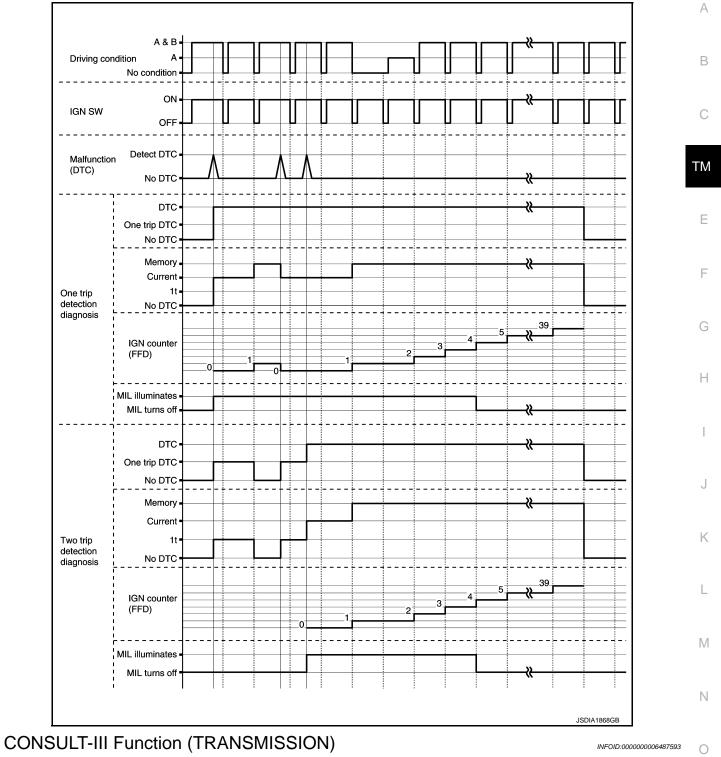
- Engine speed is 400 rpm or more.
- Water temperature was 70 °C (158 °F) or more.
- In closed loop control, vehicle speed of 70 120 km/h (43 75 MPH) continued for 60 seconds or more.
- In closed loop control, vehicle speed of 30 60 km/h (19 37 MPH) continued for 10 seconds or more.
- In closed loop 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.

## < SYSTEM DESCRIPTION >

### TIME CHART



#### APPLICABLE ITEM

		P
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.	

#### < SYSTEM DESCRIPTION >

Conditions	Function
CAN Diagnosis Support Mon- itor	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 prac- tical 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 <u>TM-345</u>, "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  $1 \rightarrow 2 \rightarrow 3...38 \rightarrow 39$ .
- 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

				$\times$ : Application $\mathbf{\nabla}$ : Optional selection
		Monitor item selection		
Monitored item	(Unit)	MAIN SIG- NALS	ECU IN- PUT SIG- NALS	Remarks
VSP SENSOR	(km/h or mph)	▼	×	Displays the vehicle speed calculated from the CVT out- put 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.

#### < SYSTEM DESCRIPTION >

		Monitor ite	m selection	
Monitored item	(Unit)	MAIN SIG- NALS	ECU IN- PUT SIG- NALS	Remarks
ENG SPEED SIG	(rpm)	▼	×	Displays the engine speed received through CAN com- munication.
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 recog- nized 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) calcu- lated 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 process- ing of gear shift control.
TRGT AUX GEARBOX		▼	▼	Displays the target gear of the auxiliary gearbox calculat- ed from processing of gear shift control.

#### < SYSTEM DESCRIPTION >

		Monitor ite	m selection	
Monitored item	(Unit)	MAIN SIG- NALS	ECU IN- PUT SIG- NALS	Remarks
LU PRS	(MPa)	•	▼	Displays the target oil pressure of the torque converter clutch solenoid valve calculated from oil pressure pro- cessing of gear shift control.
LINE PRS	(MPa)	•	▼	Displays the target oil pressure of the line pressure sole- noid 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 & re- verse 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)	×	x	Monitors the command current from TCM to the line pressure solenoid valve and displays the monitored value.
PRI SOL MON	(A)	×	х	Monitors the command current from TCM to the primary pressure solenoid valve and displays the monitored value.
HC/RB SOL MON	(A)	×	х	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 sig- nal received through CAN communication.
L POSITION SW	(On/Off)	•	×	Displays the operation status of the transmission range switch (L position).

#### < SYSTEM DESCRIPTION >

		Monitor ite	m selection	
Monitored item	(Unit)	MAIN SIG- NALS	ECU IN- PUT SIG- NALS	Remarks
IDLE SW	(On/Off)	×	×	Displays the reception status of the closed throttle posi- tion 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)	•	×	<ul><li>Displays the operation status of the paddle shifter (down switch).</li><li>It is displayed although not equipped.</li></ul>
STRUPSW	(On/Off)	•	×	<ul><li>Displays the operation status of the paddle shifter (up switch).</li><li>It is displayed although not equipped.</li></ul>
DOWNLVR	(On/Off)	•	×	<ul> <li>Displays the operation status of the selector lever (down switch).</li> <li>It is displayed although not equipped.</li> </ul>
UPLVR	(On/Off)	•	×	<ul><li>Displays the operation status of the selector lever (up switch).</li><li>It is displayed although not equipped.</li></ul>
NONMMODE	(On/Off)	▼	×	<ul><li>Displays if the selector lever position is not at the manual shift gate.</li><li>It is displayed although not equipped.</li></ul>
MMODE	(On/Off)	•	×	<ul> <li>Displays if the selector lever position is at the manual shift gate.</li> <li>It is displayed although not equipped.</li> </ul>
INDLRNG	(On/Off)	•	▼	Displays the transmission status of the shift position (L position) signal transmitted through CAN communica- tion.
INDDRNG	(On/Off)	•	▼	Displays the transmission status of the shift position (D position) signal transmitted through CAN communica- tion.
INGNRNG	(On/Off)	•	▼	Displays the transmission status of the shift position (N position) signal transmitted through CAN communica- tion.
INGRRNG	(On/Off)	▼	▼	Displays the transmission status of the shift position (R position) signal transmitted through CAN communica- tion.
INGPRNG	(On/Off)	•	▼	Displays the transmission status of the shift position (P position) signal transmitted through CAN communica- tion.
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)	▼	▼	<ul> <li>Displays the transmission status of the manual mode signal transmitted through CAN communication.</li> <li>It is displayed although not equipped.</li> </ul>
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 sig- nal received through CAN communication.
ABS ON	(On/Off)	▼	×	Displays the reception status of the ABS operation signal received through CAN communication.

#### < SYSTEM DESCRIPTION >

## [CVT: RE0F11A]

		Monitor ite	m selection	
Monitored item	(Unit)	MAIN SIG- NALS	ECU IN- PUT SIG- NALS	Remarks
4WD FAIL SIGNAL	(On/Off)	•	×	<ul> <li>Displays the reception status of the 4WD malfunction signal received through CAN communication.</li> <li>It is displayed although not equipped.</li> </ul>
4WD OPERATION SIG	(On/Off)	•	×	<ul> <li>Displays the reception status of the 4WD operation signal received through CAN communication.</li> <li>It is displayed although not equipped.</li> </ul>
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)	•	▼	<ul> <li>Displays the drive mode status recognized by TCM.</li> <li>Only vehicle with Nissan Dynamic Control System are displayed.</li> </ul>
SNOW MODE	(On/Off)	•	•	<ul> <li>Display the drive mode (SNOW switch status) of Nissan Dynamic Control System received through CAN communication.</li> <li>Only vehicle with Nissan Dynamic Control System are displayed.</li> <li>It is displayed although not equipped.</li> </ul>
ECO MODE	(On/Off)	•	▼	<ul> <li>Display the driving mode (ECO switch status) of Nissan Dynamic Control System received through CAN communication.</li> <li>Only vehicle with Nissan Dynamic Control System are displayed.</li> </ul>
NORMAL MODE	(On/Off)	•	•	<ul> <li>Display the driving mode (AUTO switch status) of Nissan Dynamic Control Systemm received through CAN communication.</li> <li>Only vehicle with Nissan Dynamic Control System are displayed.</li> </ul>
SPORT MODE	(On/Off)	•	•	<ul> <li>Display the driving mode (SPORT switch status) of Nissan Dynamic Control System received through CAN communication.</li> <li>Only vehicle with Nissan Dynamic Control System are displayed.</li> </ul>
TRGT AUX GR RATIO		▼	▼	Displays the target gear ratio of the auxiliary gearbox cal- culated 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

#### < SYSTEM DESCRIPTION >

## [CVT: RE0F11A]

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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 s	elected, 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 deg	adation level of the CVT fluid.

CVTF degradation I	evel 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	.1
CALIB DATA	The calibration data status of TCM can be checked.	0

# ECU DIAGNOSIS INFORMATION

TCM

## **Reference Value**

INFOID:000000006487594

#### 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 SEN- SOR"	
	Auxiliary gearbox: 2GR	Almost same as the "SEC REV SENSOR"	
ENG SPEED SIG	Engine running	Almost same reading as tachometer	
LINE PRESSURE SEN	<ul><li>Selector lever: "N" position</li><li>At idle</li></ul>	Approx. 0.88 – 0.92 V	
	CVT fluid: Approx. 20°C (68°F)	Approx. 2.01 – 2.05 V	
ATF TEMP SEN	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	
	Auxiliary gearbox: 1GR	Approximately twice the "OUTPUT REV"	
SEC SPEED	Auxiliary gearbox: 2GR	>Almost same as "OUTPUT REV"	
	Auxiliary gearbox: 1GR	Approximately half of "SEC SPEED"	
OUTPUT REV	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	

#### < ECU DIAGNOSIS INFORMATION >

Monitor item	Condition	Value/Status	
	In driving (forward)	Approx. 2.20 – 0.55	
PULLEY GEAR RATIO	In driving (reverse)	Approx. 2.20	
	Vehicle started with selector lever in "L" position	1st	
AUX GEARBOX	<ul> <li>Release the accelerator pedal after the following conditions are satisfied</li> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 50 km/h (31 MPH) or more</li> </ul>	2nd	
	In gear shifting of auxiliary gearbox	1st ⇔ 2nd	
	Vehicle stopped	0.00 G	
G SPEED	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	
/ENG 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.	
	In driving (forward)	Approx. 2.20 – 0.55	
TGT PLLY GR RATIO	In driving (reverse)	Approx. 2.20	
	Vehicle started with selector lever in "L" position	1st	
TRGT AUX GEARBOX	<ul> <li>Release the accelerator pedal after the following conditions are satisfied</li> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 50 km/h (31 MPH) or more</li> </ul>	2nd	
	In gear shifting of auxiliary gearbox	Display gear position after gear shifting	
	<ul><li>Engine started</li><li>Vehicle is stopped.</li></ul>	Approx. –0.500 MPa	
LU PRS	<ul> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 20 km/h (12 MPH) or more</li> </ul>	Approx. 0.450 MPa	
LINE PRS	<ul> <li>After engine warm up</li> <li>Selector lever: "N" position</li> <li>At idle</li> </ul>	Approx. 0.500 MPa	
	<ul> <li>After engine warming up</li> <li>Selector lever: "N" position</li> <li>Depress the accelerator pedal fully</li> </ul>	Approx. 4.930 – 5.430 MPa	
TRGT PRI PRESSURE	Approx. 0.325 MPa		

## < ECU DIAGNOSIS INFORMATION >

## [CVT: RE0F11A]

Monitor item	Condition	Value/Status
	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	Approx. 0.000 MPa
TRGT HC/RB PRESS	<ul> <li>Release the accelerator pedal after the following conditions are satisfied</li> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 50 km/h (31 MPH) or more</li> </ul>	Approx. 0.400 MPa
	<ul><li>Selector lever: "L" position</li><li>Vehicle speed: 20 km/h (12 MPH)</li></ul>	Approx. 0.325 MPa
TRGT LB PRESSURE	<ul> <li>Release the accelerator pedal after the following conditions are satisfied</li> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 50 km/h (31 MPH) or more</li> </ul>	Approx. 0.000 MPa
	Engine started     Vehicle is stopped.	Approx. 0.000 A
ISOLT1	<ul> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 20 km/h (12 MPH) or more</li> </ul>	Approx. 0.500 A
ISOLT2	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	Approx. 0.800 – 0.900 A
50L12	<ul> <li>After engine warming up</li> <li>Selector lever: "N" position</li> <li>Depress the accelerator pedal fully</li> </ul>	Approx. 0.350 – 0.400 A
PRI SOLENOID	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	Approx. 0.850 – 0.900 A
	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	Approx. 1,000 A
HC/RB SOLENOID	<ul> <li>Release the accelerator pedal after the following conditions are satisfied</li> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 50 km/h (31 MPH) or more</li> </ul>	Approx. 0.800 – 0.850 A
	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	Approx. 0.200 – 0.250 A
L/B SOLENOID	<ul> <li>Release the accelerator pedal after the following conditions are satisfied</li> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 50 km/h (31 MPH) or more</li> </ul>	Approx. 0.000 A
	Engine started     Vehicle is stopped.	Approx. 0.000 A
SOLMON1	<ul> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 20 km/h (12 MPH) or more</li> </ul>	Approx. 0.500 A
SOLMON2	<ul><li> After engine warm up</li><li> Selector lever: "N" position</li><li> At idle</li></ul>	Approx. 0.800 – 0.900 A
	<ul> <li>After engine warming up</li> <li>Selector lever: "N" position</li> <li>Depress the accelerator pedal fully</li> </ul>	Approx. 0.350 – 0.400 A
PRI SOL MON	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	Approx. 0.850 – 0.900 A

#### < ECU DIAGNOSIS INFORMATION >

Monitor item	Condition	Value/Status
	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	Approx. 1,000 A
HC/RB SOL MON	<ul> <li>Release the accelerator pedal after the following conditions are satisfied</li> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 50 km/h (31 MPH) or more</li> </ul>	Approx. 0.800 – 0.850 A
	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	Approx. 0.200 – 0.250 A
_/B SOL MON	<ul> <li>Release the accelerator pedal after the following conditions are satisfied</li> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 50 km/h (31 MPH) or more</li> </ul>	Approx. 0.000 A
D POSITION SW	Selector lever: "D" position	On
D POSITION SW	Other than the above	Off
	Selector lever: "N" position	On
N POSITION SW	Other than the above	Off
	Selector lever: "R" position	On
R POSITION SW	Other than the above	Off
	Selector lever: "P" position	On
P POSITION SW	Other than the above	Off
	Brake pedal is depressed	On
BRAKESW	Brake pedal is released	Off
	Selector lever: "L" position	On
POSITION SW	Other than the above	Off
	Accelerator pedal is fully depressed	On
DLE SW	Accelerator pedal is released	Off
	Press the S mode switch.	On
SPORT MODE SW	Release the S mode switch.	Off
STRDWNSW	Always	Off
STRUPSW	Always	Off
DOWNLVR	Always	Off
JPLVR	Always	Off
NONMMODE	Always	Off
MMODE	Always	Off
-	Selector lever: "L" position	On
NDLRNG	Other than the above	Off
	Selector lever: "D" position	On
NDDRNG	Other than the above	Off
	Selector lever: "N" position	On
NDNRNG	Other than the above	Off
	Selector lever: "R" position	On
NDRRNG	Other than the above	Off
	Selector lever: "P" position	On
NDPRNG	Other than the above	Off
	In S mode	On

#### < ECU DIAGNOSIS INFORMATION >

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
VDC 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
ADS FAIL SIGNAL	Other than the above	Off
ABS ON	ABS is activated	On
ABS ON	Other than the above	Off
4WD FAIL SIGNAL	Always	Off
4WD OPERATION SIG	Always	Off
4WD-TCS SIGNAL	Always	Off
	Selector lever: "P" and "N" positions	N/P
	Selector lever: "R" position	R
RANGE	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
	Flat road	0%
G SEN SLOPE	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
	Nissan Dynamic Control System: NORMAL mode	NORMAL
DRIVE MODE STATS*	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
	Nissan Dynamic Control System: SPORT mode	On
SPORT MODE*	Other than the above	Off
	Vehicle started with selector lever in "L" position	1.80
TRGT AUX GR RATIO	<ul> <li>Release the accelerator pedal after the following conditions are satisfied</li> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 50 km/h (31 MPH) or more</li> </ul>	1.00

#### < ECU DIAGNOSIS INFORMATION >

## [CVT: RE0F11A]

Monitor item	Condition	Value/Status	
G SEN CALIBRATION	When G sensor calibration is completed	DONE	A
G SEN CALIBRATION	When G sensor calibration is not completed	YET	
N IDLE STATUS	When idle neutral control is operated	On	В
NIDLE STATUS	When idle neutral control is not operated	Off	

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\*: With Nissan Dynamic Control System

## TERMINAL LAYOUT





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## INPUT/OUTPUT SIGNAL STANDARD

Terminal No. (Wire color)		Description	า		Condition	Value (Approx.)										
+	-	Signal	Input/ Output	-	Condition											
2 (V)	Ground	L range switch	Input		Selector lever: "L" posi- tion	10 – 16 V										
(v)					Other than the above	0 V										
4 (W)	Ground	D range switch	Input	-	Selector lever: "D" posi- tion	10 – 16 V										
(**)					Other than the above	0 V										
5 (Y)	Ground	N range switch	h Input	Ignition switch	Selector lever: "N" posi- tion	10 – 16 V										
(1)				ON	Other than the above	0 V										
6 (G)	Ground	R range switch P range switch	Input Input		Selector lever: "R" posi- tion	10 – 16 V										
(0)				-	-	-									Other than the above	0 V
7 (L)	Ground				Selector lever: "P" posi- tion	10 – 16 V										
(L)					Other than the above	0 V										
11 (Y)	Ground	Sensor ground	Input		Always	0 V										
				Ignition	CVT fluid: Approx. 20°C	2.01 – 2.05 V										
12 (SB)	Ground	Fround CVT fluid tempera- ture sensor	Output	tput switch	CVT fluid: Approx. 50°C	1.45 – 1.50 V										
(- )							ON	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 pres- sure sensor	Output	<ul><li>Selector lever: "N" position</li><li>At idle</li></ul>		0.88 – 0.92 V										

#### < ECU DIAGNOSIS INFORMATION >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal	Input/ Output	Condition	value (Approx.)
21 (BG)	_	ROM ASSY (CHIP SELECT)	_	_	_
22 (GR)	_	ROM ASSY (DATA I/O)	_	_	_
23 (P)		CAN-L	Input/ Output	_	_
24 (BR)	Ground	Output speed sen- sor	Input	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	200 Hz 2.5mSec/div
26	Ground	Sensor power sup-	Output	Ignition switch: ON	5.0 V
(LG)		ply	•	Ignition switch: OFF	0 V
30	30 (Y) Ground Line pressure sole- noid valve	Ground	Output	<ul> <li>After engine warming up</li> <li>Selector lever: "N" position</li> <li>At idle</li> </ul>	2.5mSec/div 2.5mSec/div 5V/div JSDIA1897GB
(Y)		noid valve		<ul> <li>After engine warming</li> <li>Selector lever: "N" pos</li> </ul>	<ul> <li>After engine warming up</li> <li>Selector lever: "N" position</li> <li>Depress the accelerator pedal fully</li> </ul>
31 (V)		ROM ASSY (CLOCK)	_	_	_
33 (L)		CAN-H	Input/ Output	_	_
34 (R)	Ground	Secondary speed sensor	Input	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	700 Hz 1mSec/div 5V/div JSDIA1905GB
35 (BG)	Ground	Primary speed sensor	Input	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	1,100 Hz 1mSec/div

ТСМ

### < ECU DIAGNOSIS INFORMATION >

### [CVT: RE0F11A]

	inal No. e color)	Description	n	Condition		A			
+	-	Signal	Input/ Output	Condition	value (Approx.)				
37	37	High clutch & re-		Quitout	In driving at "L" position	2.5mSec/div	В С ТМ		
(L)	Ground	verse brake sole- noid valve	Input/ Output     Condition     Value (Approx.)       Indriving at "L" position     2.5mSec/div SV/div     Jobusterrad       Release the accelerator pedal after the following conditions are satisfied · Selector lever: "D" position · Accelerator pedal position: 1/8 or less · Vehicle speed: 20 km/h (12 MPH)     Imsec/div SV/div       rter d     Output     · Selector lever: "L" position · Accelerator pedal position: 1/8 or less · Vehicle is stopped     Imsec/div SV/div       rter d     · Engine started · Vehicle is stopped     · Selector lever: "L" position · Vehicle speed: 20 km/h (12 MPH)     Imsec/div SV/div       lee     · Selector lever: "L" position · Vehicle is stopped     · Selector lever: "L" position · Vehicle speed: 20 km/h (12 MPH)     Imsec/div SV/div       lee     · Selector lever: "L" position · Vehicle speed: 20 km/h (12 MPH)     Imsec/div SV/div     Jobusterrad SV/div       lee     · Selector lever: "L" position · Vehicle speed: 20 km/h (12 MPH)     Imsec/div SV/div     Jobusterrad SV/div       lee     · Selector lever: "L" position · Vehicle speed: 20 km/h (12 MPH)     Imsec/div SUMINECCI       vehicle speed: 20 km/h (12 MPH)     Imsec/div Selector lever: "D" position · Vehicle speed: 20 km/h (13 MPH)		E				
38	Ground	Ground	Torque converter clutch solenoid valve	clutch solenoid		0. trut	<ul> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>		G
(R)					Cuput			J	
				<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>		L			
39 (G)	Ground	Low brake sole- noid valve	Output	<ul> <li>the following conditions are satisfied</li> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 50 km/h (31 MPH)</li> </ul>	2.5mSec/div	N O P			

тсм

#### < ECU DIAGNOSIS INFORMATION >

	nal No. color)	Description		Condition	Value (Approx.)		
+	-	Signal	Input/ Output	Condition			
40 (W)	Ground	Primary pressure solenoid valve	Output	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	2.5mSec/div		
41 (B)	Ground	Ground	Output	Always	0 V		
42 (B)	Ground	Ground	Output	put Always 0 V			
45 (V)	Ground	Power (backup)	Input	Always	10 – 16 V		
46 (GR)	Ground	Power (backup)	Input	Always	10 – 16 V		
47	Ground	Power supply	Input	Ignition switch: ON	10 – 16 V		
(LG)	Ground Power supply Input		mput	Ignition switch: OFF	0 V		
48	Ground	Power supply	Input	Ignition switch: ON	10 – 16 V		
(Y)	(Y) Ground Powe		mput	Ignition switch: OFF	0 V		

### Fail-Safe

INFOID:000000006487595

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	<ul> <li>Shift position indicator on combination meter is not displayed.</li> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	
P0706	<ul> <li>Shift position indicator on combination meter is not displayed.</li> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	
	Acceleration is slow	Engine coolant temperature when engine starts is 10°C or more.
P0711	<ul><li>Selector shock is large</li><li>Start is slow</li></ul>	Engine coolant temperature when engine starts is less than $-10^{\circ}C$
	<ul><li>Selector shock is large</li><li>Start is slow</li></ul>	Engine coolant temperature when engine starts is less than $-35^{\circ}$ C

### < ECU DIAGNOSIS INFORMATION >

### [CVT: RE0F11A]

DTC	Vehicle behavior	Conditions of vehicle
	Acceleration is slow	Engine coolant temperature when engine starts is 10°C or more.
P0712	<ul><li>Selector shock is large</li><li>Start is slow</li></ul>	Engine coolant temperature when engine starts is less than -10°C
	<ul><li>Selector shock is large</li><li>Start is slow</li></ul>	Engine coolant temperature when engine starts is less than $-35^{\circ}$ C
	Acceleration is slow	Engine coolant temperature when engine starts is 10°C or more.
P0713	<ul><li>Selector shock is large</li><li>Start is slow</li></ul>	Engine coolant temperature when engine starts is less than $-10^{\circ}$ C
	<ul><li>Selector shock is large</li><li>Start is slow</li></ul>	Engine coolant temperature when engine starts is less than $-35^{\circ}$ C
P0715	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Vehicle speed is not increased</li> <li>Lock-up is not performed.</li> </ul>	_
P0720	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
P0740	Lock-up is not performed.	-
P0743	Lock-up is not performed.	
P0744	Lock-up is not performed.	
P0746	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Vehicle speed is not increased</li> <li>Lock-up is not performed.</li> </ul>	_
P0846	<ul><li>Start is slow</li><li>Acceleration is slow</li></ul>	
P0847	<ul><li>Start is slow</li><li>Acceleration is slow</li></ul>	
P0848	<ul><li>Start is slow</li><li>Acceleration is slow</li></ul>	_
P0863	<ul> <li>Not changed from normal driving</li> </ul>	-
P0962	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
P0963	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
P1586	Not changed from normal driving	
P1588	Not changed from normal driving	
P1701	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
P1739	Start is slow	
P173A	Vehicle speed is not increased	
P173B	Start is slow	
P173C	Vehicle speed is not increased	

#### < ECU DIAGNOSIS INFORMATION >

DTC	Vehicle behavior	Conditions of vehicle
P17B4	Start is slow	-
	Start is slow	Wire disconnection
P17B5	Vehicle speed is not increased	Voltage shorting
P17B7	Start is slow	-
P17B8	Start is slow	Wire disconnection
FT/DO	Vehicle speed is not increased	Voltage shorting
P17BA	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
P17BB	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
P2765	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Vehicle speed is not increased</li> <li>Lock-up is not performed.</li> </ul>	_
U0073	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
U0100	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed.</li> </ul>	_
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:000000006487596

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 condi- tion	Wheel spin convergence returns the control to the normal control.

#### CONTROL WHEN FLUID TEMPERATURE IS HIGH

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[CVT: RE0F11A]

INFOID:000000006487597

С

### < ECU DIAGNOSIS INFORMATION >

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.	A
Vehicle behavior in control	Power performance may be lowered, compared to normal control.	B
Normal return condi- tion	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.	TN
Normal return condi- tion	Torque returns to normal by positioning the selector lever in a range other than "R" position.	E

### REVERSE PROHIBIT CONTROL

	Driadity Obart	H
Normal return condi- tion	The control returns to normal control when the vehicle is driven at low speeds. (The reverse brake becomes engaged.)	
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.	G
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.	F

### **DTC Inspection Priority Chart**

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	
	P0863 CONTROL UNIT (CAN)	<u>TM-430</u>	
	U0073 COMM BUS A OFF	<u>TM-384</u>	
	U0100 LOST COMM (ECM A)	<u>TM-385</u>	
	U0140 LOST COMM (BCM)	<u>TM-386</u>	
1	U0141 LOST COMM (BCM A)	<u>TM-387</u>	
I	U0155 LOST COMM (IPC)	<u>TM-388</u>	
	U0300 CAN COMM DATA	<u>TM-389</u>	
	U1000 CAN COMM CIRC	<u>TM-390</u>	
	U1117 LOST COMM (ABS)	<u>TM-391</u>	
	U1119 LOST COMM (MLTI DISP)	<u>TM-392</u>	
	P0740 TORQUE CONVERTER	<u>TM-416</u>	
	P0743 TORQUE CONVERTER	<u>TM-418</u>	
	P0962 PC SOLENOID A	<u>TM-431</u>	
	P0963 PC SOLENOID A	<u>TM-433</u>	
2	P17B4 LOW BRAKE SOLENOID	<u>TM-449</u>	
2	P17B5 LOW BRAKE SOLENOID	<u>TM-451</u>	
	P17B7 HIGH CLUTCH SOLENOID	<u>TM-453</u>	
	P17B8 HIGH CLUTCH SOLENOID	<u>TM-455</u>	
	P17BA PRIMARY PRESSURE SOL	<u>TM-457</u>	
	P17BB PRIMARY PRESSURE SOL	<u>TM-459</u>	
3	P1701 TCM	<u>TM-440</u>	

### TM-365

## < ECU DIAGNOSIS INFORMATION >

Priority	DTC (Diagnostic Trouble Code)	Reference
	P062F EEPROM	<u>TM-393</u>
	P0705 T/M RANGE SENSOR A	<u>TM-394</u>
	P0706 T/M RANGE SENSOR A	<u>TM-400</u>
	P0711 FLUID TEMP SENSOR A	<u>TM-406</u>
	P0712 FLUID TEMP SENSOR A	<u>TM-406</u>
4	P0713 FLUID TEMP SENSOR A	<u>TM-408</u>
4	P0715 INPUT SPEED SENSOR A	<u>TM-410</u>
	P0847 FLUID PRESS SEN/SW B	<u>TM-426</u>
	P0848 FLUID PRESS SEN/SW B	<u>TM-428</u>
	P1586 G SENSOR	<u>TM-435</u>
	P1588 G SENSOR	<u>TM-438</u>
	P2765 OUTPUT SPEED SENSOR	<u>TM-461</u>
5	P0720 OUTPUT SPEED SENSOR	<u>TM-413</u>
	P0746 PC SOLENOID A	<u>TM-422</u>
	P1739 1GR INCORRECT	<u>TM-441</u>
6	P173A 2GR INCORRECT	<u>TM-443</u>
	P173B 1GR INCORRECT	<u>TM-445</u>
	P173C 2GR INCORRECT	<u>TM-447</u>
7	P0744 TORQUE CONVERTER	<u>TM-420</u>
7	P0846 FLUID PRESS SEN/SW B	<u>TM-424</u>

### **DTC** Index

INFOID:000000006487598

#### NOTE:

- If multiple malfunction codes are detected at the same time, check each code according to the "DTC check priority list". <u>TM-365</u>, "DTC Inspection Priority Chart".
- The ignition counter is displayed in "FFD". Refer to TM-347, "CONSULT-III Function (TRANSMISSION)".

DT	<sup>-</sup> C <sup>*1, *2</sup>				
GST	CONSULT-III (TRANSMIS- SION)	Items (CONSULT-III screen terms)	Trip	MIL	Reference
P062F	P062F	EEPROM	1	ON	<u>TM-393</u>
P0705	P0705	T/M RANGE SENSOR A	2	ON	<u>TM-394</u>
P0706	P0706	T/M RANGE SENSOR A	2	ON	<u>TM-400</u>
P0711	P0711	FLUID TEMP SENSOR A	2	ON	<u>TM-404</u>
P0712	P0712	FLUID TEMP SENSOR A	2	ON	<u>TM-406</u>
P0713	P0713	FLUID TEMP SENSOR A	2	ON	<u>TM-408</u>
P0715	P0715	INPUT SPEED SENSOR A	2	ON	<u>TM-410</u>
P0720	P0720	OUTPUT SPEED SENSOR	2	ON	<u>TM-413</u>
P0740	P0740	TORQUE CONVERTER	2	ON	<u>TM-416</u>
P0743	P0743	TORQUE CONVERTER	2	ON	<u>TM-418</u>
P0744	P0744	TORQUE CONVERTER	2	ON	<u>TM-420</u>
P0746	P0746	PC SOLENOID A	2	ON	<u>TM-422</u>
P0846	P0846	FLUID PRESS SEN/SW B	2	ON	<u>TM-424</u>
P0847	P0847	FLUID PRESS SEN/SW B	2	ON	<u>TM-426</u>
P0848	P0848	FLUID PRESS SEN/SW B	2	ON	<u>TM-428</u>

### TM-366

### TM-367

< ECU DIAGNOSIS INFORMATION	>	
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DTC	2 <sup>*1, *2</sup>					А
GST	CONSULT-III (TRANSMIS- SION)	Items (CONSULT-III screen terms)	Trip	MIL	Reference	
	P0863	CONTROL UNIT (CAN)	1	—	<u>TM-430</u>	В
P0962	P0962	PC SOLENOID A	2	ON	<u>TM-431</u>	
P0963	P0963	PC SOLENOID A	2	ON	<u>TM-433</u>	С
_	P1586	G SENSOR	1	—	<u>TM-435</u>	
	P1588	G SENSOR	1	—	<u>TM-438</u>	
P1701	P1701	ТСМ	1	ON	<u>TM-440</u>	ΤM
P1739	P1739	1GR INCORRECT	2	ON	<u>TM-441</u>	·
P173A	P173A	2GR INCORRECT	2	ON	<u>TM-443</u>	Е
P173B	P173B	1GR INCORRECT	2	ON	<u>TM-445</u>	
P173C	P173C	2GR INCORRECT	2	ON	<u>TM-447</u>	
P17B4	P17B4	LOW BRAKE SOLENOID	2	ON	<u>TM-449</u>	F
P17B5	P17B5	LOW BRAKE SOLENOID	2	ON	<u>TM-451</u>	
P17B7	P17B7	HIGH CLUTCH SOLENOID	2	ON	<u>TM-453</u>	C
P17B8	P17B8	HIGH CLUTCH SOLENOID	2	ON	<u>TM-455</u>	G
P17BA	P17BA	PRIMARY PRESSURE SOL	2	ON	<u>TM-457</u>	
P17BB	P17BB	PRIMARY PRESSURE SOL	2	ON	<u>TM-459</u>	Н
P2765	P2765	OUTPUT SPEED SENSOR	2	ON	<u>TM-461</u>	
_	U0073	COMM BUS A OFF	1	—	<u>TM-384</u>	
U0100	U0100	LOST COMM (ECM A)	2	ON	<u>TM-385</u>	
_	U0140	LOST COMM (BCM)	1	_	<u>TM-386</u>	
_	U0141	LOST COMM (BCM A)	1	_	<u>TM-387</u>	J
_	U0155	LOST COMM (IPC)	1	_	<u>TM-388</u>	
	U0300	CAN COMM DATA	1	_	<u>TM-389</u>	
	U1000	CAN COMM CIRC	1		<u>TM-390</u>	K
	U1117	LOST COMM (ABS)	1	_	<u>TM-391</u>	-
	U1119	LOST COMM (MLTI DISP)	1	_	<u>TM-392</u>	L

ТСМ

\*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.

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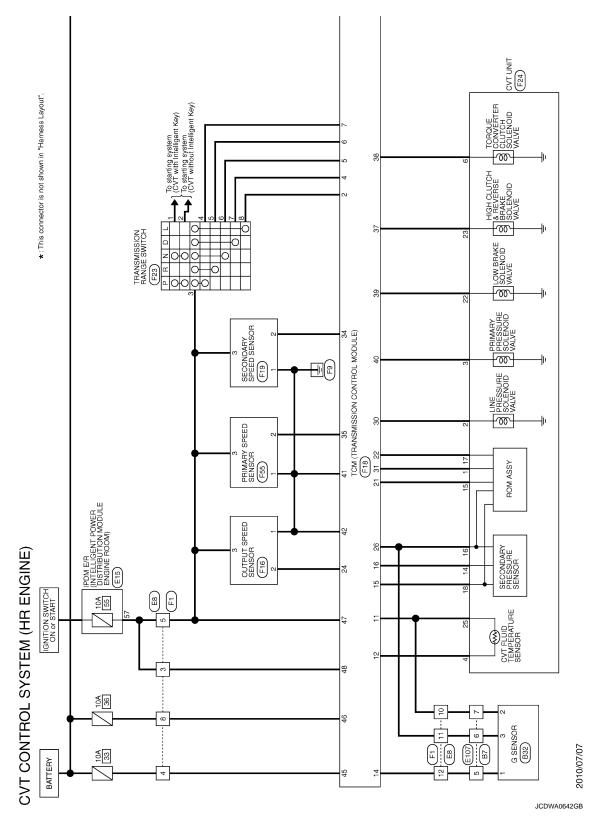
### [CVT: RE0F11A]

## WIRING DIAGRAM CVT CONTROL SYSTEM

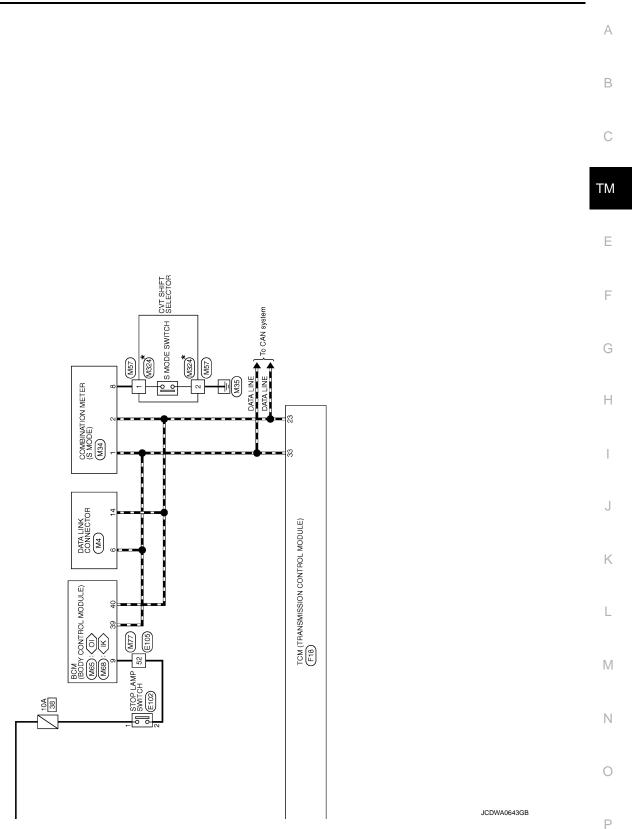
### Wiring diagram

INFOID:000000006487599

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



### **CVT CONTROL SYSTEM**



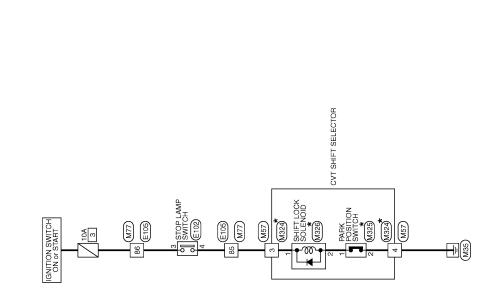
This connector is not shown in "Harness Layout".

### **CVT SHIFT LOCK SYSTEM**

### Wiring diagram

INFOID:000000006487600

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



SHIFT LOCK SYSTEM

DIAGNOSIS AND REPAIR WORK FLOW	[CVT: RE0F11A]
BASIC INSPECTION	[01111201111]
DIAGNOSIS AND REPAIR WORK FLOW	
Flowchart of Trouble Diagnosis	INFOID:00000006487601
NOTE:	
DTC" includes DTC at the 1st trip.	
<ol> <li>Refer to <u>TM-372</u>, "Question sheet" and interview the customer to obtain the mal ditions and environment when the malfunction occurred) as much as possible v in the vehicle.</li> <li>Check the following:</li> <li>Service history</li> </ol>	
Malfunction of harness and connector. <u>GI-42, "Intermittent Incident"</u> .	
>> GO TO 2. <b>2.</b> CHECK DTC	
1. Before checking the malfunction, check whether any DTC exists.	
<ol> <li>If DTC exists, perform the following operations.</li> <li>Records the DTCs. (Print out using CONSULT-III and affix to the Work Order Sh</li> <li>Erase DTCs.</li> </ol>	neet.)
<ul> <li>Check the relation between the cause found by DTC and the malfunction inform <u>475, "Symptom Table"</u> can be used effectively.</li> <li>Check the relevant information including STI, etc.</li> </ul>	nation from customer. <u>TM-</u>
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 to <u>TM-362, "Fail-Safe"</u> . Interview sheet can be used effectively when reproduce malfunction conditions. Re sheet".	efer to <u>TM-372, "Question</u>
Verify the relationship between the symptom and the conditions in which the malfunc tomer occurs.	tion described by the cus-
>> GO TO 5.	
<b>1.</b> REPRODUCE MALFUNCTION SYMPTOM	
Check the malfunction described by the customer on the vehicle. Check if the behavior is fail safe or normal operation. Refer to <u>TM-362, "Fail-Safe"</u> . Interview sheet can be used effectively when reproduce malfunction conditions. <u>TM-3</u> Verify the relationship between the symptom and the conditions in which the malfunct tomer occurs.	
>> GO TO 6.	
5. PERFORM "DTC CONFIRMATION PROCEDURE"	
Perform "DTC CONFIRMATION PROCEDURE" of the appropriate DTC to check if E Refer to <u>TM-365. "DTC Inspection Priority Chart"</u> when multiple DTCs are detected order for performing the diagnosis. <u>Is any DTC detected?</u> YES >> GO TO 7.	

YES >> GO TO 7. NO >> Follow <u>GI-42</u>, "Intermittent Incident" to check.

### DIAGNOSIS AND REPAIR WORK FLOW

#### < BASIC INSPECTION >

[CVT: RE0F11A]

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

Use <u>TM-475</u>, "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:000000006487602

SEF907L

#### 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

#### Worksheet Sample

			Question sheet				
Customer's name	MR/MS	Registration number		Initial year registration		Year	Month day
name		Vehicle type		Chassis No.			
Storage date	Year Month day	Engine		Mileage			km
Symptom		□ Vehicle doe	es not start. (□ R position	D position	L position	□Мр	osition)
		Upshifting o	does not occur. Dow	nshifting does not	occur.		
		Lock-up ma	alfunction				
		□ Shift point i	s too high.	hift point is too low	Ι.		
		□ Shift shock	(□ N⇒D □ Lock-up □	I R, D, L and M po	sition)		
		□ Slip (□ N⇒	D 🛛 Lock-up 🖾 R, D, I	L and M position)			
		D Noise	□ Vibration				
		When selecto	r lever position is shifted, s	hift pattern does n	ot change.		
		□ Other (				)	

### TM-372

### DIAGNOSIS AND REPAIR WORK FLOW

#### < BASIC INSPECTION >

### [CVT: RE0F11A]

			(	Question sheet				
Customer's		MR/MS	Registration number		Initial year registration		Year	Month day
name			Vehicle type		Chassis No.			
Storage date	Year	Month day	Engine		Mileage			km
First occurren	ce		□ Recently (a	s from month of year	)	·		
Frequency of	occurrence		□ Always	Under certain condition	ns 🗆 Som	etimes ( ti	me(s)/d	ay)
Climate con- ditions			Irrelevant					
	Weather		Clear	□ Cloud □ Rain	□ Snow	□ Others		)
	Temperature		□ Hot □	] Warm □ Cool □ Cold	I 🗆 Tempera	ture (Approx.	°C)	
	Relative humidity		□ High	□ Moderate □ Lo	W			
Transaxle con	dition		□ In cold-start □Engine spee		prox. °C)	□ After warm	n-up	
Road condition	ns		□ Urban area □ Mountainou	□ Suburb area □ H Is road (uphill or downhill)	ighway			
Operating con	dition, etc.		Irrelevant Uhen engir Uhen origing drivi At constant During corn	ng During acceleration	g deceleration			
Other conditio	ns							

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### ADDITIONAL SERVICE WHEN REPLACING TCM

< BASIC INSPECTION >

### ADDITIONAL SERVICE WHEN REPLACING TCM

### Description

INFOID:000000006487603

[CVT: RE0F11A]

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:000000006487604

**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.

 ${\it 3.}$  PERFORM G SENSOR CALIBRATION

Refer to <u>TM-377, "Procedure"</u>.

>> 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 SEN-SOR CALIBRATION". Refer to <u>TM-375, "Procedure"</u>.

#### ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY [CVT: RE0F11A]

< BASIC INSPECTION > ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY А Description INFOID:00000006487605 Perform the following work after the transaxle assembly is replaced. В 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. TΜ 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. Е 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 F TCM. Procedure INFOID:00000006487606 **1.**INITIALIZE TCM (P)With CONSULT-III Н 1. Set parking brake. 2. Turn ignition switch ON. 3. Select "Work Support" in "TRANSMISSION". Select "ERASE MEMORY DATA". 4. While maintaining the conditions below, touch "Start". 5. Vehicle stop status With engine stopped Selector lever: "R" position Accelerator pedal: Depressed NOTE: Select "Start" and complete within approximately 20 seconds. Κ Is "COMPLETED" displayed? YES >> GO TO 2. NO L >> 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 Μ 1. Turn ignition switch OFF with the selector lever in "R" position and wait for 10 seconds or more. Turn ignition switch ON with the selector lever in "R" position. 2. CAUTION: Ν Never start the engine. Select "Special function" in "TRANSMISSION". 3 Select "CALIB DATA". 4 Check that indicated value of "CALIB DATA" is equal to the value shown in the following table. 5.

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	

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### ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

#### < BASIC INSPECTION >

[CVT: RE0F11A]	

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.

>> GO TO 1. NO

 ${f 3.}$ LOADING OF CALIBRATION DATA

Shift the selector lever to the "P" position. 1.

Check that "P" is displayed on shift position indicator on combination meter. 2.

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-IIISelect "WORK SUPPORT" in "TRANSMISSION".
- Select "CONFORM CVTF DETERIORTN". 2.
- Touch "Clear". 3.

>> WORK END

### **G SENSOR CALIBRATION**

< BASIC INSPECTION >

### G SENSOR CALIBRATION

### Description

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

Removal/installation or replacement of G sense
 Replacement of TCM

### Procedure

**1.**PREPARATION BEFORE CALIBRATION PROCEDURE

- 1. Park the vehicle on a level surface.
- 2. Adjust air pressure of all tires to the specified pressure. <u>WT-9, "Tire Air Pressure"</u>.

### >> GO TO 2.

### 2.PERFORM CALIBRATION

With CONSULT-III
 Turn ignition switch ON.

- CAUTION: Never start engine.
- 2. Select "Work Support" in "TRANSMISSION".
- 3. Select "G SENSOR CALIBRATION".
- 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 Turn ignition switch OFF and wait for 10 seconds. Turn ignition switch ON

- 2. Turn ignition switch ON.
- Select "Self Diagnostic Results" in "TRANSMISSION".

#### Is "P1586" or "P1588" detected?

- YES >> Go to TM-366, "DTC Index".
- NO >> Calibration end

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#### INFOID:000000006487608

INFOID:00000006487607

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**CVT fluid** 

Fluid capacity

### CVT FLUID

### Replacement

: Refer to TM-512, "General Specification".

: 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. <u>TM-493</u>, "Exploded <u>View"</u>.
- 6. Install the charging pipe set (KV311039S0) (A) into the drain hole.

### CAUTION:

#### Tighten the charging pipe by hand.

- 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.
- Remove the ATF changer hose and charging pipe, then install the drain plug. NOTE:

Perform this work quickly because CVT fluid leaks.

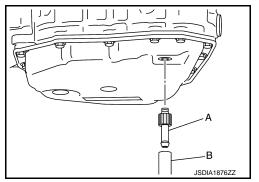
- 10. Lift down the vehicle.
- 11. Start the engine.
- 12. While depressing the brake pedal, shift the selector lever to the entire position from "P" to "L", and shift it to the "P" position.

#### 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 <u>TM-493, "Exploded View"</u>. CAUTION:

## Be sure to tighten to the specified torque. If it is not tightened to the specified torque, the tube may be damaged.



INFOID:000000006487611

### CVT FLUID

#### < BASIC INSPECTION >

#### 19. Install the charging pipe set (KV311039S0) (A) into the drain hole. А CAUTION: Tighten the charging pipe by hand. 20. Install the ATF changer hose (B) to the charging pipe. В CAUTION: Press the ATF changer hose all the way onto the charging pipe until it stops. Fill approximately 3 liter (2-5/8 lmp qt) of the CVT fluid. ·В 22. Remove the ATF changer hose and charging pipe, then install the drain plug. JSDIA1876ZZ ТΜ NOTE: Perform this work quickly because CVT fluid leaks. Lift down the vehicle. Е 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. F NOTE: Hold the lever at each position for 5 seconds. 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: Н 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. Lift down the vehicle. 31. Select "Data Monitor" in "TRANSMISSION" using CONSULT-III. 32. Select "CONFORM CVTF DETERIORTN". Κ 33. Select "Erase". 34. Stop the engine. L Adjustment INFOID:000000006487612 M **CVT** fluid : Refer to TM-512, "General Specification". : Refer to TM-512, "General Specification". Fluid capacity **CAUTION:** Ν 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. Ρ Start the engine. 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.

### [CVT: RE0F11A]

### < BASIC INSPECTION >

### 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".
- Install the charging pipe set (KV311039S0) (A) into the drain plug hole.
   CAUTION:

### Tighten the charging pipe by hand.

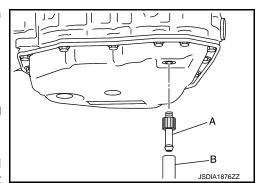
- Install the ATF changer hose (B) to the charging pipe.
   CAUTION: Press the ATF changer hose all the way onto the charging pipe until it stops.
- 10. Fill approximately 0.5 liter (1/2 lmp qt) of the CVT fluid.
- 11. Remove the ATF changer hose from the charging pipe, and check that the CVT fluid drains 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 <u>TM-493</u>, "<u>Exploded View</u>". CAUTION:

#### Never reuse drain plug gasket.

- 14. Lift down the vehicle.
- 15. Stop the engine.



### **STALL TEST**

### [CVT: RE0F11A]

ASIC INSPECTION >	
ALL TEST	

< BASIC INSP	ECTION >		[CVT: RE0F11A]	
STALL TE	ST			
Work Proce	dure		INFOID:00000006487613	
INSPECTION				
1. Check the	engine oil l	evel. Repler	nish if necessary. Refer to <u>LU-25, "Inspection"</u> .	
	0	•	efer to TM-480, "Inspection".	
3. Drive for a 176°F).	bout 10 mir	nutes to war	m up the vehicle so that the CVT fluid temperature is 50 to 80°C (122 to	
4. Be sure to	apply the p	arking brake	e and block the tires.	
5. Start the er	ngine, depr	ess the brak	e pedal and put the selector lever to the D position.	
6. While depr	essing the	brake pedal	, depress the accelerator pedal gradually.	
		quickly. Ther	n, release your foot from the accelerator pedal quickly.	
CAUTION: Never dep		ccelerator r	pedal for 5 seconds or more during the test.	
Stall sp	eed :	Refer to <u>TM</u>	I-512, "Stall Speed".	
8. Place the s	selector leve	er in the N p	osition.	
9. Cool the C				
		the idle co	eed for at least 1 minute.	
	•	-	sition and perform Step 6 to Step 9 again.	
		•		
NARROWING		ALFUNCI	IONING PARTS	
	Selector le	ever position		
	D	R	Possible cause	
	Н	0	Low brake	
	0	Н	Reverse brake	
Stall speed	L	L	<ul><li>Engine</li><li>Torque converter one way clutch</li></ul>	
	н	н	<ul> <li>Line pressure is low.</li> <li>Primary pulley</li> <li>Secondary pulley</li> </ul>	

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.

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• Secondary pulley

• Steel belt

### LINE PRESSURE TEST

### Work Procedure

INSPECTION

- 1. Check the engine oil level. Replenish if necessary. <u>LU-25, "Inspection"</u>.
- 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  $80^{\circ}$ C (122 to  $176^{\circ}$ 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".
- Measure the line pressure at both idle and the stall speed.
   CAUTION:
   Keep brack podel pressed all the way down during measurement

Keep brake pedal pressed all the way down during measurement.

### Line pressure : Refer to <u>TM-513, "Line Pressure"</u>.

### NARROWING-DOWN MALFUNCTIONING PARTS

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

INFOID:000000006626144

### < BASIC INSPECTION >

### CVT POSITION

### Inspection and Adjustment

### INSPECTION

- 1. Turn ON the ignition switch with the selector lever at the P position.
- 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.
- 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.
- 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.

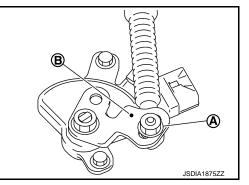
2. Remove nut (A) and set manual lever (B) to the "P" position.

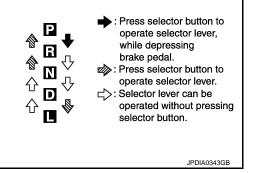
### Do not apply force to the manual lever.

Tighten nuts to the specified torque. Refer to <u>TM-485</u>, "Exploded <u>View"</u>.

### CAUTION:

In tightening, fix the manual lever.





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INFOID:00000006487614

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### DTC/CIRCUIT DIAGNOSIS U0073 COMMUNICATION BUS A OFF

### Description

INFOID:000000006487615

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:000000006487616

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U0073	Control Module Communica- tion Bus A Off	TCM communication blockage lasts for 2 sec- onds 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

T. 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:000000006487617

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

#### < DTC/CIRCUIT DIAGNOSIS >

### U0100 LOST COMMUNICATION (ECM A)

### Description

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

### 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 un- able to receive the CAN communications signal from ECM continuously for 2 sec- onds or more.	<ul> <li>ECM</li> <li>Harness or connector (CAN communication line is open or shorted)</li> </ul>
	NFIRMATION PROCED	URE	
<b>1.</b> PREPA	RATION BEFORE WORK	K	
	"DTC CONFIRMATION P econds, then perform the r		n ignition switch OFF and wait for at
~	> GO TO 2.		
	DRM DTC CONFIRMATIO		
2. Checl	the first trip DTC.		
	" <u>detected?</u>	nie Dreeedure"	
	<ul> <li>&gt; Go to <u>TM-385, "Diagnos</u></li> <li>&gt; INSPECTION END</li> </ul>	<u>sis Flocedule</u> .	
Diagnos	sis Procedure		INF0ID:00000006487620
For the dia	agnosis procedure, refer to	D LAN-17, "Trouble Diagnosis Flow C	hart".

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INFOID:000000006628112

INFOID:000000006487619

#### < DTC/CIRCUIT DIAGNOSIS >

### U0140 LOST COMMUNICATION (BCM)

### Description

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:000000006487622

INFOID:000000006628113

### 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.	Harness or connector     (CAN communication line is open or

### 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

(B)With CONSULT-III

- T. 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:000000006487623

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

TM-386

### **U0141 LOST COMMUNICATION (BCM A)**

#### < DTC/CIRCUIT DIAGNOSIS >

### U0141 LOST COMMUNICATION (BCM A)

### Description

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

### 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 communi- cation signal from IPDM E/R for 2 seconds or more.	<ul> <li>IPDM E/R</li> <li>Harness or connector (CAN communication line is open or shorted)</li> </ul>
отс со	NFIRMATION PROCED	DURE	
<b>1.</b> PREP/	ARATION BEFORE WOR	ĸ	
	"DTC CONFIRMATION F econds, then perform the	PROCEDURE" occurs just before, turn next test.	ignition switch OFF and wait for at
<b>`</b>	>> GO TO 2.		
2.PERF	ORM DTC CONFIRMATIC	ON PROCEDURE	
. Start	ONSULT-III the engine and wait for at k the DTC.	least 5 seconds.	
YES >	<u>" detected?</u> >> Go to <u>TM-384, "Diagno</u> >> INSPECTION END	sis Procedure".	
Diagnos	sis Procedure		INFOID:00000006487626
For the di	agnosis procedure, refer t	o LAN-17, "Trouble Diagnosis Flow Cha	art".
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INFOID:000000006487625

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#### < DTC/CIRCUIT DIAGNOSIS >

### U0155 LOST COMMUNICATION (IPC)

### Description

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:000000006487628

INFOID:000000006628115

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U0155	Lost Communication With In- strument 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.	<ul> <li>Combination meter</li> <li>Harness or connector (CAN communication line is open or shorted)</li> </ul>

### 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

(B)With CONSULT-III

- T. 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:000000006487629

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

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#### < DTC/CIRCUIT DIAGNOSIS >

### **U0300 CAN COMMUNICATION DATA**

### Description

CAN (Controller Area Network) is a serial communication line for real-time application. It is an on-vehicle mul-В tiplex 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

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U0300	Internal Control Module Soft- ware Incompatibility	When the ignition switch is ON, the data length transmitted from each control unit is shorter than the specified length and the sta- tus continues for 2 seconds or more.	Control unit other than TCM
DTC CO	NFIRMATION PROCED	URE	
1.PREP	ARATION BEFORE WORK	<	
		PROCEDURE" occurs just before, turn	ignition switch OFF and wait for at
least 10 s	seconds, then perform the	next test.	
:	>> GO TO 2.		
2.снес	K DTC DETECTION		
	ONSULT-III		
	the engine and wait for 5 s the DTC.	seconds or more.	
	<u>)" detected?</u>		
YES :	>> Go to <u>TM-389, "Diagno</u>	sis Procedure".	
	>> INSPECTION END		
Diagno	sis Procedure		INFOID:00000006487632
<b>1.</b> CONT	ROL UNIT CHECK		
Check the	e number of control units re	eplaced before "U0300" is detected.	
-	ntrol unit replaced?		
YES :	> The specification of the specification.	e control unit replaced may be incorre	ct. Check the part number and the
<b>^</b>	>> GO TO 2.		
2.cont	ROL UNIT CHECK		
9	ONSULT-III	we when we will	
	ove one of the control unit mble the old control unit be		
3. Turn	ignition switch ON, and wa	ait for 2 seconds or more.	
	ct "Self Diagnostic Results' )"detected?	´IN ¨I RANSMISSION".	
-		witch and check other control units in th	ne same manner.
		e control unit removed may be incorre	

tion of the control unit removed may be incorrect. Check the specification.

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### U1000 CAN COMM CIRCUIT

### Description

INFOID:000000006628117

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:000000006487634

### 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:000000006487635

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

### **U1117 LOST COMMUNICATION (ABS)**

#### < DTC/CIRCUIT DIAGNOSIS >

### U1117 LOST COMMUNICATION (ABS)

### Description

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:000000006487640

### 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.	<ul> <li>ABS actuator and electric unit (control unit)</li> <li>Harness or connector (CAN communication line is open or shorted)</li> </ul>
DTC CO	NFIRMATION PROCED	URE	
1.PREP/	ARATION BEFORE WORI	<	
		PROCEDURE" occurs just before, turn	ignition switch OFF and wait for at
ieast 10 s	seconds, then perform the	next test.	
:	>> GO TO 2.		
2.perf	ORM DTC CONFIRMATIC	N PROCEDURE	
	ONSULT-III the engine and wait for 5 s	coconde or moro	
	k the DTC.		
	" detected?		
	>> Go to <u>TM-384, "Diagno</u> >> INSPECTION END	sis Procedure".	
Diagnos	sis Procedure		INFOID:00000006487641
For the di	agnosis procedure, refer t	o LAN-17, "Trouble Diagnosis Flow Ch	art".

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### [CVT: RE0F11A]

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#### < DTC/CIRCUIT DIAGNOSIS >

### U1119 LOST COMM (MULTI-DISPLAY)

### Description

INFOID:000000006628119

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:000000006487646

### 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.	<ul> <li>MDU</li> <li>Harness or connector (CAN communication line is open or shorted)</li> </ul>

#### 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

(B)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:000000006487647

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

### **P062F EEPROM**

### < DTC/CIRCUIT DIAGNOSIS >

### P062F EEPROM

### DTC Logic

INFOID:000000006487648

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes	
P062F	Internal Control Module EE- PROM Error	Flash ROM error is detected when turning ON the ignition switch.	<ul> <li>TCM (flash ROM)</li> <li>Harness or connector [TCM power supply (back-up) circuit is open or shorted]</li> </ul>	C TM
DTC CO	NFIRMATION PROCED	URE		
1.PREP/	ARATION BEFORE WOR	K		F
	"DTC CONFIRMATION F econds, then perform the	PROCEDURE" occurs just before, turn next test.	ignition switch OFF and wait for at	
				F
-	>> GO TO 2. K DTC DETECTION			
				G
	the engine. k the first trip DTC.			
	<u>" detected?</u>			
	>> Go to <u>TM-393, "Diagno</u> >> INSPECTION END	<u>sis Procedure"</u> .		Η
Diagnos	sis Procedure		INFOID:00000006487649	
<b>1.</b> CHEC	K INTERMITTENT INCID	NT		
Refer to C	GI-42, "Intermittent Inciden	<u>t"</u> .		J
Is the insp	pection result normal?			
	>> Replace the TCM. Refe > Repair or replace the m	r to <u>TM-490, "Removal and Installation</u> alfunctioning parts.	<u>"</u> .	K
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### P0705 TRANSMISSION RANGE SWITCH A

### **DTC Logic**

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0705	Transmission Range Sensor A Circuit (PRNDL Input)	<ul> <li>Tow or more range signals simultaneously stay ON continuously for 5 seconds under the following diagnosis condition 1 and 2:</li> <li>Diagnosis condition 1 (continued for 5 seconds or more)</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> <li>Diagnosis condition 2 (continued for 2 seconds or more)</li> <li>Vehicle speed: Less than 3 km/h (2 MPH)</li> <li>Accelerator pedal position: 0.6/8 or less</li> <li>Idle switch: ON</li> <li>Stop lamp switch: ON</li> </ul>	<ul> <li>Harness or connector (Short circuit between transmission range switch and TCM)</li> <li>Transmission range switch</li> </ul>

## 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

### **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.

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### P0705 TRANSMISSION RANGE SWITCH A

#### < DTC/CIRCUIT DIAGNOSIS >

Monitor item	Test condition	Condition
D POSITION SW	Selector lever: "D" position	On
D FOSITION SW	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
K FOSITION SW	Other than the above	Off
P POSITION SW	Selector lever: "P" position	On
F FOSITION SW	Other than the above	Off
L POSITION SW	Selector lever: "L" position	On
L FOSHION SW	Other than the above	Off

(P) Without CONSULT-III.

1. Turn the ignition switch OFF.

2. Disconnect the TCM connector.

- 3. Turn ignition switch ON.
- 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	Ground		voltage
	2		Selector lever: " L" position	Battery voltage
	2		Other than the above	Approx. 0 V
	4		Selector lever: "D" position	Battery voltage
	4		Other than the above Approx. 0 V	
F18	5	Ground	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
	I		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 woltage.)]>>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  $\mathbb{N}$  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.

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### **P0705 TRANSMISSION RANGE SWITCH A**

### < DTC/CIRCUIT DIAGNOSIS >

TCM	Continuity		
Connector	Terr	ninal	Continuity
	4	2	Not existed
F18		5	
FIO		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 harnes	ss 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	Continuity		
Connector	Terr	minal	Continuity
		2	Not existed
F18	5	4	
FIO	5	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 harnes	ss 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.

# P0705 TRANSMISSION RANGE SWITCH A

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#### < DTC/CIRCUIT DIAGNOSIS >

#### 2. Disconnect the TCM connector.

3. Check the continuity between the TCM harness connector terminals.

	harness con	nector	Co	ntinuity
Connector	Teri	minal		minuny
		2		
F18	7	4	Not	existed
		5	-	
Is the chec	k result no	-		
	- GO TO 7			
_	•	•		unctioning
7.снеск	P POSITI	ON SW CI	RCUIT	(PART 2)
	nect the tr		n positi	ion switch o
			the TC	CM harness
	_			
	ess connecto	or Grou	Ind	Voltage
Connector	Termina			_
F18	7	Grou	Ind	Approx. 0 V
Is the chec				
	> GO TO 1 > Repair or		e malfi	unctioning
8.CHECK		•		-
			RCUIT	(PART1)
I. Jumm	e ianition			(PART1)
2. Discon	nect the T	switch OFF CM conneo	- ctor.	
2. Discon	nect the T	switch OFF CM conneo	- ctor.	
<ol> <li>Discon</li> <li>Check</li> </ol>	nect the T the contin	switch OFF CM connec uity betwee	- ctor.	
<ol> <li>Discon</li> <li>Check</li> </ol>	nect the T the contin harness con	switch OFF CM connec uity betwee	- ctor. en the <sup>-</sup>	
2. Discon 3. Check	nect the T the contin harness con	switch OFF CM connec uity betwee nector	- ctor. en the <sup>-</sup>	TCM harn
2. Discon 3. Check TCM Connector	nect the T the contin harness con Terr	switch OFF CM connec uity betwee nector ninal	- ctor. en the Co	TCM harn
2. Discon 3. Check	nect the T the contin harness con	switch OFF CM connec uity betwee nector ninal 2	- ctor. en the Co	TCM harn
2. Discon 3. Check TCM Connector	nect the T the contin harness con Terr	switch OFF CM connec uity betwee nector ninal 2 4	- ctor. en the Co	TCM harne
2. Discon 3. Check TCM Connector	harness con Terr	switch OFF CM connec uity betwee nector ninal 2 4 5 7	- ctor. en the Co	TCM harne
2. Discon 3. Check TCM Connector F18 Is the checc YES >>	harness con harness con Terr 6 <u>k result no</u> > GO TO 9	switch OFF CM connec uity betwee nector ninal 2 4 5 7 rmal?	Ector. en the Cor	TCM harne
2. Discon 3. Check TCM Connector F18 Is the checc YES >> NO >>	harness con harness con Terr 6 k result no > GO TO 9 > Repair or	switch OFF CM connec uity betwee nector ninal 2 4 5 7 rmal? replace th	Ector. en the Col Not	TCM harne
2. Discon 3. Check TCM Connector F18 Is the checc YES >>	harness con harness con Terr 6 k result no > GO TO 9 > Repair or	switch OFF CM connec uity betwee nector ninal 2 4 5 7 rmal? replace th	Ector. en the Col Not	TCM harne
2. Discon 3. Check TCM Connector F18 Is the checc YES >> NO >> 9.CHECK 1. Discon	harness con harness con Terr 6 k result no > GO TO 9 > Repair or R POSITI nect the tr	switch OFF CM connect uity betweet nector ninal 2 4 5 7 rmal? replace th ON SW CII ansmissior	Ector. en the Col Not	TCM harne
2. Discon 3. Check TCM Connector F18 Is the checc YES >> NO >> 9.CHECK 1. Discon 2. Turn ig	harness con harness con Terr 6 k result no > GO TO 9 > Repair or R POSITI nect the tr pnition swit	switch OFF CM connect uity betweet nector ninal 2 4 5 7 rmal? replace th ON SW CII ansmissior ch ON.	Con ctor. en the Con Not ne malfu RCUIT	TCM harne ntinuity existed unctioning (PART 2) ion switch c
2. Discon 3. Check TCM Connector F18 s the checc YES >> NO >> 9.CHECK 1. Discon 2. Turn ig	harness con harness con Terr 6 k result no > GO TO 9 > Repair or R POSITI nect the tr pnition swit	switch OFF CM connect uity betweet nector ninal 2 4 5 7 rmal? replace th ON SW CII ansmissior ch ON.	Con ctor. en the Con Not ne malfu RCUIT	TCM harne

TCM harnes	ss connector	Ground	Voltage	
Connector	Terminal	Crodina	Voltage	
F18	6	Ground	Approx. 0 V	

Is the check result normal?

YES >> GO TO 12.

NO >> Repair or replace the malfunctioning parts.

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F11A]

# 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	Continuity		
Connector	Terr	ninal	Continuity
		4	
F18	2	5	Not existed
	Z	6	NOL EXISTED
		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 harnes	ss connector	Ground	Voltage
Connector	Terminal	Ciouna	voltage
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:000000006514123

# 1.CHECK TRANSMISSION RANGE SWITCH

Check the continuity between the transmission range switch connector terminals.

Transmission range switch		Condition	Continuity	
Terminal		Condition		
1	2	Manual lever: "P" and "N" positions	Existed	
1	Z	Other than the above	Not existed	

# **P0705 TRANSMISSION RANGE SWITCH A**

#### < DTC/CIRCUIT DIAGNOSIS >

Transmission range switch		Condition	Continuity
Terr	minal	Condition	Continuity
	4	Manual lever: "P" position	Existed
	4	Other than the above	Not existed
	5	Manual lever: "R" position	Existed
	5	Other than the above	Not existed
3	6	Manual lever: "N position	Existed
5		Other than the above	Not existed
		Manual lever: "D" position	Existed
	1	Other than the above	Not existed
	8	Manual lever: "L" position	Existed
	0	Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

F NO >> There is a malfunction of the transmission range switch. Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

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[CVT: RE0F11A]

< DTC/CIRCUIT DIAGNOSIS >

# P0706 TRANSMISSION RANGE SENSOR A

# **DTC Logic**

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0706	Transmission Range Sensor A Circuit Range/Performance	<ul> <li>All range signals stay OFF continuously for 30 seconds under the following diagnosis condition 1 and 2:</li> <li>Diagnosis condition 1 (continued for 30 seconds or more)</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> <li>Diagnosis condition 2 (continued for 2 seconds or more)</li> <li>Vehicle speed: Less than 3 km/h (2 MPH)</li> <li>Accelerator pedal position: 0.6/8 or less</li> <li>Idle switch: ON</li> <li>Stop lamp switch: ON</li> </ul>	<ul> <li>Harness or connector (Open circuit between ignition switch and transmission range switch/open circuit between transmission range switch and TCM)</li> <li>Transmission range switch</li> <li>Control cable</li> </ul>

### 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.)

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4. Check the first trip DTC.

Is "P0706" detected?

YES >> Go to <u>TM-400. "Diagnosis Procedure"</u>. NO >> INSPECTION END

### Diagnosis Procedure

**1.**ADJUSTMENT OF CONTROL CABLE

Adjust the control cable. Refer to TM-383, "Inspection and Adjustment".

#### >> GO TO 2.

### 2. PERFORM DTC CONFIRMATION PROCEDURE

(B)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 <u>TM-400, "DTC Logic"</u>.

Is "P0706" detected?

# [CVT: RE0F11A]

INFOID:000000006487653

INFOID:000000006487654

# P0706 TRANSMISSION RANGE SENSOR A

< DTC/CIR	CUIT DIAGI	NOSIS >					[CVT: RE0F11A]	
•	INSPECTIC							
3.CHECK	POWER CIF	RCUIT						A
<ol> <li>Disconr</li> <li>Turn igr</li> </ol>	nition switch	smission rar ON.	0		ch harness o	connector and b	ody ground.	В
	n range switch			_				С
		Ground	Voltage					
Connector	Terminal		40 40 1					ΤN
F23	3	Ground	10 – 16 V	_				
NO >>	GO TO 4. GO TO 7.		ANSMISSI	ON RANGE	SWITCH AN	ND TCM (PART	1)	E
<ol> <li>Disconr</li> <li>Check to connect</li> </ol>	the continuit tor.	A connector.	he transmis	ssion range	switch harn	ess connector a	and the TCM harness	F
	range switch connector	TCM harnes	s connector	Continuity				Н
Connector	Terminal	Connector	Terminal		_			
	4		7		_			
	5		6					
F23	6	F18	5	Existed				
	7		4					J
	8		2		_			
YES >> NO >>	•	place the m			SWITCH AN	ND TCM (PART	2)	ł
Check the c tor.	ontinuity bet	ween the tra	nsmission r	ange switch	harness cor	nnector and the	TCM harness connec-	ľ
Transmission harness o	range switch connector	Ground	Continuity					
Connector	Terminal							Ν
	4							
	5							
F23	6	Ground	Not existed					C
	7							
	8							F
YES >> NO >>	•	place the m		g parts.				
O.CHECK	TRANSMISS	SION RANG	E SWITCH					

Check the transmission range switch. Refer to <u>TM-402</u>, "Component Inspection (Transmission Range <u>Switch)</u>".

# **P0706 TRANSMISSION RANGE SENSOR A**

< DTC/CIRCUIT DIAGNOSIS >

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 har	ness connector	Transmissior harness	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.

#### old B.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 har	ness connector	Ground	Continuity
Connector	Terminal	Oround	Continuity
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 <u>PG-15</u>, "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 <u>GI-42, "Intermittent Incident"</u>.

NO >> Repair or replace the malfunctioning parts.

### Component Inspection (Transmission Range Switch)

INFOID:000000006514124

**1.**CHECK TRANSMISSION RANGE SWITCH

Check the continuity between the transmission range switch connector terminals.

Transmission range switch		Condition	Continuity	
Terminal		Condition		
1	2	Manual lever: "P" and "N" positions	Existed	
I	2	Other than the above	Not existed	

# P0706 TRANSMISSION RANGE SENSOR A

#### < DTC/CIRCUIT DIAGNOSIS >

Transmission range switch		Condition	Continuity	
Terminal		Condition	Continuity	
	4	Manual lever: "P" position	Existed	
	4	Other than the above	Not existed	
	5	Manual lever: "R" position	Existed	
	5	Other than the above	Not existed	
3	6	Manual lever: "N position	Existed	
3	0	Other than the above	Not existed	
	7	Manual lever: "D" position	Existed	
	/	Other than the above	Not existed	
	8	Manual lever: "L" position	Existed	
	0	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 <u>TM-508, "Removal and Installation"</u>.

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[CVT: RE0F11A]

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### **P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A**

< DTC/CIRCUIT DIAGNOSIS >

# P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

# DTC Logic

INFOID:000000006487656

[CVT: RE0F11A]

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0711	Transmission Fluid Tempera- ture Sensor A Circuit Range/ Performance	<ul> <li>Under the following diagnosis conditions, CVT fluid temperature recognized by TCM does not change for 10 minutes or more in a temperature range.</li> <li>Diagnosis condition</li> <li>Selector lever: "D" position</li> <li>Vehicle speed: 10 km/h (7 MPH) or more</li> <li>Engine speed: 450 rpm or more</li> <li>Accelerator pedal position: 1.0/8 or more</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> <li>CVT fluid temperature: Less than 10°C NOTE:</li> <li>Every time the CVT fluid temperature increases, reset the detection time and start the diagnosis again.</li> </ul>	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 <u>TM-419</u>, "Diagnosis Procedure". NO >> INSPECTION END

### Diagnosis Procedure

INFOID:000000006487657

# 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 <u>TM-405</u>, "Component Inspection (CVT Fluid Temperature Sensor)".

#### Is the inspection result normal?

- YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.
- NO >> Repair or replace the malfunctioning parts.

# TM-404

### TM-405

#### P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A IIT DIAGNOSIS > [CVT: RE0F11A]

< DTC/CIRCUIT DIAGNOSIS >

# Component Inspection (CVT Fluid Temperature Sensor)

# 1.CHECK CVT FLUID TEMPERATURE SENSOR

Check resistance between the CVT unit connector terminals.

CVT unit connector Terminal		Condition	Resistance
		Condition	Resistance
		CVT fluid temperature: 20°C (68°C)	Approx. 6.5 k $\Omega$
4	4 25	CVT fluid temperature: 50°C (122°C)	Approx. 2.2 kΩ
		CVT fluid temperature: 80°C (176°C)	Approx. 0.87 k $\Omega$

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 <u>TM-508</u>, "<u>Removal and Installation</u>".

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INFOID:000000006487658

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### **P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A**

< DTC/CIRCUIT DIAGNOSIS >

# P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

# DTC Logic

INFOID:000000006487659

[CVT: RE0F11A]

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0712	Transmission Fluid Tempera- ture Sensor A Circuit Low	<ul> <li>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:</li> <li>Diagnosis conditions</li> <li>Ignition switch: ON</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	<ul> <li>Harness or connector (CVT fluid temperature sensor circuit is shorted to ground)</li> <li>CVT fluid temperature sensor</li> </ul>

### 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

# 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 harnes	ss connector	Ground	Continuity
Connector	Connector Terminal		Continuity
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 <u>TM-406</u>, "Component Inspection (CVT Fluid Temperature <u>Sensor)</u>".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.

NO >> Repair or replace the malfunctioning parts.

```
Component Inspection (CVT Fluid Temperature Sensor)
```

INFOID:000000006626145

INFOID:00000006487660

**1.**CHECK CVT FLUID TEMPERATURE SENSOR

Check resistance between the CVT unit connector terminals.

# TM-406

# P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

#### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F11A]

CVT unit connector Terminal		Condition	Resistance
	25	CVT fluid temperature: 20°C (68°C)	Approx. 6.5 kΩ
4		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 <u>TM-508</u>, "<u>Removal and Installation</u>".

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### **P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A**

< DTC/CIRCUIT DIAGNOSIS >

# P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

# DTC Logic

INFOID:000000006487662

[CVT: RE0F11A]

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0713	Transmission Fluid Tempera- ture Sensor A Circuit High	The CVT fluid temperature identified by the TCM is $-40^{\circ}$ C ( $-40^{\circ}$ 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 $\leq$ TCM power supply voltage $\leq$ 16 V	<ul> <li>Harness or connector (CVT fluid temperature sensor circuit is open or shorted to power supply)</li> <li>CVT fluid temperature sensor</li> </ul>

### 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

# **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 harnes	ss connector	CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F18	12	F24	4	Existed
1 10	11	124	25	LXISIEU

### 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.

### TM-408

INFOID:000000006487663

# P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

#### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F11A]

TCM ha					
	rness connect	tor			
Connecto	or Termir	nal Ground	Voltage		
F18	12	Ground	Approx. 0 V		
the insp	ection resul	It normal?			
	> GO TO 3				
	•	replace malfuncti	• •		
		ID TEMPERATUR			
	CVT fluid	temperature sens	or.Refer to <u>T</u>	M-409, "Compone	nt Inspection (CVT Fluid Temperature
<u>ensor)"</u> .	action room	lt normal?			
	ection results		Refer to GL4	2, "Intermittent Inc	ident"
		replace the malfu			ident.
	•	•	• •	rature Sensor)	
,ompoi			idid tempe		INFOID:00000006626146
.CHEC	K CVT FLUI	ID TEMPERATUR	E SENSOR		
heck res	istance betv	ween the CVT uni	t connector ter	rminals.	
CVT unit	connector	Conditi		Desistance	
Terr	Condition		חכ	Resistance	
	1	CVT fluid temperature	: 20°C (68°C)	Approx. 6.5 kΩ	
	05	CVT fluid temperature	· 50°C (122°C)		
4	25	CVT huid temperature	.500(1220)	Approx. 2.2 kΩ	
4		CVT fluid temperature		Approx. 2.2 kΩ Approx. 0.87 kΩ	
		CVT fluid temperature			
<u>s the insp</u> YES >	ection resu	CVT fluid temperature It normal? FION END	: 80°C (176°C)	Approx. 0.87 kΩ	
the insp YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
<u>s the insp</u> YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
the insp YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
<u>s the insp</u> YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
the insp YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
the insp YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
<u>s the insp</u> YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
the insp YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
the insp YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
the insp YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
the insp YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
the insp YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
the insp /ES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
<u>the insp</u> YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.
the insp YES >	ection resu > INSPECT > There is	CVT fluid temperature It normal? FION END a malfunction of	: 80°C (176°C) the CVT fluid	Approx. 0.87 kΩ	sor. Replace the transaxle assembly.

# P0715 INPUT SPEED SENSOR A

# DTC Logic

[CVT: RE0F11A]

INFOID:000000006487665

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
	Input/Turbine Speed Sensor A	<ul> <li>The primary speed sensor value is less than 150 rpm continuously for 5 seconds or more under the following diagnosis conditions:</li> <li>Diagnosis conditions</li> <li>Secondary pulley speed: 1,000 rpm or more</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	<ul> <li>Harness or connector (Primary speed sensor circuit is open</li> </ul>
P0715	Circuit	<ul> <li>The primary speed sensor value is 240 rpm or less continuously for 500 msec or more under the following diagnosis conditions:</li> <li>Diagnosis conditions</li> <li>10-msec-ago primary pulley speed: 1,000 rpm or more</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	or shorted) • Primary speed 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

- 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 <u>TM-410, "Diagnosis Procedure"</u>.

NO >> INSPECTION END

# **Diagnosis Procedure**

INFOID:000000006487666

# 1. CHECK PRIMARY SPEED SENSOR POWER CIRCUIT

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

	eed sensor connector	Ground	Voltage	
Connector	Terminal			
F55	3	Ground	10 – 16 V	

Is the check result normal?

			0715 IN		NSOR A [CVT: RE0F11A]	
< DTC/CIR		SNOSIS >				
-	GO TO 2.					ļ
				OUND CIRCUIT		1
Check conti	nuity betwe	en primary	speed ser	sor harness connecto	or terminal and ground.	
Primary spe	ood sonsor			-		E
harness c		Ground	Continuity			
Connector	Terminal	0.00.00	e en la la la			(
F55	1	Ground	Existed	-		
Is the check	result norn	nal?		-		
	GO TO 3. Repair or r	eplace the	malfunctio	ning parts.		Т
3.CHECK	CIRCUIT B	ETWEEN F	RIMARY	SPEED SENSOR AN	D TCM (PART 1)	
2. Disconr		M connecto		sensor harness conr	nector terminal and TCM harness connector	
Primary spe harness c		TCM harnes	s connector	Continuity		(
Connector	Terminal	Connector	Terminal			
F55	2	F18	35	Existed		
NO >>	GO TO 4. Repair or r CIRCUIT B	-		ning parts. SPEED SENSOR AN	D TCM (PART 1)	
Check conti	nuity betwe	en primary	speed ser	sor harness connecto	or terminal and ground.	
Primary spe	eed sensor			-		
harness c	connector	Ground	Continuity			
Connector	Terminal			_		
F55	2	Ground	Not existed	-		
Is the check		<u>nal?</u>				
	GO TO 5. Repair or r	eplace the	malfunctio	ning parts.		
<b>5.</b> CHECK <sup>-</sup>	-	-				
	t all of the o			ors.		
<ol> <li>Lift the signal</li> <li>Start the</li> </ol>						
TCM cc	onnector					
Connector	Terminal	Ground		Condition	Data	
CONTECTO	icitiillai				Approx. 1,100 Hz	
F18	35	Ground		· lever: "L" position speed: 20 km/h (12 MPH)		

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# P0715 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

Is the check result normal?

- YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.
- NO >> Replace the primary speed sensor. <u>TM-495, "Removal and Installation"</u>.

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

#### 1. Disconnect the IPDM E/R connector.

 Check continuity between IPDM E/R harness connector terminal and primary speed sensor harness connector terminal.

IPDM E/R har	ness 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 har	ness connector	Ground	Continuity	
Connector	Terminal	Ciouna	Continuity	
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 <u>PG-15</u>, "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.

### < DTC/CIRCUIT DIAGNOSIS >

# P0720 OUTPUT SPEED SENSOR

# DTC Logic

# DTC DETECTION LOGIC

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INFOID:000000006487667

[CVT: RE0F11A]

DTC	Trouble diagnosis name	DTC detection condition	Possible causes				
P0720	Output Speed Sensor Circuit	<ul> <li>The output speed sensor value is less than 150 rpm continuously for 5 seconds or more under the following diagnosis conditions:</li> <li>Diagnosis conditions</li> <li>Selector lever: "D", "L" or "R" position</li> <li>Auxiliary gearbox shifting is not in progress.</li> <li>When the "D" position switch, "L" position switch or "R" position switch is ON, the output speed has not experienced 250 rpm or more.</li> <li>After shifting the selector lever, the input speed has experienced less than 300 rpm.</li> <li>Secondary pulley speed: 1,500 rpm or more</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	<ul> <li>Harness or connector (Output speed sensor circuit is open or shorted)</li> <li>Output speed sensor</li> </ul>	C TM E F			
		<ul> <li>The output speed sensor value is 90 rpm or less continuously for 500 msec or more under the following diagnosis conditions:</li> <li>Diagnosis conditions</li> <li>10-msec-ago output speed: 730 rpm or more</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>		G H I			
CAUTION Be carefu 1.PREP	ul of the driving speed. ARATION BEFORE WORI	K		J			
	econds, then perform the	PROCEDURE" occurs just before, turn next test.	ignition switch OFF and wait for at	K			
•	>> GO TO 2. K DTC DETECTION			L			
2. Drive	the engine. the vehicle. tain the following condition	is for 10 seconds or more.		M			
	elector lever : "D" position hicle speed : 55 km/h (34	MPH) or more		Ν			
5. Chec <u>Is "P0720</u>	the vehicle. k the first trip DTC. <u>" detected?</u>			0			
	YES >> Go to <u>TM-413. "Diagnosis Procedure"</u> . NO >> INSPECTION END						
Diagnos	Diagnosis Procedure						
<b>1.</b> CHEC	K OUTPUT SPEED SENS	SOR POWER CIRCUIT					

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

# TM-413

A

# **P0720 OUTPUT SPEED SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

	sensor harness nector	Ground	Voltage	
Connector	Terminal			
F16	3	Ground	10 – 16 V	

Is the check result normal?

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

NU >> GUTU.

# 2. CHECK OUTPUT SPEED SENSOR GROUND CIRCUIT

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

	sensor harness nector	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.

	tput speed sensor harness connector		ss 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.

	sensor harness lector	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.

# **P0720 OUTPUT SPEED SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F11A]

TCM co	nnector	Crowned	0	ition	Deta	A
Connector	Terminal	Ground	Condi	luon	Data	
F18	24	Ground Ground • Selector lever: • Vehicle speed:			Approx. 200 Hz 2.5mSec/div	E
					5V/div JSDIA1904GB	TN
Is the check	result norm	al?				
NO >>	Replace the	e output spe	lent. Refer to <u>GI-4</u> ed sensor. Refer	to <u>TM-497, "I</u>	Exploded View".	E
<b>6.</b> CHECK	CIRCUIT BE	ETWEEN IP	DM E/R AND OU	TPUT SPEE	D SENSOR (PART 1)	
2. Check t				iess connecto	or terminal and the output speed sensor har-	F
IPDM E/R ha	irness connect	or Output sp	beed sensor harness connector	Continuity		(
Connector	Terminal	Connec	tor Terminal			
E15	57	F16	3	Existed		ŀ
NO >>	GO TO 7. Repair or re	place the m	alfunctioning part		D SENSOR (PART 2)	
					connector terminal and ground.	,
IPDM E/R ha	rness connect	or Ground	Continuity			ŀ
Connector	Terminal					
E15	57	Ground	Not existed			
<u>Is the check</u> YES >>	<u>result norm</u> GO TO 8.	<u>ial?</u>				
		place the m	alfunctioning part	ts.		
8.DETECT	ION OF MA	LFUNCTIO	N ITEMS			ľ
gram - IGN 10A fuse (	pen circuit o	or short circu <u>VER SUPPI</u>	<u>Y-"</u> .		and IPDM E/R. Refer to <u>PG-15, "Wiring Dia-</u> and Terminal Arrangement".	ľ
IPDM E/R  Is the check result normal?						
YES >>	Check inter	mittent incic	lent. Refer to <u>GI-4</u> alfunctioning part		ent Incident".	
						ŀ

# P0740 TORQUE CONVERTER

# DTC Logic

[CVT: RE0F11A]

INFOID:000000006487669

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0740	Torque Converter Clutch Cir- cuit/Open	<ul> <li>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:</li> <li>Diagnosis conditions</li> <li>Solenoid valve output current: 750 mA or more</li> <li>GND short diagnosis of the solenoid valve circuit is not satisfied.</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	<ul> <li>Harness or connector (Torque converter clutch solenoid valve circuit is open or shorted to pow- er supply)</li> <li>Torque converter clutch solenoid valve</li> </ul>

# 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 Vehicle speed : "D" position : 40 km/h (25 MPH) or more

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

Is "P0740" detected?

YES >> Go to <u>TM-417</u>, "Diagnosis Procedure".

# **P0740 TORQUE CONVERTER**

< DTC/CIRC	<u> </u>					
	CUIT DIAG	NOSIS >				[CVT: RE0F11A]
NO >>	INSPECTIO	ON END				
Diagnosis	Procedu	ure				INFOID:00000006487670
	יוסריווד סו	ETWEEN TCM		NIT		
	ition switch lect the TC	M connector ar	nd the CVT un	nit connector.		
3. Check t	he continui				al and the CVT	unit harness connector
terminal						
TCM harne:	ss connector	CVT unit harne	ess connector			
Connector	Terminal	Connector		Continuity		
F18	38	F24	6	Existed		
Is the check	result norn	nal?				
	GO TO 2.					
~	•	eplace the malf	0.			
Z.CHECK 1	FORQUE C	ONVERTER C	LUTCH SOLE	ENOID VALVE		
			enoid valve. R	efer to <u>TM-417, "C</u>	omponent Inspec	tion (Torque Converter
Clutch Soler Is the check		-				
			t Refer to GI	-42, "Intermittent Ir	ocident"	
		eplace the malf				
Compone	nt Inspec					
		ction (Torqu	e Converte	er Clutch Soler	noid Valve)	INFOID:000000006487671
1		· ·		er Clutch Soler	noid Valve)	INFOID:000000006487671
·		ONVERTER C	LUTCH SOLE	ENOID VALVE		INFOID:000000006487671
-		ONVERTER C	LUTCH SOLE			INFOID:000000006487671
Check the re		ONVERTER C	LUTCH SOLE	ENOID VALVE		INFOID:00000006487671
·		ONVERTER C	CLUTCH SOLE	ENOID VALVE		INFOID:000000006487671
Check the re	FORQUE C	ONVERTER C	LUTCH SOLE	ENOID VALVE otor terminal and gr		INFOID:000000006487671
Check the re	FORQUE C esistance be Ground	ONVERTER C	CLUTCH SOLE	ENOID VALVE etor terminal and gr Resistance		INFOID:00000006487671
Check the re	Ground	ONVERTER C etween the CV Cond	CLUTCH SOLE T unit connect dition ture: 20°C (68°F)	ENOID VALVE stor terminal and gr Resistance		INFOID:000000006487671
CVT unit connector Terminal	Ground Ground	ONVERTER C etween the CV Conc CVT fluid temperat	CLUTCH SOLE T unit connect dition ture: 20°C (68°F) ture: 50°C (122°F	ENOID VALVE etor terminal and gr Resistance ) Approx. 27 Ω F) Approx. 31 Ω		INFOID:00000006487671
Check the re	Ground	ONVERTER C etween the CV Conc CVT fluid temperat CVT fluid temperat	CLUTCH SOLE T unit connect dition ture: 20°C (68°F) ture: 50°C (122°F	ENOID VALVE etor terminal and gr Resistance ) Approx. 27 Ω F) Approx. 31 Ω		INFOID:000000006487671
Check the re CVT unit connector Terminal 6 Is the inspect YES >>	Ground Ground Ground Ground Ground	ONVERTER C etween the CV Cond CVT fluid temperat CVT fluid temperat CVT fluid temperat DN END	CLUTCH SOLE T unit connect dition ture: 20°C (68°F) ture: 50°C (122°F ture: 80°C (176°F	ENOID VALVE etor terminal and gr Resistance ) Approx. 27 Ω F) Approx. 31 Ω F) Approx. 35 Ω	ound. - - -	
Check the re CVT unit connector Terminal 6 Is the inspec YES >> NO >>	Ground Ground Ground Ction result INSPECTIO There is a	ONVERTER C etween the CV Cond CVT fluid temperat CVT fluid temperat CVT fluid temperat DN END malfunction c	CLUTCH SOLE T unit connect dition ture: 20°C (68°F) ture: 50°C (122°F ture: 80°C (176°F	ENOID VALVE etor terminal and gr Resistance Approx. 27 Ω F) Approx. 31 Ω F) Approx. 35 Ω	ound. - - -	INFOID:000000006487671
Check the re CVT unit connector Terminal 6 Is the inspec YES >> NO >>	Ground Ground Ground Ction result INSPECTIO There is a	ONVERTER C etween the CV Cond CVT fluid temperat CVT fluid temperat CVT fluid temperat DN END malfunction c	CLUTCH SOLE T unit connect dition ture: 20°C (68°F) ture: 50°C (122°F ture: 80°C (176°F	ENOID VALVE etor terminal and gr Resistance ) Approx. 27 Ω F) Approx. 31 Ω F) Approx. 35 Ω	ound. - - -	
Check the re CVT unit connector Terminal 6 Is the inspec YES >> NO >>	Ground Ground Ground Ction result INSPECTIO There is a	ONVERTER C etween the CV Cond CVT fluid temperat CVT fluid temperat CVT fluid temperat DN END malfunction c	CLUTCH SOLE T unit connect dition ture: 20°C (68°F) ture: 50°C (122°F ture: 80°C (176°F	ENOID VALVE etor terminal and gr Resistance Approx. 27 Ω F) Approx. 31 Ω F) Approx. 35 Ω	ound. - - -	

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# P0743 TORQUE CONVERTER

# DTC Logic

[CVT: RE0F11A]

INFOID:000000006487672

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0743	Torque Converter Clutch Cir- cuit Electrical	<ul> <li>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:</li> <li>Diagnosis conditions</li> <li>Solenoid valve output current: 750 mA or more</li> <li>GND short circuit diagnosis occurs in the solenoid valve drive circuit.</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	<ul> <li>Harness or connector (Torque converter clutch solenoid valve circuit is shorted to ground)</li> <li>Torque converter clutch solenoid valve</li> </ul>

# 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 Vehicle speed : "D" position : 40 km/h (25 MPH) or more

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

Is "P0743" detected?

YES >> Go to <u>TM-419</u>, "Diagnosis Procedure".

# **P0743 TORQUE CONVERTER**

2. Disconnect the TCM connector and the CVT unit connector.	< DTC/CIRCUIT D					[CVT: RE0F11A]
.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT         . Turn ignition switch OFF.         . Disconnect the TCM connector and the CVT unit connector.         . Check the continuity between TCM harness connector terminal and ground.         TCM harness connector       Ground       Continuity <u>Connector</u> Terminal       Ground       Continuity <u>F18</u> 38       Ground       Not existed         a the check result normal?       YES       >> GO TO 2.         NO       >> Repair or replace the malfunctioning parts.         .CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE         Check the torque converter clutch solenoid valve. Refer to TM-419. "Component Inspection (Torque Converter Nuch Solenoid Valve)".         at he 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)       secccccccccccccccccccccccccccccccccccc	NO >> INSPE	CTION END				
Turn ignition switch OFF.         Disconnect the TCM connector and the CVT unit connector.         Check the continuity between TCM harness connector terminal and ground.         TCM harness connector         Connector       Terminal         Ground       Continuity         F18       38       Ground         Not existed         S the check result normal?         YES       >> Repair or replace the malfunctioning parts.         C-HECK TORQUE CONVERTER CLUTCH SOLENOID VALVE         Check the torque converter clutch solenoid valve. Refer to TM-419. "Component Inspection (Torque Converter Clutch Solenoid Valve)".         a 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)       ####################################	Diagnosis Proc	edure				INFOID:00000006487673
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         TCM harness connector       Ground       Continuity         F18       38       Ground       Not existed         s 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)".         s 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)	<b>1</b> .CHECK CIRCUI	T BETWEEN	TCM AND CVT UNIT	-		
3.       Check the continuity between TCM harness connector terminal and ground.         TCM harness connector       Ground       Continuity         F18       38       Ground       Not existed         s 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)".         s 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)       ####################################						
Connector         Terminal         Ground         Continuity           F18         38         Ground         Not existed           sthe 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)".           s 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)         neonconcentration           A.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE         Not existent           Check the resistance between the CVT unit connector terminal and ground.         Not existence           CVT unit         Ground         Condition         Resistance           6         Ground         CVT fluid temperature: 20°C (68°F)         Approx. 27 Ω           6         Ground         CVT fluid temperature: 20°C (68°F)         Approx. 31 Ω           6         Ground         CVT fluid temperature: 80°C (176°F)         Approx. 35 Ω           s the inspection result normal?         YES         >> INSPECT					nd ground.	
Connector         Terminal         Ground         Continuity           F18         38         Ground         Not existed           sthe 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)".           s 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)         neonconcentration           A.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE         Not existent           Check the resistance between the CVT unit connector terminal and ground.         Not existence           CVT unit         Ground         Condition         Resistance           6         Ground         CVT fluid temperature: 20°C (68°F)         Approx. 27 Ω           6         Ground         CVT fluid temperature: 20°C (68°F)         Approx. 31 Ω           6         Ground         CVT fluid temperature: 80°C (176°F)         Approx. 35 Ω           s the inspection result normal?         YES         >> INSPECT						
F18       38       Ground       Not existed         sthe 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)".         s 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)       ####################################		Ground	Continuity			
s 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 $\underline{M-419}$ . "Component Inspection (Torque Converter Clutch Solenoid Valve)".         s the check result normal?         YES       >> Check intermittent incident. Refer to $\underline{GI-42}$ . "Intermittent Incident".         NO       >> Repair or replace the malfunctioning parts.         Component Inspection (Torque Converter Clutch Solenoid Valve)       mecin.cocccccccccccccccccccccccccccccccccc			Not existed			
YES       >> GO TO 2. NO         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)".         s 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)       ####################################						
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)".         s 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)       ##FOLD.000000000000000000000000000000000000	YES >> GO TO	2.				
Check the torque converter clutch solenoid valve. Refer to TM-419. "Component Inspection (Torque Converter Clutch Solenoid Valve)".         s 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)       #FORECONCERERS         I.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE       #FORECONCERERS         Check the resistance between the CVT unit connector terminal and ground.       #Foreconceres         CVT unit       Ground       Condition         Ground       CVT fluid temperature: 20°C (68°F)       Approx. 27 Ω         6       Ground       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       \$\$\$	- '		• •			
Subch Solenoid Valve)".         as 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)       INFORMATION CONVERTER CLUTCH SOLENOID VALVE         CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE       Interminal and ground.         CVT unit       Ground       Condition         Terminal       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)         St the inspection result normal?       YES         YES       >> INSPECTION END         NO       >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	CHECK TORQL	IE CONVERTE	ER CLUTCH SOLEN	OID VALVE		
a 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)       INFORMATION CONVENTER CLUTCH SOLENOID VALVE         .CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE       Information Condition         .CHECK the resistance between the CVT unit connector terminal and ground.       Information Condition         CVT unit       Ground       Condition         6       Ground       CVT fluid temperature: 20°C (68°F)       Approx. 27 Ω         6       Ground       CVT fluid temperature: 50°C (122°F)       Approx. 31 Ω         CVT fluid temperature: 80°C (176°F)       Approx. 35 Ω         Sthe inspection result normal?       YES       >> INSPECTION END         NO       >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle		onverter clutch	solenoid valve. Refe	er to <u>TM-419, "(</u>	Component Insp	ection (Torque Converter
YES NO       >> Check intermittent incident. Refer to GI-42, "Intermittent Incident". NO       >> Repair or replace the malfunctioning parts.         Component Inspection (Torque Converter Clutch Solenoid Valve)       INFOLE-000000000000000000000000000000000000						
NO       >> Repair or replace the malfunctioning parts.         Component Inspection (Torque Converter Clutch Solenoid Valve)       INFORMATION CONVERTER CLUTCH SOLENOID VALVE         I.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE       Check the resistance between the CVT unit connector terminal and ground.         CVT unit connector       Ground       Condition         Resistance       Ground       Condition         Resistance       CVT fluid temperature: 20°C (68°F)       Approx. 27 Ω         6       Ground       CVT fluid temperature: 50°C (122°F)       Approx. 31 Ω         CVT fluid temperature: 80°C (176°F)       Approx. 35 Ω       Sthe inspection result normal?         YES       >> INSPECTION END       NO       >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle		<u>ve)"</u> .				
CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE         Check the resistance between the CVT unit connector terminal and ground.         CVT unit connector       Ground         CVT unit connector       Ground         CVT unit connector       Ground         CVT fluid temperature: 20°C (68°F)       Approx. 27 Ω         G       CVT fluid temperature: 50°C (122°F)         Approx. 31 Ω       CVT fluid temperature: 80°C (176°F)         S the inspection result normal?         YES       >> INSPECTION END         NO       >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	s the check result	<u>lve)"</u> . normal?			ncident"	
CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE         Check the resistance between the CVT unit connector terminal and ground.         CVT unit connector       Ground         CVT unit connector       Ground         CVT fluid temperature: 20°C (68°F)       Approx. 27 Ω         G       CVT fluid temperature: 50°C (122°F)         Approx. 31 Ω       CVT fluid temperature: 80°C (176°F)         S the inspection result normal?         YES       >> INSPECTION END         NO       >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	<u>s the check result i</u> YES >> Check	<u>lve)"</u> . <u>normal?</u> intermittent inc	cident. Refer to <u>GI-42</u>	2. "Intermittent I	ncident".	
CVT unit connector       Ground       Condition       Resistance         Terminal       Ground       Condition       Resistance         6       Ground       CVT fluid temperature: 20°C (68°F)       Approx. 27 Ω         6       Ground       CVT fluid temperature: 50°C (122°F)       Approx. 31 Ω         CVT fluid temperature: 80°C (176°F)       Approx. 35 Ω         s the inspection result normal?         YES       >> INSPECTION END         NO       >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	s the check result YES >> Check NO >> Repair	<u>lve)"</u> . <u>normal?</u> intermittent inc or replace the	cident. Refer to <u>GI-42</u> malfunctioning parts	2. "Intermittent I		INF0ID:00000006628363
CVT unit connector       Ground       Condition       Resistance         Terminal       CVT fluid temperature: 20°C (68°F)       Approx. 27 Ω         6       Ground       CVT fluid temperature: 50°C (122°F)       Approx. 31 Ω         CVT fluid temperature: 80°C (176°F)       Approx. 35 Ω         s the inspection result normal?         YES       >> INSPECTION END         NO       >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	<u>s the check result i</u> YES >> Check NO >> Repair Component Ins	<u>inermal?</u> intermittent ind or replace the pection (To	cident. Refer to <u>GI-42</u> malfunctioning parts prque Converter	2. "Intermittent I Clutch Sole		INFOID:00000006628363
connector       Ground       Condition       Resistance         Terminal       CVT fluid temperature: 20°C (68°F)       Approx. 27 Ω         6       Ground       CVT fluid temperature: 50°C (122°F)       Approx. 31 Ω         CVT fluid temperature: 80°C (176°F)       Approx. 35 Ω         s the inspection result normal?         YES       >> INSPECTION END         NO       >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	<u>s the check result i</u> YES >> Check NO >> Repair Component Ins 1.CHECK TORQU	ive)". hormal? intermittent ind or replace the pection (To JE CONVERTE	cident. Refer to <u>GI-42</u> malfunctioning parts prque Converter ER CLUTCH SOLEN	2. "Intermittent I Clutch Sole OID VALVE	noid Valve)	INFOID:00000006628363
Terminal       CVT fluid temperature: 20°C (68°F)       Approx. 27 Ω         6       Ground       CVT fluid temperature: 50°C (122°F)       Approx. 31 Ω         CVT fluid temperature: 80°C (176°F)       Approx. 35 Ω         s the inspection result normal?         YES       >> INSPECTION END         NO       >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	<u>s the check result i</u> YES >> Check NO >> Repair Component Ins 1.CHECK TORQU	ive)". hormal? intermittent ind or replace the pection (To JE CONVERTE	cident. Refer to <u>GI-42</u> malfunctioning parts prque Converter ER CLUTCH SOLEN	2. "Intermittent I Clutch Sole OID VALVE	noid Valve)	INFOID:000000006628363
6       Ground       CVT fluid temperature: 20°C (68°F)       Approx. 27 Ω         6       Ground       CVT fluid temperature: 50°C (122°F)       Approx. 31 Ω         CVT fluid temperature: 80°C (176°F)       Approx. 35 Ω         s the inspection result normal?         YES       >> INSPECTION END         NO       >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	s the check result of YES >> Check NO >> Repair Component Ins 1.CHECK TORQU Check the resistand	ive)". hormal? intermittent ind or replace the pection (To JE CONVERTE	cident. Refer to <u>GI-42</u> malfunctioning parts prque Converter ER CLUTCH SOLEN	2. "Intermittent I Clutch Sole OID VALVE	noid Valve)	INF0ID:000000006628363
6       Ground       CVT fluid temperature: 50°C (122°F)       Approx. 31 Ω         CVT fluid temperature: 80°C (176°F)       Approx. 35 Ω         s the inspection result normal?         YES       >> INSPECTION END         NO       >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	s the check result i         YES       >> Check         NO       >> Repair         Component Ins         I.CHECK TORQL         Check the resistand         CVT unit         connector         Ground	intermal? intermittent inc or replace the pection (To E CONVERTE ce between the	cident. Refer to <u>GI-42</u> malfunctioning parts orque Converter ER CLUTCH SOLEN e CVT unit connector	2. "Intermittent I Clutch Sole OID VALVE terminal and g	noid Valve)	INFOID:00000006628363
CVT fluid temperature: 80°C (176°F)       Approx. 35 Ω         s the inspection result normal?         YES       >> INSPECTION END         NO       >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	s the check result of YES >> Check NO >> Repair Component Ins 1.CHECK TORQL Check the resistand CVT unit connector Ground	intermittent ind or replace the pection (To E CONVERTE between the	cident. Refer to <u>GI-42</u> malfunctioning parts orque Converter ER CLUTCH SOLEN e CVT unit connector Condition	2. "Intermittent I Clutch Sole OID VALVE terminal and g Resistance	noid Valve)	INFOID:00000006628363
s the inspection result normal? YES >> INSPECTION END NO >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	s the check result of YES >> Check NO >> Repair Component Ins 1.CHECK TORQL Check the resistand CVT unit connector Terminal	intermittent inc or replace the pection (To E CONVERTE be between the CVT fluid term	cident. Refer to <u>GI-42</u> malfunctioning parts orque Converter ER CLUTCH SOLEN e CVT unit connector Condition	2. "Intermittent I Clutch Sole OID VALVE terminal and g Resistance Approx. 27 Ω	noid Valve)	INFOID:000000006628363
YES >> INSPECTION END NO >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	s the check result i         YES       >> Check         NO       >> Repair         Component Ins         I.CHECK TORQL         Check the resistand         CVT unit connector         Terminal	Ive)". normal? intermittent inc or replace the pection (To IE CONVERTE ce between the CVT fluid tem CVT fluid tem	cident. Refer to <u>GI-42</u> malfunctioning parts orque Converter ER CLUTCH SOLEN e CVT unit connector Condition perature: 20°C (68°F) perature: 50°C (122°F)	2. "Intermittent I Clutch Sole OID VALVE terminal and g Resistance Approx. 27 Ω Approx. 31 Ω	noid Valve)	INFOID:00000006628363
NO >> There is a malfunction of the torque converter clutch solenoid valve. Replace the transaxle	s the check result i         YES       >> Check         NO       >> Repair         Component Ins         1.CHECK TORQL         Check the resistand         CVT unit connector         Terminal         6       Ground	Ive)". normal? intermittent inc or replace the pection (To IE CONVERTE ce between the CVT fluid tem CVT fluid tem CVT fluid tem	cident. Refer to <u>GI-42</u> malfunctioning parts orque Converter ER CLUTCH SOLEN e CVT unit connector Condition perature: 20°C (68°F) perature: 50°C (122°F)	2. "Intermittent I Clutch Sole OID VALVE terminal and g Resistance Approx. 27 Ω Approx. 31 Ω	noid Valve)	INFOID:00000006628363
assembly. Refer to <u>TM-508, "Removal and Installation"</u> .	s the check result i         YES       >> Check         NO       >> Repair         Component Ins         1.CHECK TORQUE         Check the resistance         CVT unit connector         Terminal         6       Grounder         s the inspection resistance	Ive)". normal? intermittent inc or replace the pection (To IE CONVERTE ce between the CVT fluid tem CVT fluid tem CVT fluid tem Sult normal?	cident. Refer to <u>GI-42</u> malfunctioning parts orque Converter ER CLUTCH SOLEN e CVT unit connector Condition perature: 20°C (68°F) perature: 50°C (122°F)	2. "Intermittent I Clutch Sole OID VALVE terminal and g Resistance Approx. 27 Ω Approx. 31 Ω	noid Valve)	INFOID:00000006628363
	s the check result i         YES       >> Check         NO       >> Repair         Component Ins         1.CHECK TORQUE         Check the resistance         CVT unit connector         Terminal         6         Ground         s the inspection resistance         YES         NO         YES         NO         NO         S The resistance	Ive)". normal? intermittent inc or replace the pection (To E CONVERTE be between the CVT fluid tem CVT fluid tem Sult normal? CTION END is a malfuncti	cident. Refer to <u>GI-42</u> malfunctioning parts orque Converter of ER CLUTCH SOLEN e CVT unit connector Condition perature: 20°C (68°F) perature: 50°C (122°F) perature: 80°C (176°F)	2. "Intermittent I Clutch Sole OID VALVE terminal and g Resistance Approx. 27 Ω Approx. 31 Ω Approx. 35 Ω	noid Valve) round.	
	s the check result i         YES       >> Check         NO       >> Repair         Component Ins         1.CHECK TORQUE         Check the resistance         CVT unit connector         Terminal         6         Ground         s the inspection resistance         YES         NO         YES         NO         NO         S The resistance	Ive)". normal? intermittent inc or replace the pection (To E CONVERTE be between the CVT fluid tem CVT fluid tem Sult normal? CTION END is a malfuncti	cident. Refer to <u>GI-42</u> malfunctioning parts orque Converter of ER CLUTCH SOLEN e CVT unit connector Condition perature: 20°C (68°F) perature: 50°C (122°F) perature: 80°C (176°F)	2. "Intermittent I Clutch Sole OID VALVE terminal and g Resistance Approx. 27 Ω Approx. 31 Ω Approx. 35 Ω	noid Valve) round.	
	s the check result i         YES       >> Check         NO       >> Repair         Component Ins         1.CHECK TORQL         Check the resistand         CVT unit connector         Terminal         6       Ground         s the inspection resistand         YES       >> INSPE         NO       >> There	Ive)". normal? intermittent inc or replace the pection (To E CONVERTE be between the CVT fluid tem CVT fluid tem Sult normal? CTION END is a malfuncti	cident. Refer to <u>GI-42</u> malfunctioning parts orque Converter of ER CLUTCH SOLEN e CVT unit connector Condition perature: 20°C (68°F) perature: 50°C (122°F) perature: 80°C (176°F)	2. "Intermittent I Clutch Sole OID VALVE terminal and g Resistance Approx. 27 Ω Approx. 31 Ω Approx. 35 Ω	noid Valve) round.	

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# P0744 TORQUE CONVERTER

# DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0744	Torque converter clutch circuit intermittent	<ul> <li>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:</li> <li>Diagnosis conditions</li> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1.0/8 or more</li> <li>Vehicle speed: 450 rpm or more</li> <li>CVT fluid temperature: 20°C (68°F) ≤ CVT fluid temperature ≤ 180°C (356°F)</li> <li>Lockup command is being given (except for slip lockup).</li> <li>LU PRS: More than 0.2 MPa</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	<ul> <li>Torque converter clutch solenoid valve</li> <li>Control valve assembly</li> <li>Torque converter</li> </ul>

### 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

INFOID:000000006487676

# **P0744 TORQUE CONVERTER**

		[CVT: RE0F11A]
< DTC/CIRCUIT DIAGNOSIS >		
Accelerator pedal position : 1.0/8 or mor		
	MPH) or more	
<ol> <li>Stop the vehicle.</li> <li>Check the first trip DTC.</li> </ol>		
s "P0744" detected?		
YES >> Go to <u>TM-421, "Diagnosis Proce</u>	edure".	
NO >> INSPECTION END	<u>saaro</u> .	
Diagnosis Procedure		INFOID:00000006487677
1. CHECK LINE PRESSURE		
Perform the line pressure test. Refer to TM-	382. "Work Procedure".	
s the inspection result normal?		
YES >> GO TO 2.		
NO >> Repair or replace the malfunction		
2. CHECK TORQUE CONVERTER CLUTC	H SOLENOID VALVE	
1. Turn ignition switch OFF.		
2. Disconnect the CVT unit connector.		
<ol> <li>Check the torque converter clutch soler verter Clutch Solenoid Valve)".</li> </ol>	noid value. Refer to $\underline{TM-4}$	21. "Component Inspection (Torque Con-
Is the inspection result normal?		
YES >> Check intermittent incident. Ref	er to GI-42 "Intermittent	Incident"
NO >> Repair or replace the malfunction		<u>includint</u> .
Component Inspection (Torque Co	nverter Clutch Sole	enoid Valve)
<b>1.</b> CHECK TORQUE CONVERTER CLUTC	H SOLENOID VALVE	
Check the resistance between the CVT unit	connector terminal and g	ground.
CVT unit		
connector Ground Condition	Resistance	
Terminal CVT fluid temperature: 20	°C (69°E)	
6 Ground CVT fluid temperature: 50	· ,	
CVT fluid temperature: 80	°C (176°F) Approx. 35 Ω	_
Is the inspection result normal?		
YES >> INSPECTION END	torque converter clutch	a solenoid value. Replace the transavle
NO >> There is a malfunction of the		n solenoid valve. Replace the transaxle
		n solenoid valve. Replace the transaxle
NO >> There is a malfunction of the		

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### **P0746 PRESSURE CONTROL SOLENOID A**

< DTC/CIRCUIT DIAGNOSIS >

# P0746 PRESSURE CONTROL SOLENOID A

# **DTC** Logic

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0746	Pressure Control Solenoid A Performance/Stuck Off	<ul> <li>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:</li> <li>Diagnosis conditions</li> <li>After the ignition switch is ON, 500 msec or more have passed.</li> <li>Selector lever: Other than "P" and "N" positions</li> <li>Idle is not being detected.</li> <li>Engine speed: 600 rpm or more</li> <li>Primary pulley speed: 500 rpm or more</li> <li>Acceleration/deceleration speed: -0.05 G or more</li> <li>The primary pulley speed experienced 306 rpm or more at least once.</li> <li>The output speed is 107 rpm or less or the secondary pulley speed exceeds 61 rpm.</li> <li>Detection condition A</li> <li>Status with the shifting ratio of the primary pulley speed/secondary pulley ratio exceeding 2.55 is 200 msec or more continuously.</li> <li>Detection condition B</li> <li>Status with the shifting ratio of the primary pulley speed/secondary pulley ratio exceeding 3.35 is 100 msec or more continuously.</li> </ul>	<ul> <li>Line pressure solenoid valve</li> <li>Control valve assembly</li> </ul>

#### NOTE:

DC stands for "DRIVING CYCLE" and indicates a series of driving cycle of "Ignition switch OFF  $\rightarrow$  ON  $\rightarrow$  driving  $\rightarrow$  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

### TM-422

INFOID:000000006628109

# **P0746 PRESSURE CONTROL SOLENOID A**

< DTC/CIR		GNOSIS >	ITROL SOLEN	[CVT: RE0F11A]	
<ol> <li>Stop th</li> <li>Check</li> </ol>	e vehicle. the first trip				А
<u>ls "P0746"</u>					
	Go to <u>TM-</u> INSPECTI	<u>423, "Diagnosis Procedure"</u> . ON END			В
Diagnosi	s Proced	ure		INFOID:000000006628110	
1.снеск	LINE PRES	SSURE SOLENOID VALVE		,	С
<ol> <li>Discon</li> <li>Check <u>Valve)</u>"</li> </ol>	the line pre	/T unit connector. ssure solenoid valve. Refer to <u>TM-</u> /	423, "Component Ir	nspection (Line Pressure Solenoid	M
	• GO TO 2.	normal?			Е
2.снеск	LINE PRES	SSURE			F
	•	ure test. Refer to <u>TM-382, "Work P</u>	rocedure".		
	Check interview	<u>normal?</u> ermittent incident. Refer to <u>GI-42. "I</u> replace the malfunction items.	ntermittent Inciden	<u>it"</u> .	G
_		ection (Line Pressure Solen	oid Valve)		
	•	SSURE SOLENOID VALVE		INFOID:00000006628111	Η
Check the	resistance b	between the CVT unit connector ter	minal and ground.		
CVT unit connector	Ground	Condition	Resistance		.1
Terminal					0
		CVT fluid temperature: 20°C (68°F)	Approx. 6.1 $\Omega$		
2	Ground	CVT fluid temperature: 50°C (122°F)	Approx. 6.9 Ω		K
		CVT fluid temperature: 80°C (176°F)	Approx. 7.7 $\Omega$		
YES >>	<ul> <li>ction result</li> <li>INSPECTI</li> <li>There is a</li> </ul>		blenoid valve. Repla	ace the transaxle assembly. Refer	L
	to <u>TM-508</u>	, "Removal and Installation".		I	M
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### P0846 TRANSMISSION FLUID PRESSURE SEN/SW B

< DTC/CIRCUIT DIAGNOSIS >

# P0846 TRANSMISSION FLUID PRESSURE SEN/SW B

# **DTC** Logic

INFOID:000000006628366

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0846	Transmission Fluid Pressure Sensor/Switch B Circuit Range/Performance	<ul> <li>The detection conditions continuously for 5 seconds or more under the following diagnosis conditions:</li> <li>Diagnosis conditions</li> <li>Selector lever: "D" position</li> <li>The primary pulley speed experienced 306 rpm or more and the secondary pulley speed experienced 230 rpm or more at least once.</li> <li>Stop lamp switch: OFF</li> <li>Wheel spin is not being detected.</li> <li>The rate of change in pulley ratio: Between -0.09 and +0.09 inclusive</li> <li>TCM power supply voltage ≤ 16 V</li> <li>Solenoid valve output current: 750 mA or more</li> <li>GND short diagnosis of the solenoid valve circuit is not satisfied.</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> <li>Solenoid valve output current: 750 mA or more</li> <li>GND short diagnosis of the solenoid valve circuit is not satisfied.</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> <li>Detection conditions</li> <li>After the value of "Actual secondary pressure – Target secondary pressure" exceeds 0.675 MPa:</li> <li>The rate of change in vehicle speed [km/h (MPH)]: Between -49 (-30) and +49 (+30) inclusive</li> <li>The rate of change in accelerator pedal angle: Between -1.3/8 and +1.3/8 inclusive</li> </ul>	<ul> <li>Secondary pressure sensor</li> <li>Control valve assembly</li> </ul>

### 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

# TM-424

### P0846 TRANSMISSION FLUID PRESSURE SEN/SW B DIAGNOSIS > [CVT: RE0F11A]

# < DTC/CIRCUIT DIAGNOSIS >

# Diagnosis Procedure

INFOID:000000006628367

# 1.CHECK TCM INPUT SIGNAL

- 1. Start the engine.
- 2. Check the voltage between TCM connector terminal and ground.

TCM co	TCM connector		Condition	Voltage	
Connector	Terminal	Ground	Condition	Voltage	
F18	16	Ground	<ul><li>Selector lever: "N" position</li><li>Idle speed</li></ul>	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 <u>TM-508</u>, "<u>Removal and Installation</u>".

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# P0847 TRANSMISSION FLUID PRESSURE SEN/SW B

< DTC/CIRCUIT DIAGNOSIS >

# P0847 TRANSMISSION FLUID PRESSURE SEN/SW B

# DTC Logic

INFOID:000000006487681

[CVT: RE0F11A]

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0847	Transmission Fluid Pressure Sensor/Switch B Circuit Low	<ul> <li>The secondary pressure sensor voltage is 0.09 V or less continuously for 5 seconds or more under the following diagnosis conditions:</li> <li>Diagnosis conditions</li> <li>CVT fluid temperature: -20°C (-4°F) or more</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	<ul> <li>Harness or connector (Secondary pressure sensor circuit is open or shorted to ground)</li> <li>Secondary pressure sensor</li> <li>Control valve assembly</li> </ul>

### 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  $: -19^{\circ}C (-2.2^{\circ}F)$  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  $-20^{\circ}C$  ( $-4^{\circ}F$ ) 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 <u>TM-426, "Diagnosis Procedure"</u>. NO >> INSPECTION END

# Diagnosis Procedure

INFOID:000000006487682

# **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.
- 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	Connector Terminal		
	15		18		
F18	16	F24	14	Existed	
	26		16		

NO       >> Repair or replace the malfunctioning parts.         .CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (PART 2)         heek the continuity between the TCM harness connector terminals and ground.         TCM harness connector       Ground         Connector       Terminal         15       Ground         16       Ground         Not existed         the inspection result normal?         YES       >> GO TO 3.         NO       >> Repair or replace the malfunctioning parts.         .CHECK TCM INPUT SIGNALS         Connect all connectors removed.         Start the engine.         Check the voltage between TCM connector terminal and ground.         TCM connector       Ground         Connector       Terminal         16       Ground       Condition         Voltage       • Selector lever: "N" position         F18       16       Ground       • Selector lever: "N" position         • Idle speed       • Idle speed       Approx. 0.88 – 0.92 V         the inspection result normal?       Yes       >> Check intermittent incident. Refer to GI-42. "Intermittent Incident".				NSMISSION FLUID PR	ESSURE SEN/SV	
YES       >> GO TO 2.         10       >> Repair or replace the malfunctioning parts.         .CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (PART 2)         neck the continuity between the TCM harness connector terminals and ground.         TCM hamess connector       Ground       Continuity         F18       15       Ground       Continuity         F18       15       Ground       Not existed         the inspection result normal?       KES       >> GO TO 3.         VO       >> Repair or replace the malfunctioning parts.         .CHECK TCM INPUT SIGNALS       Connect all connectors removed.         Start the engine.       Connect or Terminal       Ground         Connector       Ground       Condition       Voltage         Connector       Ground       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       • Selector lever: "N" pos	s the insper					[CVT: RE0F11A]
NO       >> Repair or replace the malfunctioning parts.         .CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (PART 2)         heck the continuity between the TCM harness connector terminals and ground.         TCM harness connector       Ground       Continuity         F18       15       Ground       Not existed         the inspection result normal?       TCS       >> GO TO 3.         NO       >> Repair or replace the malfunctioning parts.          .CHECK TCM INPUT SIGNALS       Connector semoved.         Start the engine.       Check the voltage between TCM connector terminal and ground.         TCM connector       Ground       Condition         Voltage       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       • Selector lever: "N" position       Approx. 0.88 – 0.9			ormal?			
CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (PART 2)         neck the continuity between the TCM harness connector terminals and ground.         TCM harness connector       Ground         Connector       Terminal         f18       15         f6       Ground         Not existed         the inspection result normal?         YES       > GO TO 3.         NO       >> Repair or replace the malfunctioning parts.         .CHECK TCM INPUT SIGNALS         Connect all connectors removed.         Start the engine.         Check the voltage between TCM connector terminal and ground.         TCM connector       Ground         Connector       Terminal         f18       16         Ground       Selector lever: "N" position         Approx. 0.88 – 0.92 V       the inspection result normal?         (ES       >> Check intermittent incident. Refer to GI-42. "Intermittent Incident".         VO       >> There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to			nlaca tha	malfunctioning parts		
TCM harness connector       Ground       Continuity         Connector       Terminal       Ground       Continuity         F18       15       Ground       Not existed         the inspection result normal?       Yes       >> GO TO 3.         VO       >> Repair or replace the malfunctioning parts.         .CHECK TCM INPUT SIGNALS       Connector terminal and ground.         Connect all connectors removed.       Start the engine.         Check the voltage between TCM connector terminal and ground.       Voltage         TCM connector       Ground       • Selector lever: "N" position         F18       16       Ground       • Selector lever: "N" position         F18       16       Ground       • Selector lever: "N" position         Keense       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       * Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       * Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       * Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       * Selector lever: "N" position       Approx. 0.88 – 0.92 V         Xet in the inspection result normal?       * Selector lever: "N" position<			•	•	N N	
TCM harness connector       Ground       Continuity         Connector       Terminal       Ground       Not existed         F18       15       Ground       Not existed         the inspection result normal?       Yes       >> GO TO 3.         YO       >> Repair or replace the malfunctioning parts.         .CHECK TCM INPUT SIGNALS         Connect all connectors removed.         Start the engine.         Check the voltage between TCM connector terminal and ground.         TCM connector       Ground         Connector       Terminal         F18       16         Ground       Selector lever: "N" position         Approx. 0.88 – 0.92 V         the inspection result normal?         /ES       >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".         MO       >> There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to						
ConnectorTerminalGroundContinuityF1815GroundNot existed1616GroundNot existedthe inspection result normal?/ES>> GO TO 3.NO>> Repair or replace the malfunctioning partsCHECK TCM INPUT SIGNALSConnect all connectors removed.Start the engine.Check the voltage between TCM connector terminal and ground.TCM connectorGroundConditionVoltageF1816Ground• Selector lever: "N" position • Idle speedF1816Ground• Selector lever: "N" position • Idle speedthe inspection result normal?/ES>> Check intermittent incident. Refer to GI-42, "Intermittent Incident".NO>> There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to	Check the c	ontinuity betw	ween the	TCM harness connector term	nals and ground.	
ConnectorTerminalGroundContinuityF1815GroundNot existed1616GroundNot existedthe inspection result normal?/ES>> GO TO 3.NO>> Repair or replace the malfunctioning partsCHECK TCM INPUT SIGNALSConnect all connectors removed.Start the engine.Check the voltage between TCM connector terminal and ground.TCM connectorGroundConditionVoltageF1816Ground• Selector lever: "N" position • Idle speedF1816Ground• Selector lever: "N" position • Idle speedthe inspection result normal?/ES>> Check intermittent incident. Refer to GI-42. "Intermittent Incident".NO>> There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to	TOM					
F1815GroundNot existedthe inspection result normal?(ES>> GO TO 3. $30$ >> Repair or replace the malfunctioning partsCHECK TCM INPUT SIGNALSConnect all connectors removed.Start the engine.Check the voltage between TCM connector terminal and ground. $\overline{\text{TCM connector}}$ $\overline{\text{Ground}}$ $\overline{\text{Connector}}$ $\overline{\text{Terminal}}$ $F18$ 16 $Ground$ $\cdot$ Selector lever: "N" position $\cdot$ <t< td=""><td></td><td></td><td>Ground</td><td>Continuity</td><td></td><td></td></t<>			Ground	Continuity		
F18GroundNot existedthe inspection result normal?(ES >> GO TO 3.NO >> Repair or replace the malfunctioning partsCHECK TCM INPUT SIGNALSConnect all connectors removed.Start the engine.Check the voltage between TCM connector terminal and ground. $\overline{\text{Connector}}$ $\overline{\text{Connector}}$ $\overline{\text{Ground}}$ $\overline{\text{Condition}}$ $\overline{\text{Voltage}}$ $\overline{\text{F18}}$ 16 $\overline{\text{Ground}}$ $\cdot$ <td>Connector</td> <td></td> <td></td> <td></td> <td></td> <td></td>	Connector					
the inspection result normal?         YES       >> GO TO 3.         NO       >> Repair or replace the malfunctioning parts.         .CHECK TCM INPUT SIGNALS         Connect all connectors removed.         Start the engine.         Check the voltage between TCM connector terminal and ground.         TCM connector       Ground         Connector       Terminal         F18       16       Ground       • Selector lever: "N" position         Approx. 0.88 – 0.92 V       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	F18 -	-	Ground	Not existed		
YES       >> GO TO 3.         NO       >> Repair or replace the malfunctioning parts.         .CHECK TCM INPUT SIGNALS         Connect all connectors removed.         Start the engine.         Check the voltage between TCM connector terminal and ground.         TCM connector       Ground         Connector       Ground         Connector       Ground         Voltage         F18       16         Ground       • Selector lever: "N" position         • Idle speed       Approx. 0.88 – 0.92 V         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		-				
NO       >> Repair or replace the malfunctioning parts.         .CHECK TCM INPUT SIGNALS         Connect all connectors removed.         Start the engine.         Check the voltage between TCM connector terminal and ground.         TCM connector       Ground         Connector       Terminal         F18       16       Ground       Selector lever: "N" position • Idle speed         F18       16       Ground       • Selector lever: "N" position • Idle speed         the inspection result normal?       Yes >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".         YO       >> There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to			ormal?			
.CHECK TCM INPUT SIGNALS         Connect all connectors removed.         Start the engine.         Check the voltage between TCM connector terminal and ground.         TCM connector       Ground         Connector       Terminal         Ground       Condition         Voltage         F18       16         Ground       • Selector lever: "N" position         • Idle speed       • Approx. 0.88 – 0.92 V         the inspection result normal?       YES         YES       >> Check intermittent incident. Refer to GI-42. "Intermittent Incident".         YO       >> There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to			nlace the	malfunctioning parts		
Connect all connectors removed. Start the engine. Check the voltage between TCM connector terminal and ground.         TCM connector       Ground       Condition       Voltage         F18       16       Ground       • Selector lever: "N" position • Idle speed       Approx. 0.88 – 0.92 V         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			•	•		
Start the engine. Check the voltage between TCM connector terminal and ground.         TCM connector       Ground       Condition       Voltage         Connector       Terminal       Ground       Condition       Voltage         F18       16       Ground       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       · Idle speed       · Approx. 0.88 – 0.92 V         CS       >> Check intermittent incident. Refer to GI-42. "Intermittent Incident".         VO       >> There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to						
Check the voltage between TCM connector terminal and ground.         TCM connector       Ground       Condition       Voltage         Connector       Terminal       Ground       Condition       Voltage         F18       16       Ground       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         the inspection result normal?       YES       >> Check intermittent incident. Refer to GI-42. "Intermittent Incident".         VO       >> There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to			ors remov	ed.		
TCM connector       Ground       Condition       Voltage         Connector       Terminal       Ground       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         F18       16       Ground       • Selector lever: "N" position       Approx. 0.88 – 0.92 V         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			etween T	CM connector terminal and gr	ound.	
Connector       Terminal       Ground       Condition       Voltage         F18       16       Ground       • Selector lever: "N" position • Idle speed       Approx. 0.88 – 0.92 V         the inspection result normal? /ES       >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".       Selector lever: "N" position         VO       >> There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to		Ū		Ũ		
Connector       Terminal         F18       16       Ground       • Selector lever: "N" position • Idle speed       Approx. 0.88 – 0.92 V         the inspection result normal?         YES       >> Check intermittent incident. Refer to GI-42. "Intermittent Incident".         VO       >> There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to	TCM c	onnector				
ris       ris       Ground       • Idle speed       Approx. 0.88 – 0.92 V         the inspection result normal?	Connector	Terminal	- Ground	Condition	voltage	
<ul> <li>&gt;&gt; Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.</li> <li>&gt;&gt; There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to</li> </ul>	F18	16	Ground		Approx. 0.88 – 0.92 V	
<ul> <li>&gt;&gt; Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.</li> <li>&gt;&gt; There is malfunction of the secondary pressure sensor. Replace the transaxle assembly. Refer to</li> </ul>	s the inspe	ction result n	ormal?			
<u>TM-508, "Removal and Installation"</u> .					sor. Replace the transa	xle assembly. Refer to
		<u>TM-508, "Re</u>	emoval an	d Installation".		

### P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

< DTC/CIRCUIT DIAGNOSIS >

# P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

# **DTC Logic**

INFOID:000000006487683

[CVT: RE0F11A]

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0848	Transmission Fluid Pressure Sensor/Switch B Circuit Low	<ul> <li>The secondary pressure sensor voltage is 4.7</li> <li>V or more continuously for 5 seconds or more under the following diagnosis conditions:</li> <li>Diagnosis conditions</li> <li>CVT fluid temperature: -20°C (-4°F) or more</li> <li>Secondary pressure target value: 5.7 MPa or less</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	<ul> <li>Harness or connector (Secondary pressure sensor circuit is shorted to power supply)</li> <li>Secondary pressure sensor</li> <li>Control valve assembly</li> </ul>

#### 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  $-20^{\circ}C$  ( $-4^{\circ}F$ ) 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:000000006487684

### 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 harnes	ss connector	Ground	Voltage	
Connector	Connector Terminal		voltage	
F24	16	Ground	Approx. 5.0 V	

Is the inspection result normal?

# TM-428

# P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F11A]

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# 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.

 Check the continuity between the TCM harness connector terminal and the CVT unit harness connector terminal.

TCM harnes	ss connector	CVT unit harr	Continuity	
Connector	Connector Terminal		Terminal	Continuity
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	Ground	Condition	vollage
F18	16	Ground	<ul><li>Selector lever: "N" position</li><li>Idle speed</li></ul>	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 <u>TM-508</u>, "<u>Removal and Installation</u>".

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### P0863 TCM COMMUNICATION

#### < DTC/CIRCUIT DIAGNOSIS >

# P0863 TCM COMMUNICATION

### **DTC Logic**

INFOID:000000006487686

INFOID:00000006487687

[CVT: RE0F11A]

#### 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.	тсм

#### 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**

**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.

< DTC/CIRCUIT DIAGNOSIS >

# P0962 PRESSURE CONTROL SOLENOID A

# **DTC** Logic

DTC	Trouble diagnosis	name	DTC detection condition	Possible causes
P0962	Pressure Control Sole Control Circuit Low	enoid A Genoid A enoid A G Ci Ci Ci Ci	line pressure solenoid valve current is mA or less continuously for 200 msec or e under the following diagnosis condi- s: iagnosis conditions olenoid output current: 750 mA or more ND short diagnosis of the solenoid drive rcuit is satisfied. CM power supply voltage: 10 V $\leq$ TCM ower supply voltage $\leq$ 16 V	<ul> <li>Harness or connector (Line pressure solenoid valve circuit is shorted to ground)</li> <li>Line pressure solenoid valve</li> </ul>
тс со	NFIRMATION PR			
.PREP	ARATION BEFORE	WORK		
anothe	r "DTC CONFIRMA	TION PRO	CEDURE" occurs just before, turn	ignition switch OFF and wait for a
east 10 s	seconds, then perfo	rm the next	test.	
	>> GO TO 2.			
	>> GO TO 2. K DTC DETECTIO	N		
	the engine and wa		nds or more	
	k the first trip DTC.			
	2" detected?			
	>> Go to <u>TM-431, "</u> >> INSPECTION E		rocedure".	
-	sis Procedure			
-				INFOID:00000006487
.CHEC	K CIRCUIT BETW	EEN TCM A	ND THE CVT UNIT	
	ignition switch OFF		the CVT unit connector.	
			harness connector terminal and gr	ound.
	narness connector	Ground	Continuity	
			,	
TCM r Connec				
TCM h Connec F18	30	Ground	Not existed	
TCM F Connec F18 s the ins	30 pection result norm		Not existed	
TCM F Connec F18 s the ins YES	30	al?	<u> </u>	

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)

1.CHECK LINE PRESSURE SOLENOID VALVE

INFOID:00000006487688

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INFOID:000000006628249

# P0962 PRESSURE CONTROL SOLENOID A

#### < DTC/CIRCUIT DIAGNOSIS >

Check the resistance between the CVT unit connector terminal and ground.

CVT unit connector Terminal	Ground	Condition	Resistance
	Ground	CVT fluid temperature: 20°C (68°F)	Approx. 6.1 Ω
2		CVT fluid temperature: 50°C (122°F)	Approx. 6.9 $\Omega$
		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 <u>TM-508, "Removal and Installation"</u>.

## **P0963 PRESSURE CONTROL SOLENOID A**

< DTC/CIRCUIT DIAGNOSIS >

# P0963 PRESSURE CONTROL SOLENOID A

# DTC Logic

#### DTC DETECTION LOGIC

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INFOID:000000006487690

[CVT: RE0F11A]

DTC	Trouble diagnosis	name	DTC detect	ion condition	Possible causes	
P0963	Pressure Control Sol Control Circuit High	200 r more tions enoid A - So - GN circ - TC	mA or less contin under the follow agnosis condition lenoid output cur ND short diagnosi cuit is not satisfie	rent: 750 mA or more s of the solenoid drive d. voltage: 10 V $\leq$ TCM	<ul> <li>Harness or connector (Line pressure solenoid valve circuit is open or shorted to power supply)</li> <li>Line pressure solenoid valve</li> </ul>	C TM E
DTC CON	IFIRMATION PR	OCEDURE				F
<b>1.</b> PREPA	RATION BEFORE	WORK				
	"DTC CONFIRMA econds, then perfo			urs just before, turn	ignition switch OFF and wait for at	G
>	> GO TO 2.					Н
2.CHECK	C DTC DETECTIO	N				
2. Check	he engine and wa the first trip DTC. <u>detected?</u>		ds or more.			I
	> Go to <u>TM-433. "</u> > INSPECTION E		<u>ocedure"</u> .			J
Diagnos	is Procedure				INFOID:00000006487691	
<b>1.</b> CHECK	CIRCUIT BETW	EEN TCM AN	ND THE CVT	UNIT		Κ
2. Disco		nnector and t			nd the CVT unit harness connector	L
TCM ha	arness connector	CVT unit harr	ness connector			M
Connecto		Connector	Terminal	Continuity		
F18	30	F24	2	Existed		Ν
YES > NO >	ection result norm > GO TO 2. > Repair or replac < LINE PRESSUR	e the malfun	01			0
				434, "Component I	nspection (Line Pressure Solenoid	Ρ
•	ection result norm					
YES >	Check intermitte	nt incident E	Pofor to CL-12	"Intermittent Incide	nt"	

>> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.
>> Repair or replace the malfunctioning parts. YES

NO

# P0963 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

# Component Inspection (Line Pressure Solenoid Valve)

[CVT: RE0F11A]

INFOID:000000006628250

# 1.CHECK LINE PRESSURE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

CVT unit connector	Ground	Condition	Resistance
Terminal			
		CVT fluid temperature: 20°C (68°F)	Approx. 6.1 $\Omega$
2	Ground	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 <u>TM-508, "Removal and Installation"</u>.

# P1586 G SENSOR

## < DTC/CIRCUIT DIAGNOSIS >

# P1586 G SENSOR

# DTC Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis nan	DTC detection condition	Possible causes
D1586	G Sensor Circuit Electric	<ul> <li>The G sensor detection voltage is 0.7 V or less continuously for 5 seconds or more under the following diagnosis conditions:</li> <li>Diagnosis conditions</li> <li>While driving</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	<ul> <li>Harness or connector</li> <li>(G sensor circuit)</li> </ul>
P1586 G 3		<ul> <li>The G sensor detection voltage is 3.2 V or more continuously for 5 seconds or more under the following diagnosis conditions:</li> <li>Diagnosis conditions</li> <li>While driving</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	• G sensor
отс со	NFIRMATION PRO	CEDURE	
CAUTION Be carefu	<mark>\:</mark> ul of the driving spee	d	
4	ARATION BEFORE W		
		ON PROCEDURE" occurs just before, turn	ignition switch OFF and wait for at
			ignition switch of Land wait for at
least 10 S	econas, then periorm	the next test.	
	seconds, then perform	the next test.	
;	>> GO TO 2.	the next test.	
;		the next test.	
2.CHEC	>> GO TO 2. K DTC DETECTION ONSULT-III	the next test.	
2.CHEC	>> GO TO 2. K DTC DETECTION ONSULT-III the engine.		
2.CHEC With C With C 1. Start 2. Drive 3. Stop	> GO TO 2. K DTC DETECTION ONSULT-III the engine. the vehicle for 10 sec the vehicle.		
2.CHEC With C 1. Start 2. Drive 3. Stop 4. Chec	> GO TO 2. K DTC DETECTION ONSULT-III the engine. the vehicle for 10 sec the vehicle. k the DTC.		
2.CHEC With Co 1. Start 2. Drive 3. Stop 4. Chec Is "P1586	> GO TO 2. K DTC DETECTION ONSULT-III the engine. the vehicle for 10 sec the vehicle. k the DTC. <u>" detected?</u>	conds or more.	
2.CHEC With Co With Co Start 2. Drive 3. Stop 4. Chec Is "P1586 YES	> GO TO 2. K DTC DETECTION ONSULT-III the engine. the vehicle for 10 sec the vehicle. k the DTC.	conds or more.	
2.CHEC With Co 1. Start 2. Drive 3. Stop 4. Chec Is "P1586 YES NO	> GO TO 2. K DTC DETECTION ONSULT-III the engine. the vehicle for 10 sec the vehicle. k the DTC. * detected? >> Go to TM-435, "Dial >> INSPECTION END	conds or more.	
2.CHEC With Cu 1. Start 2. Drive 3. Stop 4. Checc Is "P1586 YES NO 2 Diagnos	> GO TO 2. K DTC DETECTION ONSULT-III the engine. the vehicle for 10 sec the vehicle. k the DTC. <u>a detected?</u> > Go to <u>TM-435, "Dia</u> > INSPECTION END sis Procedure	onds or more. Ignosis Procedure".	INFOID:000000006487693
2.CHEC With Co 1. Start 2. Drive 3. Stop 4. Chec Is "P1586 YES NO 2 Diagnos	> GO TO 2. K DTC DETECTION ONSULT-III the engine. the vehicle for 10 sec the vehicle. k the DTC. * detected? >> Go to TM-435, "Dial >> INSPECTION END	onds or more. Ignosis Procedure".	INFOID:00000006487693
2.CHEC With Cd 1. Start 2. Drive 3. Stop 4. Chec Is "P1586 YES NO Diagnos 1.CHEC With C	<ul> <li>&gt;&gt; GO TO 2.</li> <li>K DTC DETECTION</li> <li>ONSULT-III the engine. the vehicle for 10 sec the vehicle. k the DTC.</li> <li>&gt; Go to <u>TM-435</u>, "Dia &gt;&gt; INSPECTION END</li> <li>Sis Procedure</li> <li>K G SENSOR SIGNA</li> <li>ONSULT-III</li> </ul>	conds or more. Ignosis Procedure".	INFOID:00000006487693
2.CHEC With C 1. Start 2. Drive 3. Stop 4. Chec Is "P1586 YES NO Diagnos Diagnos 1.CHEC With C 1. Park	<ul> <li>&gt;&gt; GO TO 2.</li> <li>K DTC DETECTION</li> <li>ONSULT-III the engine. the vehicle for 10 sec the vehicle. k the DTC.</li> <li>&gt; Go to TM-435, "Dia &gt;&gt; INSPECTION END</li> <li>Sis Procedure</li> <li>K G SENSOR SIGNA</li> <li>ONSULT-III the vehicle on a level</li> </ul>	conds or more. Ignosis Procedure".	INFOID:00000006487693
2.CHEC With C 1. Start 2. Drive 3. Stop 4. Chec <u>Is "P1586</u> YES NO Diagnos Diagnos 1.CHEC With C 1. Park 2. Turn	<ul> <li>&gt;&gt; GO TO 2.</li> <li>K DTC DETECTION</li> <li>ONSULT-III the engine. the vehicle for 10 sec the vehicle. k the DTC.</li> <li>&gt; Go to <u>TM-435</u>, "Dia &gt;&gt; INSPECTION END</li> <li>Sis Procedure</li> <li>K G SENSOR SIGNA</li> <li>ONSULT-III</li> </ul>	conds or more. Ignosis Procedure". L	INFOID:00000006487693
2.CHEC With Cu 1. Start 2. Drive 3. Stop 4. Chec Is "P1586 YES NO 2 Diagnos Diagnos 1.CHEC 1. Park 2. Turn 3. Selec 4. Selec	<ul> <li>&gt;&gt; GO TO 2.</li> <li>K DTC DETECTION</li> <li>ONSULT-III the engine. the vehicle for 10 sec the vehicle. k the DTC.</li> <li>&gt; Go to <u>TM-435. "Dia</u></li> <li>&gt;&gt; INSPECTION END</li> <li>sis Procedure</li> <li>K G SENSOR SIGNA</li> <li>ONSULT-III</li> <li>the vehicle on a level ignition switch ON.</li> <li>tt "Data Monitor" in "Tot "G SEN SLOPE".</li> </ul>	conds or more. Ignosis Procedure". L surface. RANSMISSION".	
2.CHEC With Cu 1. Start 2. Drive 3. Stop 4. Chec Is "P1586 YES NO 2 Diagnos 1.CHEC 1. Park 2. Turn 3. Selec 4. Selec	<ul> <li>&gt;&gt; GO TO 2.</li> <li>K DTC DETECTION</li> <li>ONSULT-III the engine. the vehicle for 10 sec the vehicle. k the DTC.</li> <li>&gt; Go to <u>TM-435. "Dia</u></li> <li>&gt;&gt; INSPECTION END</li> <li>sis Procedure</li> <li>K G SENSOR SIGNA</li> <li>ONSULT-III</li> <li>the vehicle on a level ignition switch ON.</li> <li>tt "Data Monitor" in "Tot "G SEN SLOPE".</li> </ul>	conds or more. Ignosis Procedure". L	
2.CHEC With Cu 1. Start 2. Drive 3. Stop 4. Chec Is "P1586 YES NO 2 Diagnos 1.CHEC 1. Park 2. Turn 3. Selec 4. Selec	<ul> <li>&gt;&gt; GO TO 2.</li> <li>K DTC DETECTION</li> <li>ONSULT-III the engine. the vehicle for 10 sectors the vehicle.</li> <li>k the DTC.</li> <li><u>" detected?</u></li> <li>&gt;&gt; Go to <u>TM-435. "Dia</u></li> <li>&gt;&gt; INSPECTION END</li> <li>sis Procedure</li> <li>K G SENSOR SIGNA</li> <li>ONSULT-III</li> <li>the vehicle on a levelignition switch ON.</li> <li>ct "Data Monitor" in "Text "G SEN SLOPE".</li> <li>g the vehicle and cheat</li> </ul>	conds or more. Ignosis Procedure". L surface. RANSMISSION".	

Is the inspection result normal?

Uphill

Downhill

G SEN SLOPE

INFOID:000000006487692

Positive value (Maximum 40.45%)

Negative value (Minimum -40.45%)

В

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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 harr	G sensor harness connector Connector Terminal		Voltage	
Connector				
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 harr	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F18	11	B32	2	Existed
110	14	D32	1	Existed

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	Giouna	Continuity		
F18	11	Ground	Not existed		
	16	Ground	NOT EXISTED		

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. <u>TM-492, "Removal and Installation"</u>.

- 2. Connect the all connectors.
- 3. Turn ignition switch ON.

# P1586 G SENSOR

Voltage

Approx. 1.17 V

Approx.2.5 V

Approx.3.83 V

#### < DTC/CIRCUIT DIAGNOSIS >

: Direction of gravitational force

Ground

Ground

4. Check the voltage between TCM connector terminal and ground.

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[CVT: RE0F11A]

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#### Is the inspection result normal?

Terminal

14

YES >> GO TO 7.

TCM connector

Connector

F18

NO >> Replace G sensor.<u>TM-492, "Removal and Installation"</u>.

**7.**G SENSOR CALIBRATION (PART 2)

#### (I) With CONSULT-III

- 1. Install G sensor. <u>TM-492, "Removal and Installation"</u>.
- Select "Self Diagnostic Results" in "TRANSMISSION".
- 3. Touch "Erase".

>> Perform "G SENSOR CALIBRATION". Refer to TM-377, "Procedure".

Test condition

Vertical (-1G) (A)

Horizontal (B)

Vertical (1G) (C)

# **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 harnes	s connector	G sensor harne	ess connector	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F18	26	B32	3	Existed
NO >> R	O TO 9. epair or repla	mal? ace the malfun /ER SUPPLY	• •	
Check the co	ntinuity betwe	een TCM harn	ess connecto	or terminal a
TCM harne	ess connector	Oraciand	Orationit	
Connector	Terminal	Ground	Continuity	ý
F18	26	Ground	Not existe	d
Is the inspecti	ion result nor	mal?		
		ttent incident. I ace the malfun		

# P1588 G SENSOR

DTC Logic

INFOID:000000006487694

[CVT: RE0F11A]

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P1588	G Sensor Circuit Range/Per- formance	<ul> <li>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:</li> <li>Diagnosis condition (1 second or more)</li> <li>The rate of change in G sensor detection value (mV): Between -15 and +15 inclusive</li> </ul>	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**

#### **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?

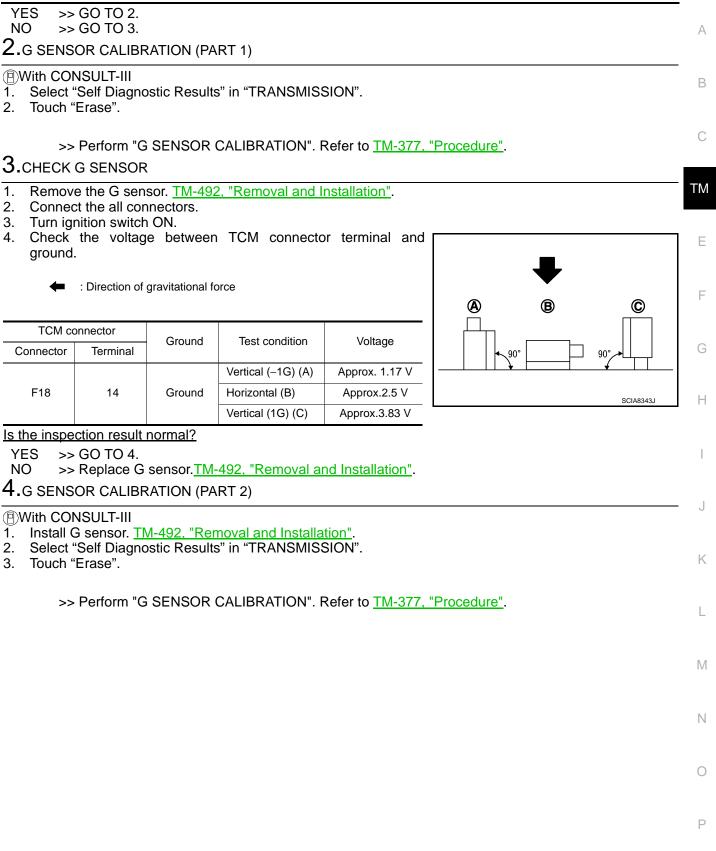
# TM-438

INFOID:000000006487695

# P1588 G SENSOR

< DTC/CIRCUIT DIAGNOSIS >





# P1701 TCM

**DTC Logic** 

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P1701	Power Supply Circuit	<ul> <li>The battery voltage supplied to the TCM is less than 8.4 V continuously for 200 msec or more under the following diagnosis condition:</li> <li>Diagnosis condition</li> <li>TCM power supply voltage: More than 11 V</li> </ul>	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**

# 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 harne	TCM harness connector		Voltage	
Connector	or Terminal Ground	Crodina	voltage	
F18	45	Ground	10 – 16 V	
	46	Ground	10 - 10 V	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.

```
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 <u>PG-10, "Wiring Diagram - BATTERY POWER SUPPLY -"</u>.
- 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 <u>GI-42, "Intermittent Incident"</u>.
- NO >> Repair or replace the malfunctioning parts.

INFOID:000000006487697

INFOID:000000006487698

# P1739 1GR INCORRECT RATIO

# **DTC** Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes	
		The detection conditions continuously for 200 msec or more under the following diagnosis conditions:		_
		<ul> <li>Diagnosis conditions</li> <li>Selector lever: Other than "P", "R" and "N" positions</li> </ul>		
		<ul> <li>Vehicle speed: 10 km/h (6 MPH) or more</li> <li>Engine speed: More than 550 rpm</li> <li>Output speed: More than 300 rpm</li> <li>Secondary pulley speed: More than 300</li> </ul>		
		<ul> <li>rpm</li> <li>A lapse of 500 msec or more after the stop lamp switch is turned from ON to OFF.</li> <li>Command for the 1GR of auxiliary gearbox</li> </ul>		
		<ul> <li>is in progress.</li> <li>Auxiliary gearbox shifting is not in progress.</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> <li>Detection conditions</li> </ul>	High clutch & reverse brake solenoid	
1739	1GR Incorrect Ratio	<ul> <li>Acceleration/deceleration: Less than -0.05 G</li> <li>Actual auxiliary gearbox gear ratio - Auxiliary gearbox 1GR ratio ≥ 50%</li> </ul>	<ul><li> Control valve assembly</li></ul>	
		<ul> <li>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:</li> <li>Diagnosis conditions</li> <li>Selector lever: Other than "P", "R" and "N"</li> </ul>		
		<ul> <li>positions</li> <li>Accelerator pedal position: 0.7/8 or more</li> <li>Engine speed: More than 550 rpm</li> <li>Secondary pulley speed: More than 300</li> </ul>		
		<ul> <li>rpm</li> <li>Output speed: More than 300 rpm</li> <li>Command for the 1GR of auxiliary gearbox is in progress.</li> <li>Auxiliary gearbox shifting is not in progress.</li> </ul>		
		<ul> <li>Auxiliary gearbox shifting is not in progress.</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>		

#### CAUTION:

- Be sure to perform "<u>TM-442, "Diagnosis Procedure"</u>" and then perform "DTC CONFIRMATION PRO-CEDURE".
- 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.

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- 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 <u>TM-442, "Diagnosis Procedure"</u>. NO >> INSPECTION END

#### **Diagnosis Procedure**

INFOID:000000006487700

# 1. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace the transaxle assembly. Refer to <u>TM-508, "Removal and Installation"</u>.
- NO >> Repair or replace the malfunctioning parts.

# P173A 2GR INCORRECT RATIO

## **DTC** Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes	
P173A	2GR Incorrect Ratio	<ul> <li>The detection conditions continuously for 200 msec or more under the following diagnosis conditions:</li> <li>Diagnosis conditions</li> <li>Selector lever: Other than "P", "R" and "N" positions</li> <li>Vehicle speed: 10 km/h (6 MPH) or more</li> <li>Engine speed: More than 550 rpm</li> <li>Output speed: More than 300 rpm</li> <li>Secondary pulley speed: More than 300 rpm</li> <li>A lapse of 500 msec or more after the stop lamp switch is turned from ON to OFF.</li> <li>Command for the 2GR of auxiliary gearbox is in progress.</li> <li>Auxiliary gearbox shifting is not in progress.</li> <li>TCM power supply voltage ≤ 16 V</li> <li>Detection conditions</li> <li>Acceleration/deceleration: Less than -0.05 G</li> <li>Actual auxiliary gearbox gear ratio – Auxiliary gearbox 2GR ratio ≥ 50%</li> </ul>	<ul> <li>Low brake solenoid valve</li> <li>Control valve assembly</li> </ul>	
		The auxiliary gearbox gear ratio is ±10% or less for the auxiliary gearbox 1GR ratio contin- uously for 500 msec or more under the follow- ing diagnosis conditions: • Diagnosis conditions • Selector lever: Other than "P", "R" and "N"		
		<ul> <li>positions</li> <li>Accelerator pedal position: 0.7/8 or more</li> <li>Engine speed: More than 550 rpm</li> <li>Secondary pulley speed: More than 300 rpm</li> </ul>		
		<ul> <li>Output speed: More than 300 rpm</li> <li>Command for the 2GR of auxiliary gearbox is in progress.</li> <li>Auxiliary gearbox shifting is not in progress.</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>		

#### CAUTION:

- Be sure to perform "<u>TM-444, "Diagnosis Procedure"</u>" and then perform "DTC CONFIRMATION PRO-CEDURE".
- 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.

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# P173A 2GR INCORRECT RATIO

#### < DTC/CIRCUIT DIAGNOSIS >

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 <u>TM-444</u>, "<u>Diagnosis Procedure</u>". NO >> INSPECTION END

#### **Diagnosis Procedure**

INFOID:000000006487705

1. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace the transaxle assembly. Refer to <u>TM-508</u>, "Removal and Installation".
- NO >> Repair or replace the malfunctioning parts.

# P173B 1GR INCORRECT RATIO

# **DTC** Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes	
P173B	1GR Incorrect Ratio	<ul> <li>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:</li> <li>Diagnosis conditions</li> <li>Selector lever: Other than "P", "R" and "N" positions</li> <li>Accelerator pedal position: 0.7/8 or more</li> <li>Engine speed: More than 550 rpm</li> <li>Output speed: More than 300 rpm</li> <li>Secondary pulley speed: More than 300 rpm</li> <li>Command for the 1GR of auxiliary gearbox is in progress.</li> <li>Auxiliary gearbox shifting is not in progress.</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	<ul> <li>Low brake solenoid valve</li> <li>Control valve assembly</li> </ul>	E F

#### DTC CONFIRMATION PROCEDURE

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- Be sure to perform "<u>TM-445, "Diagnosis Procedure"</u>" and then perform "DTC CONFIRMATION PRO-CEDURE".
- 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.

#### Drive the vehicle. 2.

Maintain the following conditions for 10 seconds or more. 3.

Selector lever	: "L" POSITION	
Accelerator pedal position	: 0.7/8 or more	Ν
Vehicle speed	: 10 km/h (6 MPH) or more	IN
<ol> <li>Stop the vehicle.</li> <li>Check the first trip DTC.</li> </ol>		0
Is "P173B" detected?		Ũ
YES >> Go to <u>TM-445, "Dia</u> NO >> INSPECTION END	<u>gnosis Procedure"</u> .	P
Diagnosis Procedure		INFOID:00000006487707

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". INFOID:00000006487706

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NO >> Repair or replace the malfunctioning parts.

# P173C 2GR INCORRECT RATIO

# DTC Logic

#### DTC DETECTION LOGIC

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-	Trouble diagnosis name	DTC detection condition	Possible causes
P173C	2GR Incorrect Ratio	<ul> <li>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:</li> <li>Diagnosis conditions</li> <li>Selector lever: Other than "P", "R" and "N" positions</li> <li>Accelerator pedal position: 0.7/8 or more</li> <li>Engine speed: More than 550 rpm</li> <li>Output speed: More than 300 rpm</li> <li>Secondary pulley speed: More than 300 rpm</li> <li>Command for the 2GR of auxiliary gearbox is in progress.</li> <li>Auxiliary gearbox shifting is not in progress.</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	<ul> <li>High clutch &amp; reverse brake solenoid valve</li> <li>Control valve assembly</li> </ul>
отс со	NFIRMATION PROCEI		
CAUTION	4:		
Be sure		Diagnosis Procedure"" and then perf	orm "DTC CONFIRMATION PRO-
		ATION PROCEDURE" before the repa	irs. Doing so may result in a sec-
ondary	malfunction.	-	
4	eful of the driving speed		
I.PRFP	ARATION BEFORE WOR		
f another	"DTC CONFIRMATION	PROCEDURE" occurs just before, turn	ignition switch OFF and wait for at
f another		PROCEDURE" occurs just before, turn	ignition switch OFF and wait for at
f another east 10 s	"DTC CONFIRMATION	PROCEDURE" occurs just before, turn	ignition switch OFF and wait for at
f another east 10 s	"DTC CONFIRMATION econds, then perform the	PROCEDURE" occurs just before, turn	ignition switch OFF and wait for at
f another east 10 s 2.CHEC	<ul> <li>"DTC CONFIRMATION econds, then perform the</li> <li>&gt; GO TO 2.</li> <li>K DTC DETECTION</li> </ul>	PROCEDURE" occurs just before, turn	ignition switch OFF and wait for at
f another east 10 s 2.CHEC 1. Start 2. Drive	<ul> <li>"DTC CONFIRMATION econds, then perform the</li> <li>&gt; GO TO 2.</li> <li>K DTC DETECTION</li> <li>the engine.</li> <li>the vehicle.</li> </ul>	PROCEDURE" occurs just before, turn next test.	ignition switch OFF and wait for at
f another east 10 s 2.CHEC 1. Start 2. Drive	<ul> <li>"DTC CONFIRMATION econds, then perform the</li> <li>&gt; GO TO 2.</li> <li>K DTC DETECTION</li> <li>the engine.</li> <li>the vehicle.</li> </ul>	PROCEDURE" occurs just before, turn	ignition switch OFF and wait for at
f another east 10 s 2.CHEC 1. Start 2. Drive 3. Maint	T "DTC CONFIRMATION econds, then perform the >> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following conditio	PROCEDURE" occurs just before, turn next test.	ignition switch OFF and wait for at
f another east 10 s 2.CHEC 1. Start 2. Drive 3. Maint Se	T "DTC CONFIRMATION econds, then perform the >> GO TO 2. K DTC DETECTION the engine. the vehicle. the vehicle. tain the following conditio	PROCEDURE" occurs just before, turn next test.	ignition switch OFF and wait for at
f another east 10 s 2.CHEC 1. Start 2. Drive 3. Maint Se Ac Ve	T "DTC CONFIRMATION econds, then perform the >> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition lector lever : celerator pedal position : hicle speed :	PROCEDURE" occurs just before, turn next test. ns for 10 seconds or more. "D" POSITION	ignition switch OFF and wait for at
If another least 10 s 2.CHEC 1. Start 2. Drive 3. Maint Se Ac Ve 4. Stop	T "DTC CONFIRMATION econds, then perform the econds, then perform the solution of the second states of the k DTC DETECTION the engine. the vehicle. the vehicle. the speed : the vehicle.	PROCEDURE" occurs just before, turn next test. ns for 10 seconds or more. "D" POSITION 0.7/8 or more	ignition switch OFF and wait for at
If another least 10 s 2.CHEC 1. Start 2. Drive 3. Maint Se Ac Ve 4. Stop 5. Chec	T "DTC CONFIRMATION econds, then perform the econds, then perform the solution of the engine. the engine. the vehicle. the vehicle. hicle speed : the vehicle. k the first trip DTC.	PROCEDURE" occurs just before, turn next test. ns for 10 seconds or more. "D" POSITION 0.7/8 or more	ignition switch OFF and wait for at
If another least 10 s 2.CHEC 1. Start 2. Drive 3. Maint Se Ac Ve 4. Stop 5. Chec Is "P1730	"DTC CONFIRMATION econds, then perform the >> GO TO 2. K DTC DETECTION the engine. the vehicle. the vehicle. the following condition lector lever : celerator pedal position : hicle speed : the vehicle. k the first trip DTC. <u>" detected?</u>	PROCEDURE" occurs just before, turn next test. next for 10 seconds or more. "D" POSITION 0.7/8 or more 45 km/h (28 MPH) or more	ignition switch OFF and wait for at
If another least 10 s 2.CHEC 1. Start 2. Drive 3. Maint Se Ac Ve 4. Stop 5. Chec Is "P1730 YES	T "DTC CONFIRMATION econds, then perform the econds, then perform the solution of the engine. the engine. the vehicle. the vehicle. hicle speed : the vehicle. k the first trip DTC.	PROCEDURE" occurs just before, turn next test. next for 10 seconds or more. "D" POSITION 0.7/8 or more 45 km/h (28 MPH) or more	ignition switch OFF and wait for at
If another least 10 s 2.CHEC 1. Start 2. Drive 3. Maint 3. Maint Se Ac Ve 4. Stop 5. Chec Is "P1730 YES 3 NO 3	"DTC CONFIRMATION econds, then perform the econds, then perform the solution of the perform the solution of the performance the vehicle. the vehicle. the vehicle. the vehicle. the vehicle. the vehicle. the vehicle. the first trip DTC. <u>or detected?</u> solution of the term of the term of the solution of the term of the term of the the performance of the term of the term of the term of the term of the solution of the term of the term of the term of the term of the term of the term of the term of the term of the term of the term of the term of the term of the term of the term of the term of the term of te	PROCEDURE" occurs just before, turn next test. next for 10 seconds or more. "D" POSITION 0.7/8 or more 45 km/h (28 MPH) or more	ignition switch OFF and wait for at
f another east 10 s 2.CHEC 1. Start 2. Drive 3. Maint 3. Maint 5. Chec s <u>"P1730</u> YES NO 2. Diagnos	<ul> <li>"DTC CONFIRMATION econds, then perform the econds, then perform the</li> <li>GO TO 2.</li> <li>K DTC DETECTION</li> <li>the engine.</li> <li>the vehicle.</li> <li>the vehicle.</li> <li>the following condition</li> <li>eclerator pedal position</li> <li>the vehicle.</li> <li>the vehicle.</li> <li>the vehicle.</li> <li>the first trip DTC.</li> <li><u>2" detected?</u></li> <li>&gt; Go to <u>TM-447, "Diagne</u></li> </ul>	PROCEDURE" occurs just before, turn next test. next test. ms for 10 seconds or more. "D" POSITION 0.7/8 or more 45 km/h (28 MPH) or more <u>osis Procedure"</u> .	

Refer to GI-42, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-508, "Removal and Installation".

# TM-447

NO >> Repair or replace the malfunctioning parts.

# P17B4 LOW BRAKE SOLENOID

# DTC Logic

#### DTC DETECTION LOGIC

В

INFOID:000000006487710

[CVT: RE0F11A]

DTC	Trouble diagnosis	sname	DTC detection	on condition	Possible causes		
P17B4	Low Brake Solenoid Low	Circuit Circuit Circuit Circuit	or 480 msec or more nosis conditions: Diagnosis conditions Solenoid valve outpu nore	mA or less continuous- under the following di- t current: 750 mA or gnosis occurs in the circuit. bltage: 10 V $\leq$ TCM	<ul> <li>Harness or connector (Low brake solenoid valve circuit short- ed to ground)</li> <li>Low brake solenoid valve</li> </ul>		
DTC CO	NFIRMATION P	ROCEDUR	E		F		
<b>1</b> .prep	ARATION BEFOR	E WORK					
	"DTC CONFIRM econds, then perf			rs just before, turn	ignition switch OFF and wait for at G		
	>> GO TO 2.				н		
<b>2.</b> CHEC	K DTC DETECTIO	N					
2. Shift	2. Shift the selector lever to "D" position and wait for 5 seconds or more.						
<u>ls "P17B4</u>	Is "P17B4" detected?						
	>> Go to <u>TM-449.</u> >> INSPECTION I		Procedure".				
	sis Procedure				INFOID:00000006487711		
			AND THE CVT U	NIT			
	the ignition switch onnect the TCM co		the CVT unit co	nnector.			
3. Chec	k the continuity be	etween TCM	harness connec	tor terminal and gr	ound. M		
TCM h	arness connector						
Connect	tor Terminal	Ground	Continuity		Ν		
F18	39	Ground	Not existed		14		
	pection result norr	nal?					
	>> GO TO 2. >> Repair or repla	ce the malfu	nctioning parts.		0		
-	K LOW BRAKE S		• •				
				Component Inspec	tion (Low Brake Solenoid Valve)".		
Is the insp	pection result norr	nal?					

# Component Inspection (Low Brake Solenoid Valve)

# [CVT: RE0F11A]

INFOID:000000006628252

# 1.CHECK LOW BRAKE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

CVT unit connector	Ground	Condition	Resistance	
Terminal				
		CVT fluid temperature: 20°C (68°F)	Approx. 6.1 $\Omega$	
22	Ground	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 <u>TM-508, "Removal and Installation"</u>.

# P17B5 LOW BRAKE SOLENOID

# DTC Logic

### DTC DETECTION LOGIC

В

INFOID:000000006487712

[CVT: RE0F11A]

DTC	Trouble diagnos	is name	DTC det	ection condition	Possible causes
P17B5	Low Brake Solenoi High	d Circuit	nitor reading is 2 for 200 msec or n nosis conditions: Diagnosis condit Solenoid valve o more GND short diagn circuit is not satis	ions utput current: 750 mA or osis of the solenoid valve sfied. bly voltage: 10 V $\leq$ TCM	<ul> <li>Harness or connector (Low brake solenoid valve circuit is open or shorted to power supply)</li> <li>Low brake solenoid valve</li> </ul>
	NFIRMATION F		E		
<b>1</b> .PREP/	ARATION BEFOR	RE WORK			
	"DTC CONFIRM econds, then per			ccurs just before, turn	ignition switch OFF and wait for at
-	>> GO TO 2. K DTC DETECTI	ON			
		ON			
2. Shift			on and wait fo	or 5 seconds or more.	
	k the first trip DT	C.			
	<u>" detected?</u> >> Go to <u>TM-451</u>	"Diagnosis I	Procedure"		
	> INSPECTION		<u>iocedure</u> .		
Diagnos	sis Procedure	;			INFOID:00000006487713
	K CIRCUIT BET		AND THE CV		
	ignition switch O				
2. Disco	nnect the TCM c	connector and			
<ol> <li>Chec termin</li> </ol>		between the	FCM harness	connector terminal a	nd the CVT unit harness connector
torrin					
TCM ha	arness connector	CVT unit harr	ness connector	Continuity	
Connect	or Terminal	Connector	Terminal		
F18	39	F24	22	Existed	
	pection result nor	mal?			
	<b></b>				
YES >	>> GO TO 2. >> Repair or repla	ace the malfu	Inctioning par	ts	
YES >	>> Repair or repla		• •	ts.	
YES NO 2.CHEC	>> Repair or replaced of the second s	SOLENOID V	ALVE		tion (Low Brake Solenoid Valve)"
YES NO 2.CHEC Check the	>> Repair or replaced of the second s	SOLENOID V oid valve. Re	ALVE		tion (Low Brake Solenoid Valve)".

>> Repair or replace the malfunctioning parts. NO

# Component Inspection (Low Brake Solenoid Valve)

# [CVT: RE0F11A]

INFOID:000000006628253

# 1.CHECK LOW BRAKE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

CVT unit connector	Ground	Condition	Resistance	
Terminal				
		CVT fluid temperature: 20°C (68°F)	Approx. 6.1 $\Omega$	
22	Ground	CVT fluid temperature: 50°C (122°F)	Approx. 6.9 $\Omega$	
		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 <u>TM-508, "Removal and Installation"</u>.

# P17B7 HIGH CLUTCH SOLENOID

# DTC Logic

### DTC DETECTION LOGIC

	Γ	L.	
1	L	٩	
*			

В

INFOID:000000006487714

[CVT: RE0F11A]

DTC	Trouble diagnosis	name	DTC detection conditi	on	Possible causes	
P17B7	High Clutch & Revers Solenoid Circuit Low	e Brake e Brake - C - S - C - T	TCM high clutch & reverse br ve current monitor reading is a s continuously for 200 msec o following diagnosis condition Diagnosis conditions colenoid valve output current: hore SND short circuit diagnosis of olenoid valve drive circuit. CM power supply voltage: 10 ower supply voltage $\leq 16$ V	200 mA or r more under is: 750 mA or ccurs in the	<ul> <li>Harness or connector (High&amp; clutch reverse brake solenoid valve circuit shorted to ground)</li> <li>High clutch &amp; reverse brake solenoid valve</li> </ul>	C TM E
DTC CO	NFIRMATION PR	OCEDUR	E			F
1.PREP/	ARATION BEFORE	WORK				
	"DTC CONFIRMA econds, then perfo			pefore, turn	ignition switch OFF and wait for at	G
	>> GO TO 2.					Н
•	K DTC DETECTIO	N				
2. Chec	the engine and wai k the first trip DTC.		nds or more.			
YES >	<u>′" detected?</u> >> Go to <u>TM-453. "</u> >> INSPECTION E		Procedure".			J
Diagnos	sis Procedure				INFOID:00000006487715	K
<b>1.</b> CHEC	K CIRCUIT BETWI	EEN TCM A	ND THE CVT UNIT			I.
	ignition switch OFF					I
			the CVT unit connector harness connector term		ound.	
				0		M
TCM h	arness connector	Ground	Continuity			
F18	37	Ground	Not existed			Ν
Is the insp	pection result norm	al?	<u> </u>			
-	>> GO TO 2. >> Repair or replac	e the malfu	nctioning parts			0
•			E BRAKE SOLENOID V	/ALVE		0
Check the		erse brake :			Component Inspection (High Clutch	Ρ
	pection result norm					
	> Check intermitte > Repair or replac		Refer to <u>GI-42, "Interm</u> nctioning parts.	<u>ittent Incide</u>	<u>nt"</u> .	

А

# Component Inspection (High Clutch & Reverse Brake Solenoid Valve)

INFOID:000000006628254

# $1. {\sf CHECK} \ {\sf High} \ {\sf CLUTCH} \ {\&} \ {\sf Reverse} \ {\sf Brake} \ {\sf solenoid} \ {\sf valve}$

Check the resistance between the CVT unit connector terminal and ground.

CVT unit connector	Ground	Condition	Resistance
Terminal			
		CVT fluid temperature: 20°C (68°F)	Approx. 6.1 $\Omega$
23	Ground	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 <u>TM-508</u>, "<u>Removal and Installation</u>".

# P17B8 HIGH CLUTCH SOLENOID

# DTC Logic

# DTC DETECTION LOGIC

INFOID:000000006487716

[CVT: RE0F11A]

DTC	Trouble diagnosis nan	ne	DTC det	ection condition		Possible causes	
P17B8	High Clutch & Reverse B Solenoid Circuit High	rake val rake val rake val rake val rake	e TCM high clutcl ve current monit s continuously fo e following diagno Diagnosis conditi Solenoid valve of more GND short diagn circuit is not satis TCM power supp power supply vol	or reading is 200 or 200 msec or m posis conditions: ions utput current: 75 osis of the solen fied. ly voltage: 10 V	) mA or ore under 0 mA or oid valve	<ul> <li>Harness or connector (High clutch &amp; reverse brake solenoid valve circuit is open or shorted to pow- er supply)</li> <li>High clutch &amp; reverse brake solenoid valve</li> </ul>	C TM E
DTC CO	NFIRMATION PRO	CEDUR	E				F
1.PREP/	ARATION BEFORE W	/ORK					
	"DTC CONFIRMATIC econds, then perform			ccurs just bef	ore, turn	ignition switch OFF and wait for at	G
	>> GO TO 2.						Н
	K DTC DETECTION						
1. Start 2. Chec	the engine and wait fo k the first trip DTC.	or 5 seco	onds or more				I
YES >	<u>» detected?</u> >> Go to <u>TM-455, "Dia</u> >> INSPECTION END		Procedure".				J
Diagnos	sis Procedure					INFOID:00000006487717	К
1.CHEC	K CIRCUIT BETWEE		AND THE CV	T UNIT			IX
1. Turn 2. Disco	ignition switch OFF. Innect the TCM connect the the the the the the the the the th	ector and	d the CVT uni	t connector.	rminal ar	nd the CVT unit harness connector	L
				1			Μ
			ness connector	Continuity			
Connect F18	or Terminal Co	F24	Terminal 23	Existed			Ν
-	pection result normal?		20	Exiotod			
YES >	»> GO TO 2.	-					0
•	> Repair or replace t K HIGH CLUTCH & R						
						Component Inspection (High Clutch	Ρ
	e Brake Solenoid Valv			e. Relei lo <u>11</u>	<u>vi-430, (</u>	component inspection (High Clutch	
	pection result normal?	_					
	> Check intermittent > Repair or replace t				nt Incide	<u>nt"</u> .	

В

# Component Inspection (High Clutch & Reverse Brake Solenoid Valve)

INFOID:000000006628255

# $1. {\sf CHECK} ~ {\sf High} ~ {\sf CLUTCH} ~ {\&} ~ {\sf Reverse} ~ {\sf Brake} ~ {\sf Solenoid} ~ {\sf valve}$

Check the resistance between the CVT unit connector terminal and ground.

CVT unit connector	Ground	Condition	Resistance
Terminal			
		CVT fluid temperature: 20°C (68°F)	Approx. 6.1 $\Omega$
23	Ground	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 <u>TM-508</u>, "<u>Removal and Installation</u>".

# P17BA PRIMARY PRESSURE SOLENOID

# DTC Logic

#### DTC DETECTION LOGIC

В

INFOID:000000006487718

[CVT: RE0F11A]

DTC	Trouble diagnosis	s name	DTC detec	tion condition	Possible causes	
P17BA	Primary Pressure So Circuit Low	olenoid	0 mA or less contin ore under the follow ns: Diagnosis condition Solenoid valve outp nore GND short circuit d solenoid valve drive	but current: 750 mA or iagnosis occurs in the e circuit. voltage: 10 V $\leq$ TCM	<ul> <li>Harness or connector (Primary pressure solenoid valve cir- cuit shorted to ground)</li> <li>Primary pressure solenoid valve</li> </ul>	C TM E
DTC CO	NFIRMATION P	ROCEDUR	E			F
1.PREP/	ARATION BEFOR	E WORK				
	"DTC CONFIRM econds, then perf			urs just before, turn	ignition switch OFF and wait for at	G
	>> GO TO 2.					Н
-	K DTC DETECTION	NC				
	the engine and wa		onds or more.			
	k the first trip DTC <u>A" detected?</u>	).				
YES >	>> Go to <u>TM-457.</u> > INSPECTION I		Procedure".			J
Diagnos	sis Procedure				INFOID:00000006487719	К
<b>1.</b> CHEC	K CIRCUIT BETV		AND THE CVT	UNIT		Γ\
2. Disco	ignition switch OF onnect the TCM co k the continuity be	onnector and		connector. ector terminal and gr	ound.	L
TCM h	arness connector					M
Connect	tor Terminal	Ground	Continuity			
F18	40	Ground	Not existed			Ν
•	Dection result norr >> GO TO 2.	<u>mal?</u>				
	>> Repair or repla	ice the malfu	inctioning parts			0
<b>2.</b> CHEC	K PRIMARY PRE	SSURE SO	LENOID VALVE	E		
noid Valve	<u>e)"</u> .		alve. Refer to <u>⊺</u>	M-458, "Component	Inspection (Primary Pressure Sole-	Ρ
•	Dection result norr			Wheeler we feel to the first		
	>> Check intermiti >> Repair or repla			. "Intermittent Incide	<u>ent"</u> .	

NO >> Repair or replace the malfunctioning parts.

# TM-457

#### 1

# Component Inspection (Primary Pressure Solenoid Valve)

INFOID:000000006628256

[CVT: RE0F11A]

# 1.CHECK PRIMARY PRESSURE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

CVT unit connector	Ground	Condition	Resistance
Terminal			
		CVT fluid temperature: 20°C (68°F)	Approx. 6.1 $\Omega$
3	Ground	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 <u>TM-508, "Removal and Installation"</u>.

# P17BB PRIMARY PRESSURE SOLENOID

# DTC Logic

# DTC DETECTION LOGIC

В

INFOID:000000006487720

[CVT: RE0F11A]

DTC	Trouble diagnos	is name	DTC det	ection condition		Possible causes	
P17BB	Primary Pressure S Circuit High	Solenoid Solenoid	D mA or less con ore under the follo ns: Diagnosis conditi Solenoid valve or nore GND short diagno circuit is not satis	utput current: 750 osis of the solend fied. ly voltage: 10 V s	msec or condi- ) mA or oid valve	<ul> <li>Harness or connector (Primary pressure solenoid valve cir- cuit open or shorted to power supply)</li> <li>Primary pressure solenoid valve</li> </ul>	C TM E
DTC CO	NFIRMATION F	ROCEDUR	E				F
<b>1.</b> PREP/	ARATION BEFOR	RE WORK					
	"DTC CONFIRM econds, then per			curs just befo	ore, turn	ignition switch OFF and wait for at	G
	>> GO TO 2.						Н
	K DTC DETECTI	ON					
1. Start 2. Chec	the engine and w k the first trip DT	ait for 5 seco	onds or more.				I
YES >	<u>3" detected?</u> >> Go to <u>TM-459</u> >> INSPECTION		Procedure".				J
	sis Procedure					INFOID:00000006487721	К
<b>1.</b> CHEC	K CIRCUIT BET	VEEN TCM	AND THE CV	T UNIT			
<ol> <li>Disco</li> <li>Chec</li> </ol>	•	connector and			minal ar	nd the CVT unit harness connector	L
termi	nal.						M
TCM ha	arness connector	CVT unit harr	ness connector				
Connect	or Terminal	Connector	Terminal	Continuity			Ν
F18	40	F24	3	Existed			
	pection result nor	mal?					
	> GO TO 2. > Repair or replay	ace the malfu	nctioning par	ts.			0
•	K PRIMARY PRE		01				
Check the noid Valve		e solenoid va	lve. Refer to	<u>TM-460, "Con</u>	nponent	Inspection (Primary Pressure Sole-	Ρ
	pection result nor						
	> Check intermit > Repair or replay				nt Incide	<u>nt"</u> .	

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# Component Inspection (Primary Pressure Solenoid Valve)

INFOID:000000006628257

[CVT: RE0F11A]

# 1.CHECK PRIMARY PRESSURE SOLENOID VALVE

Check the resistance between the CVT unit connector terminal and ground.

CVT unit connector	Ground	Condition	Resistance
Terminal			
		CVT fluid temperature: 20°C (68°F)	Approx. 6.1 $\Omega$
3	Ground	CVT fluid temperature: 50°C (122°F)	Approx. 6.9 Ω
		CVT fluid temperature: 80°C (176°F)	Approx. 7.7 $\Omega$

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 <u>TM-508, "Removal and Installation"</u>.

# P2765 CLUTCH B SPEED SENSOR

# DTC Logic

#### DTC DETECTION LOGIC

1	-	1	L	

В

INFOID:000000006487729

[CVT: RE0F11A]

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
	Input/Turbing Speed Speed R	<ul> <li>The secondary speed sensor value is less than 150 rpm continuously for 5 seconds or more under the following diagnosis conditions:</li> <li>Diagnosis conditions</li> <li>Primary pulley speed: 1,000 rpm or more</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	<ul> <li>Harness or connector (Secondary speed sensor circuit is</li> </ul>
P2765 Input/Turbine Speed Sensor B Circuit		<ul> <li>The secondary pulley speed sensor value is 240 rpm or less continuously for 500 msec or more under the following diagnosis conditions:</li> <li>Diagnosis condition</li> <li>10-msec-ago secondary pulley speed: 1,000 rpm or more</li> <li>TCM power supply voltage: 10 V ≤ TCM power supply voltage ≤ 16 V</li> </ul>	open or shorted) <ul> <li>Secondary speed sensor</li> </ul>
	NFIRMATION PROCED	URE	
AUTIO Be caref	N: ul of the driving speed.		
	ARATION BEFORE WOR	<	
anothe	r "DTC CONFIRMATION F	PROCEDURE" occurs just before, turn	ignition switch OFF and wait for a
east 10	seconds, then perform the	next test.	
	>> GO TO 2.		
-	K DTC DETECTION		
	the engine.		
	e the vehicle. tain the following condition	s for 10 seconds or more.	
	_		
	elector lever : "D" position ehicle speed : 55 km/h (34 Ml	PH) or more	
	the vehicle.		
5. Che	ck the first trip DTC.		
5. Che l <u>s "P276</u>	ck the first trip DTC. 5" detected?	sis Procedure".	
5. Che <u>s "P276</u> YES	ck the first trip DTC.	<u>sis Procedure"</u> .	
5. Cheo I <u>s "P276</u> YES NO	ck the first trip DTC. <u>5" detected?</u> >> Go to <u>TM-461, "Diagno</u>	<u>sis Procedure"</u> .	INFOID:0000000648775
5. Cheo I <u>s "P276</u> YES NO Diagno	ck the first trip DTC. <u>5" detected?</u> >> Go to <u>TM-461, "Diagno</u> >> INSPECTION END sis Procedure		INFOID:0000000648773
5. Chéo I <u>s "Р276:</u> YES NO Diagno <b>1.</b> СНЕС	ck the first trip DTC. <u>5" detected?</u> >> Go to <u>TM-461, "Diagno</u> >> INSPECTION END sis Procedure CK SECONDARY SPEED S	sis Procedure". SENSOR POWER CIRCUIT	INF0ID:0000000648773
5. Cheo <u>s "P276</u> YES NO Diagno 1.CHEC 1. Turn 2. Disc	ck the first trip DTC. <u>5" detected?</u> >> Go to <u>TM-461, "Diagno</u> >> INSPECTION END sis Procedure	SENSOR POWER CIRCUIT	INFOID:0000000648773

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

	speed sensor connector	Ground	Voltage	
Connector	Terminal			
F19	3	Ground	10 – 16 V	

# P2765 CLUTCH B SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

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.

	speed sensor 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.

	speed sensor connector	TCM harne	ss 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.

-	speed sensor 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.

# P2765 CLUTCH B SPEED SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F11A]

I CIM co	onnector	Ground	C	ondition		Data	
Connector	Terminal	Croana	0	onakion		Data	_
F18	34	Ground	<ul><li>Selector leve</li><li>Vehicle speed</li></ul>	r: "L" position d: 20 km/h (12 MF	PH)	Approximately 700 Hz	
						5V/div JSDIA1905GB	_
YES >>		nittent incide		<u>-42, "Intermiti</u> <u>TM-496, "Ren</u>		ncident". and Installation".	
<b>6.</b> снеск о	CIRCUIT BE	TWEEN IPC	DM E/R AND S	SECONDARY	SPEE	D SENSOR (PART 1)	
2. Check c	ect the IPDN continuity be or terminal.			s connector ter	rminal	and secondary speed senso	r harness
IPDM E/R har	ness connecto	r	y speed sensor s connector	Continuity			
<b>^</b> ·			<b>T</b>	-			
Connector	Terminal	Connector	Terminal				
E15	Terminal 57 result norma	F19	3	Existed			
E15 <u>s the check</u> YES >> NO >> CHECK (	57 result norma GO TO 7. Repair or rep CIRCUIT BE	F19 al? place the ma TWEEN IPD	3 alfunctioning p DM E/R AND S	oarts. SECONDARY		D SENSOR (PART 2)	
E15 <u>s the check</u> YES >> NO >> CHECK (	57 result norma GO TO 7. Repair or rep CIRCUIT BE	F19 al? place the ma TWEEN IPD	3 alfunctioning p DM E/R AND S	parts.			
E15 S the check YES >> NO >> CHECK ( Check contin	57 result norma GO TO 7. Repair or rep CIRCUIT BE	F19 al? Diace the ma TWEEN IPD n IPDM E/R	3 alfunctioning p DM E/R AND S harness conr	oarts. SECONDARY : nector terminal			
E15 <u>s the check</u> YES >> NO >> .CHECK ( Check contin IPDM E/R ha	57 GO TO 7. Repair or rep CIRCUIT BE nuity betwee	F19 al? Diace the ma TWEEN IPD n IPDM E/R	3 alfunctioning p DM E/R AND S harness conr d Continu	barts. SECONDARY nector terminal			
E15 S the check YES >> NO >> CHECK (C) Check contin IPDM E/R ha Connector E15 S the check YES >>	57 result norma GO TO 7. Repair or rep CIRCUIT BE nuity betwee arness connector Terminal 57 result norma GO TO 8.	F19 al? Diace the ma TWEEN IPD n IPDM E/R or Groun Groun al?	3 alfunctioning p DM E/R AND S harness conr d Continu d Not exis	barts. SECONDARY nector terminal			
E15 YES >> NO >> CHECK (C) Check contin IPDM E/R ha Connector E15 S the check YES >> NO >>	57 result norma GO TO 7. Repair or rep CIRCUIT BE nuity betwee arness connector Terminal 57 result norma GO TO 8.	F19 al? Diace the ma TWEEN IPD n IPDM E/R or Groun Groun al? Diace the ma	3 alfunctioning p DM E/R AND S harness conr d Continu d Not exis	barts. SECONDARY nector terminal			
E15 s the check YES >> NO >> CHECK (C Check contin IPDM E/R ha Connector E15 s the check YES >> NO >> DETECT Check the foc Harness of gram - IGN 10A fuse (1)	57 result norma GO TO 7. Repair or rep CIRCUIT BE nuity betwee arness connector Terminal 57 result norma GO TO 8. Repair or rep ION OF MAL ollowing item pen circuit of UTION POM	F19 al? olace the ma TWEEN IPD n IPDM E/R or Groun al? olace the ma FUNCTION s: r short circui (ER SUPPL)	3 alfunctioning p DM E/R AND S harness conr d Continu d Not exis alfunctioning p I ITEMS it between the Y".	parts. SECONDARY nector terminal nity ted parts.	and g		/iring Dia-
E15 S the check YES >> NO >> CHECK (C) Check contin IPDM E/R ha Connector E15 S the check YES >> NO >> DETECT Check the foc Harness of gram - IGN 10A fuse (I IPDM E/R	57 result norma GO TO 7. Repair or rep CIRCUIT BE nuity betwee arness connector Terminal 57 result norma GO TO 8. Repair or rep ION OF MAL ollowing item pen circuit of UTION POM	F19 al? olace the ma TWEEN IPD n IPDM E/R or Groun al? olace the ma FUNCTION s: r short circui <u>/ER SUPPL</u> I E/R). Refe	3 alfunctioning p DM E/R AND S harness conr d Continu d Not exis alfunctioning p I ITEMS it between the Y".	parts. SECONDARY nector terminal nity ted parts.	and g	ground. IPDM E/R. Refer to <u>PG-15. "W</u>	/iring Dia-

# MAIN POWER SUPPLY AND GROUND CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN POWER SUPPLY AND GROUND CIRCUIT

#### **Diagnosis Procedure**

INFOID:000000006600485

[CVT: RE0F11A]

**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 harne	ss connector	Ground	Voltage
Connector	Terminal	Cround	voltage
F18	45	Ground	10 – 16 V
FIO	46	Ground	10 - 10 v

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 harnes	ss connector	Ground	Condition	Voltage
Connector	Terminal	Ground	Condition	voltage
	47		Ignition switch ON	10 – 16 V
F18	47	Ground	Ignition switch OFF	Approx. 0 V
FIO	48	Giouna	Ignition switch ON	10 – 16 V
	40		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 harne	ss connector	Ground	Continuity
Connector	Terminal	Ground	Continuity
F18	41	Ground	Existed
FIO	42	Gibuna	Existed

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.

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 <u>PG-10, "Wiring Diagram - BATTERY POWER SUPPLY -"</u>.
- 10A fuse (No.33, fuse and fusible link block). Refer to <u>PG-23, "Fuse and Fusible Link Arrangement"</u>.
- 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 <u>GI-42, "Intermittent Incident"</u>.
- NO >> Repair or replace the malfunctioning parts.
- **5.**CHECK CIRCUIT BETWEEN IPDM E/R AND TCM (PART 1)

# TM-464

# MAIN POWER SUPPLY AND GROUND CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

- 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 har	ness connector	TCM harnes	ss connector	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E15	57	F18	47	Existed
E10	51	110	48	Existed

Is the check result normal?

YES >> GO TO 6.

NO >> Repair or replace the malfunctioning parts.

# $6. {\sf CHECK CIRCUIT BETWEEN IPDM E/R AND TCM (PART 2)}$

Check continuity between IPDM E/R harness connector terminal and ground.

IPDM E/R har	ness connector	Ground	Continuity	
Connector	Terminal	Ground	Continuity	
E15	57	Ground	Not existed	
Is the check r	esult normal?			
	GO TO 7.	as the molfun	otioning porto	
-			ctioning parts.	
I .DETECTION	ON OF MALFU	JNCTION ITE	MS (PART 2)	
<u>gram - IGN</u>	en circuit or sl	<u>R SUPPLY -"</u> .	U	on switch and IPDM E/R. Refer to <u>PG-15, "Wiring Dia-</u> Connector and Terminal Arrangement".
Is the check r	esult normal?			
				"Intermittent Incident".
NO >> F	epair or repla	ce the malfun	ctioning parts.	

[CVT: RE0F11A]

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# S MODE SWITCH

# Component Function Check

**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 <u>TM-469</u>, "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 <u>TM-466, "Diagnosis Procedure"</u>.

# Diagnosis Procedure

**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	
Connector	Terr	ninal	Voltage
Connector	+	_	
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.

 $\mathbf{3}$ .CHECK CVT SHIFT SELECTOR HARNESS

Check CVT shift selector harness. Refer to <u>TM-467</u>, "Component Inspection (CVT Shift Selector Harness)". Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.

NO >> Repair or replace the malfunctioning parts.

**4.**CHECK GROUND CIRCUIT

Check the continuity between CVT shift selector harness connector terminal and ground.

	ector harness nector	Ground	Continuity
Connector	Terminal		
M57	2	Ground	Existed

Is the inspection result normal?

INFOID:000000006600467

INFOID:000000006600468

# S MODE SWITCH

#### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F11A]

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#### 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.
- Check the continuity between combination meter harness connector terminal and CVT shift selector harness connector terminal.

	meter harness lector	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.

#### $\mathbf{6.}$ 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 inspecti	on result norn	nal?	
	iO TO 7. epair or repla	ce the malfun	ctioning parts.
			01

**I**.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".
- Check that "O/D OFF SW" turns ON/OFF when S mode switch is operated. Refer to <u>MWI-28, "Reference</u> K <u>Value"</u>.

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
- NO >> Replace combination meter. Refer to <u>MWI-69</u>, "Removal and Installation".

# Component Inspection (S Mode Switch)

# 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 <u>TM-482, "Disassembly and Assembly"</u>.

# JSDIA1969ZZ

Component Inspection (CVT Shift Selector Harness)

**1.**CHECK CVT SHIFT SELECTOR HARNESS

TM-467

INFOID:000000006600470

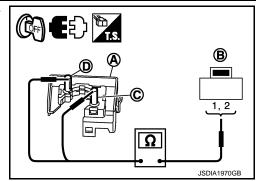
INFOID:000000006600469

# **S MODE SWITCH**

#### < DTC/CIRCUIT DIAGNOSIS >

Check the continuity between harness plate (A) and CVT shift selector harness connector (B).

Harness plate	CVT shift selector har- ness connector	Continuity	
	Terminal		
С	1	Existed	
D	2	Existed	



Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace CVT shift selector harness. Refer to <u>TM-482, "Disassembly and Assembly"</u>.

#### **S MODE INDICATOR**

< DTC/CIRCUIT DIAGNOSIS >	[CVT: RE0F11A]
S MODE INDICATOR	[01111201111]
Component Function Check	INFOID:000000006600471
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 <u>TM-469</u> , " <u>Diagnosis Procedure</u> ".	
Diagnosis Procedure	INFOID:000000006600472
1.CHECK DTC (TCM)	
<ul> <li>With CONSULT-III</li> <li>Turn ignition switch ON.</li> </ul>	
2. Check "Self Diagnostic Results" in "TRANSMISSION".	
<u>Is any DTC detected?</u> YES >> Check DTC detected item. Refer to TM-366, "DTC Index".	
<ul> <li>YES &gt;&gt; Check DTC detected item. Refer to <u>TM-366, "DTC Index"</u>.</li> <li>NO &gt;&gt; GO TO 2.</li> </ul>	
<b>2.</b> CHECK DTC (COMBINATION METER)	
With CONSULT-III Check "Salt Diagnostic Results" in "METER (M& A"	
Check "Self Diagnostic Results" in "METER/M&A". Is any DTC detected?	
YES >> Check DTC detected item. Refer to <u>MWI-36, "DTC Index"</u> .	
NO >> GO TO 3.	
3.CHECK COMBINATION METER INPUT SIGNAL	
1. Shift the selector lever to "D" position.	
<ol> <li>Select "Data Monitor" in "METER/M&amp;A".</li> <li>Select "O/D OFF IND".</li> </ol>	
<ol> <li>Check that "O/D OFF IND" turns ON/OFF when S mode switch is operated. Refer to <u>I</u> Value".</li> </ol>	MWI-28, "Reference
<u>Is the inspection result normal?</u>	
YES >> Replace combination meter. Refer to <u>MWI-69, "Removal and Installation"</u> .	
NO >> GO TO 4. 4.CHECK TCM INPUT/OUTPUT SIGNAL	
With CONSULT-III	
1. Select "Data Monitor" in "TRANSMISSION".	
<ol> <li>Select "SPORT MODE SW".</li> <li>Check that "SPORT MODE SW" turns ON/OFF when S mode switch is operated. Re</li> </ol>	fer to <u>TM-354</u> . "Ref-
erence Value".	<u></u>
<u>Is the inspection result normal?</u> YES >> Replace combination meter. Refer to <u>MWI-69</u> , " <u>Removal and Installation</u> ".	
NO >> Check S mode switch circuit. Refer to $\underline{\text{TM}-466}$ , "Diagnosis Procedure".	

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#### SHIFT POSITION INDICATOR CIRCUIT

#### **Component Parts Function Inspection**

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:000000006487734

#### 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 "TRANSMIS-SION".
- NO-3 (Specific"RANGE" is not displayed on the shift position indicator.)>>Check "Self Diagnostic Result" in "METER/M&A".

#### SHIFT LOCK SYSTEM

SHIFT LOCK SYSTEM         Component Function Check         1.CHECK SHIFT LOCK OPERATION (PART 1)         1. Turn ignition switch ON.	INFOID:00000006600473
1.CHECK SHIFT LOCK OPERATION (PART 1)	INFOID:00000006600473
1. Turn ignition switch ON.	
<ol> <li>Shift the selector lever to "P" position.</li> <li>Attempt to shift the selector lever to any other than position with the brake p Can the selector lever be shifted to any other position?</li> <li>YES &gt;&gt; Go to TM-471. "Diagnosis Procedure".</li> </ol>	oedal released.
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 peda	l denressed
Can the selector lever be shifted to any other position?         YES       >> INSPECTION END         NO       >> Go to TM-471, "Diagnosis Procedure".	
Diagnosis Procedure	INFOID:00000006600474
1.CHECK POWER SOURCE (PART 1)	
<ol> <li>Turn ignition switch OFF.</li> <li>Disconnect stop lamp switch connector</li> <li>Turn ignition switch ON.</li> <li>Check the voltage between the stop lamp switch harness connector terminal</li> </ol>	al 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)	<b>O</b>
Check stop lamp switch. Refer to <u>TM-474</u> , <u>"Component Inspection (Stop Lamp 3</u> Is the inspection result normal? YES >> GO TO 3. NO >> GO TO 10.	
<b>3.</b> CHECK CIRCUIT BETWEEN STOP LAMP SWITCH AND CVT SHIFT SELE	ECTOR (PART 1)
<ol> <li>Disconnect CVT shift selector connector</li> <li>Check the continuity between the stop lamp switch harness connector term harness connector terminal.</li> </ol>	inal and the CVT shift selector
Stop lamp switch harness connector     CVT shift selector harness connector     Continuity	
Connector Terminal Connector Terminal	

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.

#### SHIFT LOCK SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

	witch harness nector	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.

	ector harness nector	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.

 $\mathbf{8}$ . CHECK CVT SHIFT SELECTOR HARNESS

Check CVT shift selector harness. Refer to <u>TM-473</u>, "Component Inspection (CVT Shift Selector Harness)". Is the inspection result normal?

- YES >> Check intermittent incident. Refer to <u>GI-42, "Intermittent Incident"</u>.
- 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 <u>PG-15</u>, <u>"Wiring Diagram - IGNITION POWER SUPPLY -"</u>.

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 <u>GI-42, "Intermittent Incident"</u>.

NO >> Repair or replace the malfunctioning parts.

10. CHECK INSTALLATION POSITION OF STOP LAMP SWITCH

Adjust stop lamp switch position. Refer to <u>BR-9</u>, "Inspection and Adjustment" (LHD) or <u>BR-77</u>, "Inspection and <u>Adjustment"</u> (RHD).

>> GO TO 11.

#### TM-472

#### SHIFT LOCK SYSTEM

	JIT DIAGNO	SIS >			[CVT: RE0F11A]
11.снеск	STOP LAMP	SWITCH (PART 2)			
			nponent Inspe	ection (Stop Lamp Swite	<u>ch)"</u> .
Is the inspecti	on result norr	<u>mal?</u>			
	ISPECTION I				
		ce the malfunctionin	• •		
Componen	it Inspectio	on (Shift Lock So	olenoid)		INFOID:00000006600475
1.CHECK SH	HIFT LOCK S	OLENOID			
	to terminals of	of shift lock solenoid	connector and	d check that shift lock s	olenoid is activated.
CAUTION:	a fuca hatwa	on the terminals w	han annluing	the voltage	
		en the terminals w etween terminals.	nen apprying	the voltage.	
	J				
Shift lock sole	noid connector				
Tern	ninal	Condition		Status	
+ (fuse)	_				
1	2	Apply battery voltage b tween terminals 1 and 2		olenoid operates	
Is the inspecti	on result norr	nal?			
	SPECTION I				
NO >> R	eplace the sh	ift lock unit. Refer to	<u>TM-482, "Dis</u>	assembly and Assemb	<u>ly"</u> .
Componen	t Inspectio	n (Park Positior	Switch)		INFOID:00000006600476
	•	on (Park Position	n Switch)		INFOID:000000006600476
<b>1.</b> CHECK PA	ARK POSITIC	N SWITCH		terminals	INFOID:00000006600476
<b>1</b> .CHECK PA Check the cor CAUTION:	ARK POSITIC	ON SWITCH en park position swi	ch connector		INFOID:00000006600476
1.CHECK PA Check the cor CAUTION: • Connect the	ARK POSITIC ntinuity betwe e fuse betwe	ON SWITCH en park position swi een the terminals w	ch connector		INFOID:00000006600476
1.CHECK PA Check the cor CAUTION: • Connect the	ARK POSITIC ntinuity betwe e fuse betwe	ON SWITCH en park position swi	ch connector		INFOID:00000006600476
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus	ARK POSITIC ntinuity betwe e fuse betwe e shorting b	ON SWITCH en park position swi een the terminals w	ch connector		INFOID:00000006600476
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus	ARK POSITIC ntinuity betwe e fuse betwe	ON SWITCH en park position swi een the terminals w	ch connector		INFOID:00000006600476
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus	ARK POSITIC ntinuity betwe e fuse betwe e shorting be witch connector	ON SWITCH en park position swi een the terminals w etween terminals. Conditio	ich connector hen applying	the voltage.	INFOID:00000006600476
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus	ARK POSITIC ntinuity betwe e fuse betwe e shorting be witch connector	ON SWITCH en park position swi een the terminals w etween terminals.	ich connector hen applying	the voltage.	INFOID:00000006600476
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus Park position s Terr	ARK POSITIC ntinuity betwe e fuse betwe e shorting be witch connector ninal	on SWITCH en park position swi een the terminals w etween terminals. Condition Shift the selector lever Other than above	ich connector hen applying	the voltage. Continuity Existed	INFOID:00000006600476
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus Park position s Term 1 1 Is the inspecti	ARK POSITIC ntinuity betwe e fuse betwe e shorting be witch connector ninal	ON SWITCH en park position switch en the terminals we etween terminals. Condition Shift the selector lever Other than above	ich connector hen applying	the voltage. Continuity Existed	INFOID:00000006600476
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus Park position s Term 1 1 Is the inspecti YES >> IN	ARK POSITIC ntinuity betwe e fuse betwe e shorting be witch connector ninal 2 on result norr	ON SWITCH en park position switten the terminals we etween terminals. Condition Shift the selector lever Other than above mal? END	tch connector	the voltage. Continuity Existed	
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus Park position s Term 1 s the inspecti YES >> IN NO >> R	ARK POSITIC ntinuity betwe e fuse betwe e shorting be witch connector ninal 2 on result norr SPECTION eplace the pa	ON SWITCH en park position swir een the terminals w etween terminals. Condition Shift the selector lever Other than above mal? END ark position switch. R	tch connector hen applying on to "P" position.	the voltage. Continuity Existed Not existed 2. "Disassembly and A	
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus Park position s Term 1 s the inspecti YES >> IN NO >> R Componen	ARK POSITIC ntinuity betwe e fuse betwe e shorting be witch connector ninal 2 on result norr NSPECTION eplace the pa at Inspectio	en park position swir een the terminals wetween terminals. Condition Shift the selector lever Other than above mal? END ark position switch. Ren on (CVT Shift Se	tch connector hen applying n to "P" position.	the voltage. Continuity Existed Not existed 2. "Disassembly and A	<u>ssembly"</u> .
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus Park position s Term 1 s the inspecti YES >> IN NO >> R Componen	ARK POSITIC ntinuity betwe e fuse betwe e shorting be witch connector ninal 2 on result norr NSPECTION eplace the pa at Inspectio	ON SWITCH en park position swir een the terminals w etween terminals. Condition Shift the selector lever Other than above mal? END ark position switch. R	tch connector hen applying n to "P" position.	the voltage. Continuity Existed Not existed 2. "Disassembly and A	<u>ssembly"</u> .
1.CHECK PA Check the cor CAUTION: Connect the Never cause Park position st Territion 1 S the inspection YES >> IN NO >> R Componen 1.CHECK CN Check the con	ARK POSITIC ntinuity betwe e fuse betwe e shorting b witch connector ninal 2 on result norr NSPECTION eplace the pa it Inspectio /T SHIFT SE ntinuity betwe	en park position swir een the terminals wetween terminals. Condition Shift the selector lever Other than above mal? END ark position switch. Real on (CVT Shift Secondary Second	tch connector hen applying on to "P" position. tefer to <u>TM-48</u> lector Harr 5 (PART 1)	the voltage. Continuity Existed Not existed 2. "Disassembly and A NeSS)	<u>ssembly"</u> .
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus Park position s Terr 1 Is the inspecti YES >> IN NO >> R Componen 1.CHECK CV	ARK POSITIC ntinuity betwe e fuse betwe e shorting b witch connector ninal 2 on result norr NSPECTION eplace the pa it Inspectio /T SHIFT SE ntinuity betwe	en park position swir een the terminals wetween terminals. Condition Shift the selector lever Other than above mal? END ark position switch. Real on (CVT Shift Secondary Second	tch connector hen applying on to "P" position. tefer to <u>TM-48</u> lector Harr 5 (PART 1)	the voltage. Continuity Existed Not existed 2. "Disassembly and A NeSS)	ssembly".
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus Park position st Term 1 Is the inspecti YES >> IN NO >> R Componen 1.CHECK CN Check the con harness conne	ARK POSITIC ntinuity betwe e fuse betwe e shorting be witch connector ninal 2 on result norr NSPECTION I eplace the pa at Inspectio VT SHIFT SE ntinuity betwe ector terminal	en park position swir een the terminals wetween terminals. Condition Shift the selector lever Other than above mal? END ark position switch. Real on (CVT Shift Secondary CVT Shift Secondary Second	tch connector hen applying on to "P" position. to "P" position. tefer to <u>TM-48</u> lector Harr 6 (PART 1) elector harnes	the voltage. Continuity Existed Not existed 2. "Disassembly and A NeSS)	ssembly".
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus Park position s Terr 1 <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u></u>	ARK POSITIC ntinuity betwe e fuse betwe e shorting b witch connector ninal 2 on result norr NSPECTION eplace the pa ot Inspectio VT SHIFT SE ntinuity betwe ector terminal	en park position swir een the terminals wetween terminals. Condition Shift the selector lever Other than above mal? END ark position switch. Real on (CVT Shift Secondary Second	tch connector hen applying in to "P" position. to "P" position. tefer to <u>TM-48</u> lector Harr (PART 1) elector harnes	the voltage. Continuity Existed Not existed 2. "Disassembly and Aness) s connector terminal a	ssembly".
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus Park position st Term 1 Is the inspecti YES >> IN NO >> R Componen 1.CHECK CV Check the con harness conne	ARK POSITIC ntinuity betwe e fuse betwe e shorting b witch connector ninal 2 on result norr NSPECTION eplace the pa ot Inspectio VT SHIFT SE ntinuity betwe ector terminal	en park position swir een the terminals wetween terminals. Condition Shift the selector lever Other than above mal? END ark position switch. Real CVT Shift Se LECTOR HARNESS een the CVT shift se I. Shift lock solenoid har	to "P" position. to "P" position. tefer to <u>TM-48</u> lector Harr 6 (PART 1) elector harnes hess Contin	the voltage. Continuity Existed Not existed 2. "Disassembly and Aness) s connector terminal a	ssembly".
1.CHECK PA Check the cor CAUTION: • Connect the • Never caus Park position s Term 1 Is the inspecti YES >> IN NO >> R Componen 1.CHECK CM Check the con harness conne	ARK POSITIC ntinuity betwe e fuse betwe e shorting be witch connector ninal 2 on result norr SPECTION I eplace the pa at Inspectio VT SHIFT SE ntinuity betwe ector terminal	AN SWITCH en park position swir een the terminals we etween terminals. Condition Shift the selector lever Other than above mal? END ark position switch. Re on (CVT Shift Se LECTOR HARNESS een the CVT shift se LECTOR HARNESS een the CVT shift se LECTOR HARNESS	tch connector hen applying on to "P" position. to "P" position. to "P" position. to "P" position. to "P" position. to "P" position.	the voltage. Continuity Existed Not existed Continuity	ssembly".

YES >> GO TO 2. NO >> Replace the CVT shift selector harness. Refer to <u>TM-482, "Disassembly and Assembly"</u>.

#### < DTC/CIRCUIT DIAGNOSIS >

#### 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.

	enoid harness lector	Park position conr	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 ha	mess connector	CVT shift sel conr	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 <u>TM-482, "Disassembly and Assembly"</u>.

**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 <u>TM-482</u>, "Disassembly and Assembly".

#### Component Inspection (Stop Lamp Switch)

INFOID:000000006600478

#### **1.**CHECK STOP LAMP SWITCH

Check the continuity between the stop lamp switch connector terminals.

Stop lamp sw	itch connector	Condition	Continuity
Terr	ninal	Condition	Continuity
3	4	Depressed brake pedal	Existed
5	4	Released brake pedal	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-20, "Exploded View"</u> (LHD) or <u>BR-88, "Exploded View"</u> (RHD).

#### < SYMPTOM DIAGNOSIS >

INFOID:000000006487744

#### А

В

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CVT CONTROL SYSTEM

SYMPTOM DIAGNOSIS

#### Symptom Table

The diagnosis item number indicates the order of check. Start checking in the order from 1.

Symptom diagnosis chart 1-1

		Cł	neck					nditio nent)		pair		R	epla	ce the	e transa	xle asse	embly.		
							1					Elect	tric sy	/sten	n				ΤM
	Symptom	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)	E F G H
		EC-537	<u>TM-480</u>	TM-382	TM-383	TM-354	TM-466		L	I	J			TM-366	1	I	1		J
	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	K
	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	L
Driving is not possi- ble.	Acceleration at start is not suf- ficient in "D", "L", or "R" posi- tion.	1		2		1		1	1	1	2	2	1	1	2	1	1	1	N
	The engine speed increases suddenly in "D", "L", or "R" po- sition during driving.		1	1								2	1	1		1	1		
	Engine brake is suddenly ap- plied in "D" or "R" position dur- ing driving.	1		1									1	1		1	1		ľ

Ρ

#### < SYMPTOM DIAGNOSIS >

		Cł	neck					nditio nent)	n (re	pair		R	epla	ce the	e transa	ixle asse	mbly.	
												Elect	ric s	/sten	ſ			
	Symptom	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	<u>TM-480</u>	TM-382	TM-383	TM-354	TM-466							TM-366				<u>.</u>
	The engine races when the auxiliary gearbox is shifted from 1GR $\Leftrightarrow$ 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 is not possi-	Shifting does not occur with S mode.					1	1	1	1	1	1		1	1				
ble.	Engine stall occurs immediate- ly 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 >

#### Symptom diagnosis chart 1-2

#### [CVT: RE0F11A]

<u>oymptom diag</u>	nosis chart 1-2					Repla	ce the trans	axle assem	bly.						А
		sure	ores- con- ol				Powe	er transmiss	sion						В
	Symptom	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	C TM
							TM-508								E
	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		F
	Engine stall occurs in "D", "L", or "R" position and the vehicle does not start.	1							1	1	1	1	1	1	G
Driving is not possi- ble.	Acceleration at start is not suf- ficient in "D", "L", or "R" posi- tion.	1		1		1 (In "D" or "L")		1 (In "R")							Н
	The engine speed increases suddenly in "D", "L", or "R" po- sition during driving.	1	1		1	1 (In "D" or "L")	1 (In "D" or "L")	1 (In "R")							I
	Engine brake is suddenly ap- plied in "D" or "R" position dur- ing driving.	1				1 (In "D" or "L")	1 (In "D" or "L")	1 (In "R")							J
	The engine races when the auxiliary gearbox is shifted from 1GR $\Leftrightarrow$ 2GR.	1	1		2	1	1								K
	Engine braking is not effective in "L" position.	1	2	1	2	1	1								
Shifting is not possi-	Shifting does not occur with S mode.														L
ble.	Engine stall occurs immedi- ately before stop at decelera- tion in "D" or "L" position.	1		1											Μ
	During driving in "D" position, slippage occurs in lockup or lockup is not possible.	1		1											Ν

0

Ρ

#### < SYMPTOM DIAGNOSIS >

Symptom diagnosis chart 2-1

		C	heck				d con acem		n (rep	air		Re	eplac	e the	transa	xle asse	mbly.	
											E	Electr	ic sy	stem				
	Symptom Shock at start is large in "D",		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		1					TM-366		<u> </u>	I	<u>.                                    </u>
	Shock at start is large in "D", "L", or "R" position.			1								2		1	1			
	Shock is large when the aux- iliary gearbox is shifted from $1GR \rightarrow 2GR$ . Shock in lockup is large dur- ing driving in "D" or "L" posi-	2		1		2							2	2	1	1	1	
Shock vi- bration Noise	tion. Shock is large when the lever is shifted from "N" $\rightarrow$ "D" and "N" $\rightarrow$ "R" positions.	1		1		2		1	1		1			1	1	1	1	1
	Shock is large when the lever is shifted from "D" $\rightarrow$ "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															
	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			
Other	Engine stall occurs in "P" or "N" position during stop.	1				1				1					1			
	Parking lock does not oper- ate in "P" position.				1						1							
	Parking lock cannot be can- celled when the selector le- ver is shifted from "P" position to other position.				1						1							

#### < SYMPTOM DIAGNOSIS >

#### Symptom diagnosis chart 2-2

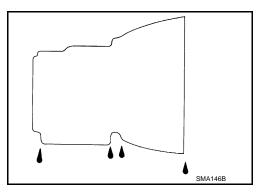
Symptom diagnosis chart 2-2			Replace the transaxle assembly.								А				
		sure	ores- con- ol				Pow	er transmiss	sion						В
	Symptom	Valve body, control valve	Oil pump	Torque converter	Pulley, steel belt	Low brake	High clutch	Reverse brake	Bearings	Counter gear	Planetary gear	Reduction gear	Final gear, differential gear	Parking mechanism	C
			1		1		TM-508			1	1	1	1		E
	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		F
	Shock is large when the auxiliary gearbox is shifted from $1GR \rightarrow 2GR$ .	1				1	1								G
	Shock in lockup is large dur- ing driving in "D" or "L" posi- tion.	1		1											Н
Shock vi- bration Noise	Shock is large when the lever is shifted from "N" $\rightarrow$ "D" and "N" $\rightarrow$ "R" positions.	1				1 ("N" → "D")		1 ("N" → "D")							I
	Shock is large when the lever is shifted from "D" $\rightarrow$ "L" position.	1				1	1								J
	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		K
	Noise occurs during driving.	1	1		1				1	1	1	1	1		
	Noise occurs in idling. Starter operates in "D", "L", or "R" position.	1	1		1				1	1	1				L
	Starter does not operate in "P" or "N" position.														Μ
	Engine stall occurs in "D", "L", or "R" position during stop.	1		1											N
Other	Engine stall occurs in "P" or "N" position during stop.														
	Parking lock does not operate in "P" position.													1	0
	Parking lock cannot be can- celled when the selector lever is shifted from "P" position to other position.													1	Ρ

### PERIODIC MAINTENANCE CVT FLUID

Inspection

#### 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 <u>TM-379</u>, "Adjustment".

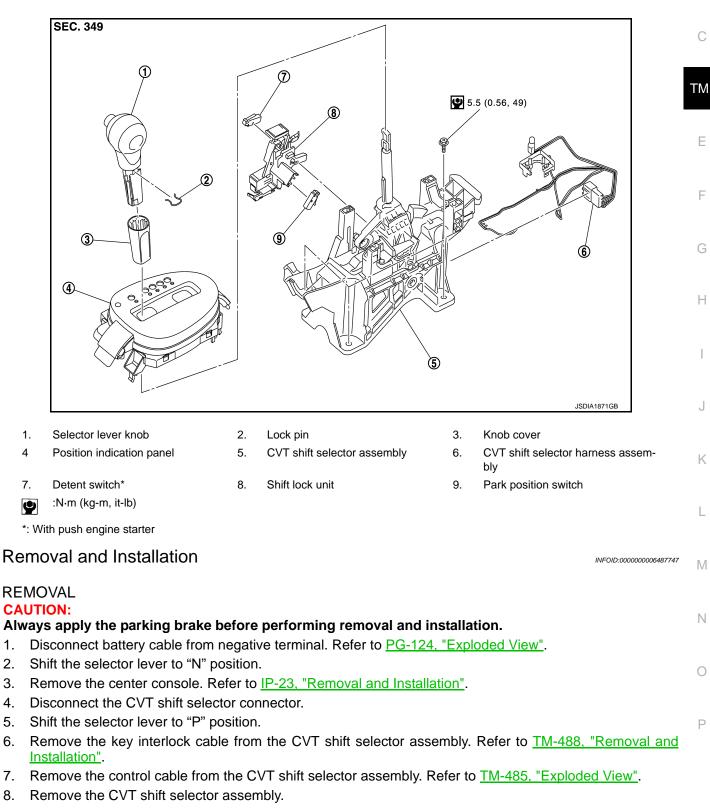


INFOID:000000006487745

# < REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION CVT SHIFT SELECTOR

#### **Exploded View**

INFOID:00000006487746 B



#### INSTALLATION

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

#### TM-481

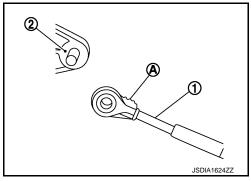
A

#### **CVT SHIFT SELECTOR**

#### < REMOVAL AND INSTALLATION >

• 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.

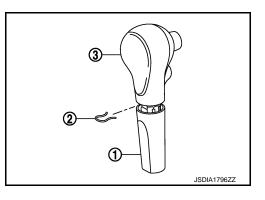
#### [CVT: RE0F11A]

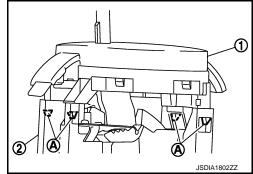


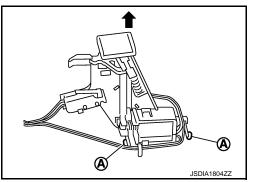
Disassembly and Assembly

#### DISASSEMBLY

- 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.







 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.

- 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.

INFOID:000000006487748

#### **CVT SHIFT SELECTOR**

#### < REMOVAL AND INSTALLATION >

- 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:**

INSTALLATION

clicks. **CAUTION:** 

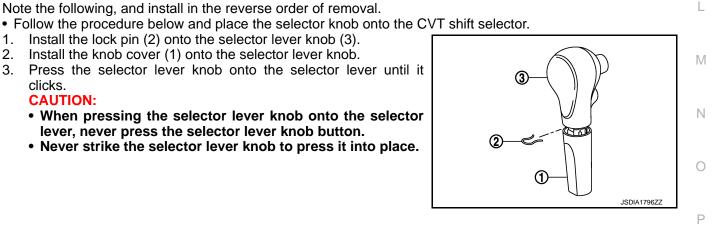
#### Never damage the CVT shift selector assembly.

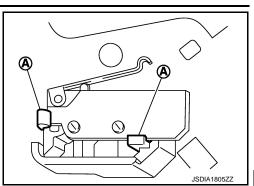
Note the following, and install in the reverse order of removal.

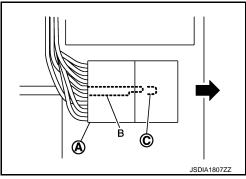
lever, never press the selector lever knob button.

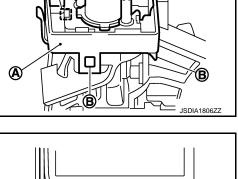
1. Install the lock pin (2) onto the selector lever knob (3). 2. Install the knob cover (1) onto the selector lever knob.

13. Disconnect the CVT shift selector harness from the CVT shift selector.









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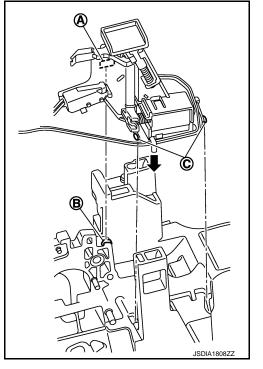
А

В

#### **CVT SHIFT SELECTOR**

#### < REMOVAL AND INSTALLATION >

- Follow the procedure below and press the shift lock unit onto the CVT shift selector.
- 1. Connect the connectors.
- 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:000000006487749

INSPECTION AFTER INSTALLATION

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to <u>TM-383, "Inspection and</u> <u>Adjustment"</u>.

#### **CONTROL CABLE**

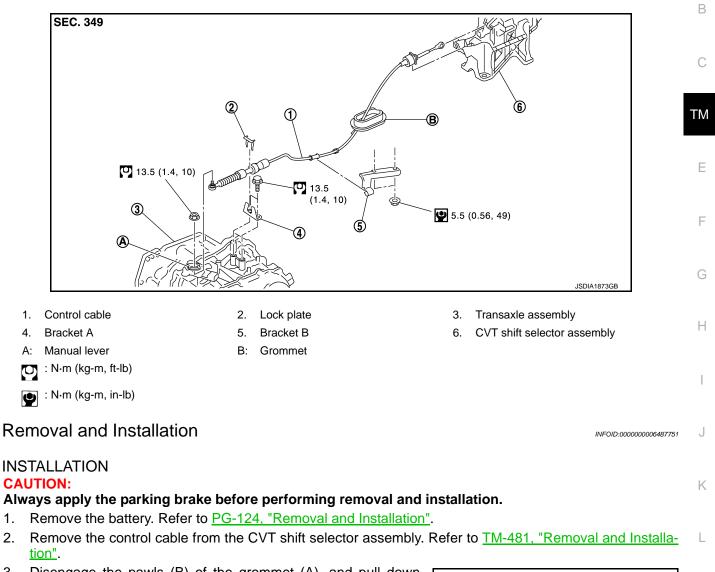
# < REMOVAL AND INSTALLATION > CONTROL CABLE

#### [CVT: RE0F11A]

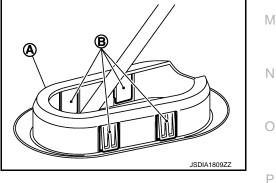
#### Exploded View

INFOID:000000006487750

А



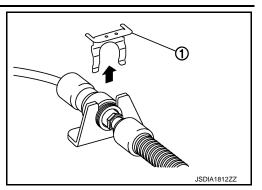
- 3. Disengage the pawls (B) of the grommet (A), and pull downwards to remove.
- 4. Remove the control cable installation nut from the manual lever.



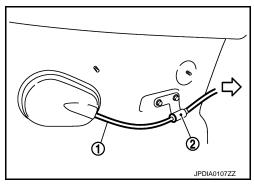
#### **CONTROL CABLE**

#### < REMOVAL AND INSTALLATION >

5. Remove the lock plate (1).



- 6. Remove sub muffler from the mounting rubber and lower the sub muffler downward. Refer to <u>EX-12.</u> <u>"Exploded View"</u>.
- 7. Lift up the heat plate.
- 8. Remove the control cable (1) from the bracket (2).

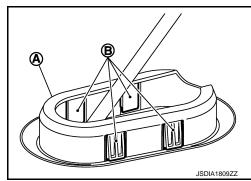


- 9. Remove the control cable from the vehicle.
- 10. Remove bracket.

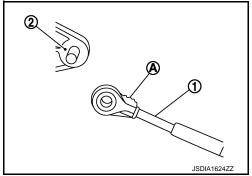
#### INSTALLATION

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.



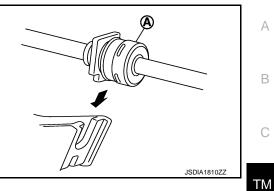
- Pay attention to the following when connecting the control cable to the CVT shift selector.
- 1. When connecting the control cable (1) to the CVT shift selector assembly (2), face the grooved surface of the rib (A) up and insert the control cable until it stops.



#### **CONTROL CABLE**

#### < REMOVAL AND INSTALLATION >

- 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.



[CVT: RE0F11A]

Inspection

INFOID:00000006487752

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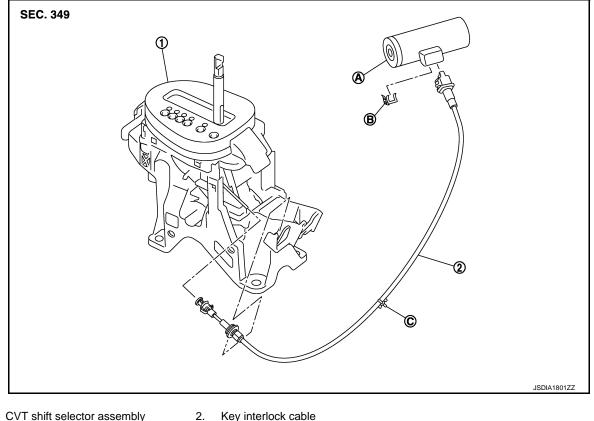
**INSPECTION AFTER INSTALLATION** 

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to <u>TM-383</u>, "Inspection and <u>Adjustment</u>".

#### **KEY INTERLOCK CABLE**

#### **Exploded View**

INFOID:00000006487753



- 1. CVT shift selector assembly Key cylinder
- Key interlock cable B: Clip
- C: Clip

#### **Removal and Installation**

INFOID:000000006487754

#### REMOVAL

#### **CAUTION:**

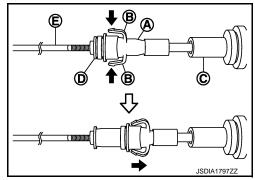
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#### Always apply the parking brake before performing removal and installation.

- 1. Shift the selector lever to the "P" position.
- 2. Remove the selector lever knob. Refer to TM-482, "Disassembly and Assembly".
- 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.

#### Е :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".



#### **KEY INTERLOCK CABLE**

#### < REMOVAL AND INSTALLATION >

- Lift clip (A) in the direction of the arrow (**C**) and remove in the 7. direction of the arrow (
  - :Key interlock cable 1
  - В :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.

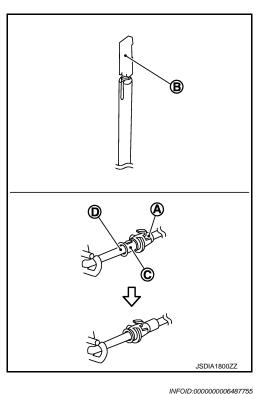
#### **INSTALLATION**

 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.

C (A) (1) B JSDIA1798ZZ ТΜ C



Inspection

INSPECTION AFTER INSTALLATION

- Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to <u>TM-383</u>, "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.

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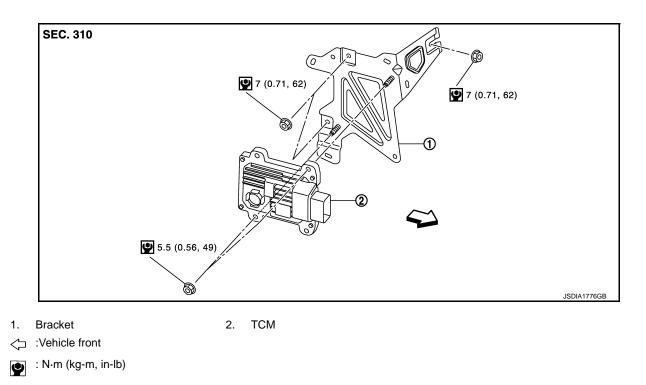
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**TM-489** 

#### TCM

Exploded View

INFOID:000000006487756



#### Removal and Installation

**CAUTION:** 

When replacing TCM, note the "CVTF DETERIORATION DATE" value displayed on CONSULT-III "CON-FORM 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 <u>TM-374</u>, "<u>Description</u>".

#### 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:000000006487758

INFOID:000000006487757

ADJUSTMENT AFTER INSTALLATION Perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to <u>TM-374</u>, "<u>Description</u>".

#### AIR BREATHER HOSE

#### Removal and Installation

#### REMOVAL

- 1. Remove clip from bracket.
- 2. Remove air breather hose from transaxle assembly.

#### INSTALLATION

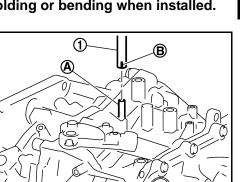
Note the following, and install in the reverse order of removal. **CAUTION:** 

Check that air breather hose is not collapsed or blocked due to folding or bending when installed.
Securely install the clip to the bracket.

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- 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.





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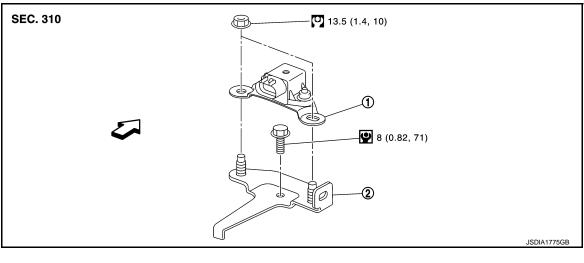
[CVT: RE0F11A]

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#### G SENSOR

**Exploded View** 

INFOID:000000006487760



#### 1. Bracket

1. G sensor

- : N·m (kg-m, ft-lb)
- : N·m (kg-m, in-lb)

#### Removal and Installation

INFOID:000000006487761

#### **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".
- Remove center pillar lower garnish (left side) and dash side finisher (left side). Refer to <u>INT-20, "CENTER</u> <u>PILLAR LOWER GARNISH : Removal and Installation"</u> (center pillar lower garnish) and <u>INT-20, "DASH</u> <u>SIDE FINISHER : Removal and Installation"</u> (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

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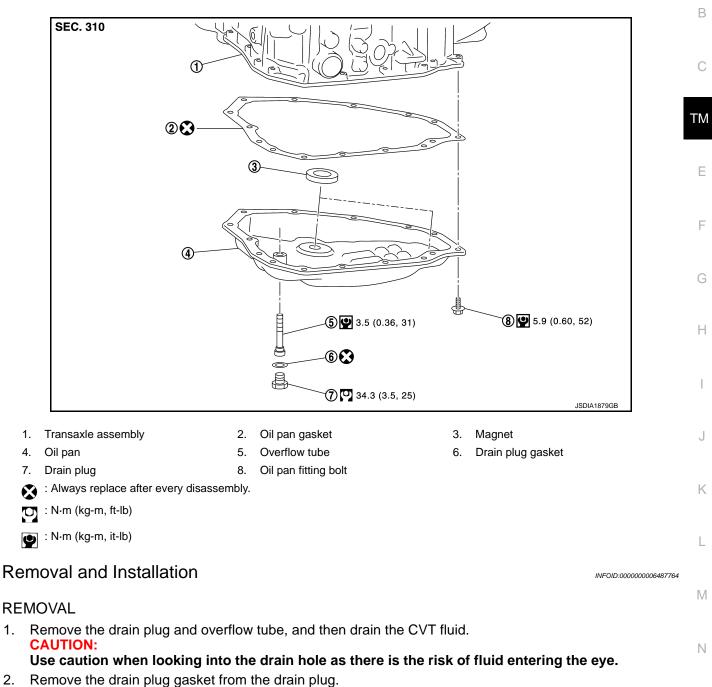
ADJUSTMENT AFTER INSTALLATION Perform "G SENSOR CALIBRATION". Refer to <u>TM-377</u>, "Description".

#### OIL PAN

#### Exploded View

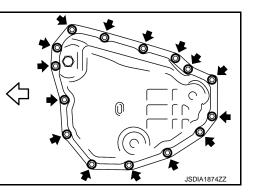
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Remove the oil pan mounting bolts (+), and then remove the oil pan and oil pan gasket.

4. Remove the magnets from the oil pan.



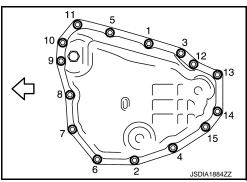
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#### INSTALLATION

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.



INFOID:000000006487765

#### INSPECTION AFTER REMOVAL

Inspection and Adjustment

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** 

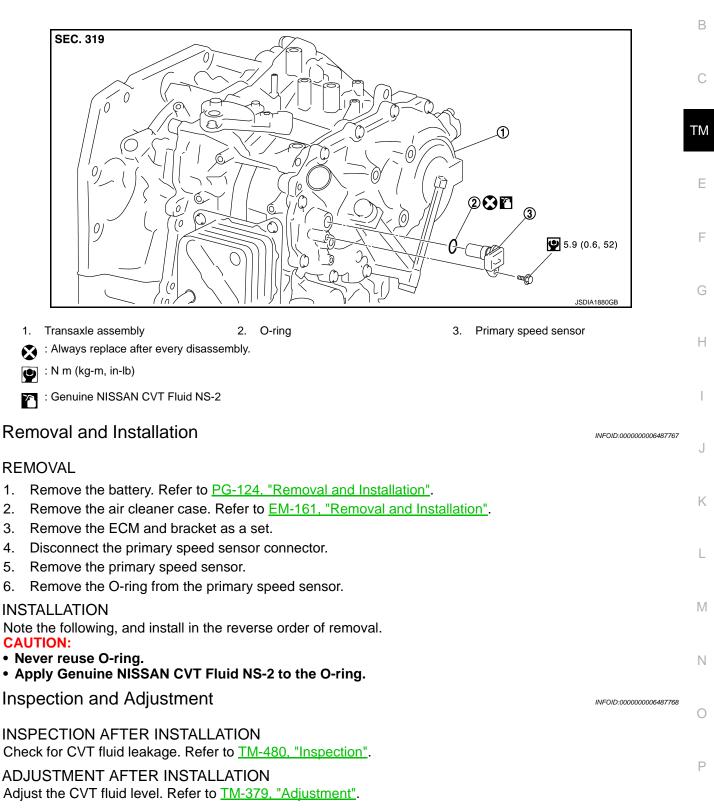
Check for CVT fluid leakage. Refer to TM-480, "Inspection".

ADJUSTMENT AFTER INSTALLATION Adjust the CVT fluid level. Refer to <u>TM-379, "Adjustment"</u>.

PRIMARY SPEED SENSOR

Exploded View

INFOID:000000006487766



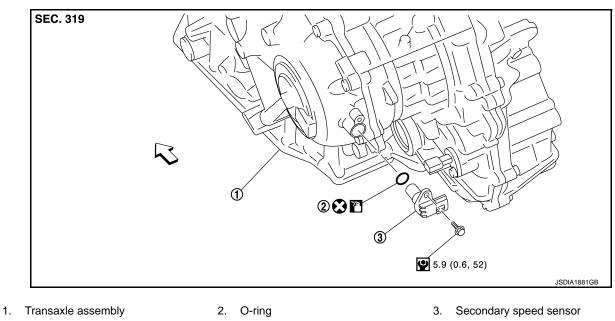
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#### SECONDARY SPEED SENSOR

#### **Exploded View**

INFOID:00000006487769

[CVT: RE0F11A]



- : Vehicle front
- Always replace after every disassembly.
- : N·m (kg-m, in-lb) 9
- : Genuine NISSAN CVT Fluid NS-2

#### Removal and Installation

#### 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.
- Remove the O-ring from the secondary speed sensor. 5.

#### **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

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". INFOID:000000006487771

INFOID:000000006487770

#### TM-496

#### **OUTPUT SPEED SENSOR**

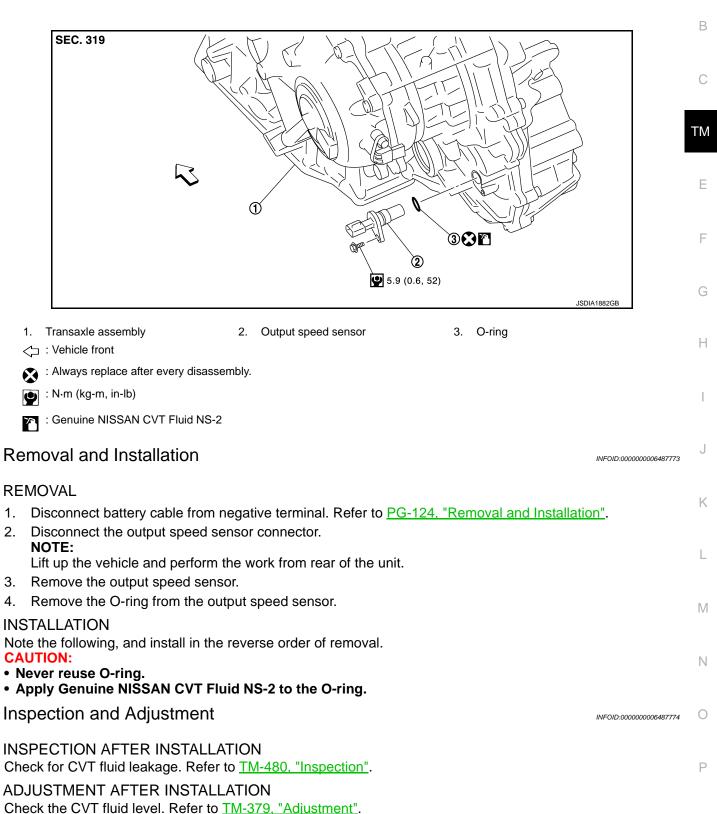
#### < REMOVAL AND INSTALLATION >

#### OUTPUT SPEED SENSOR

#### **Exploded View**

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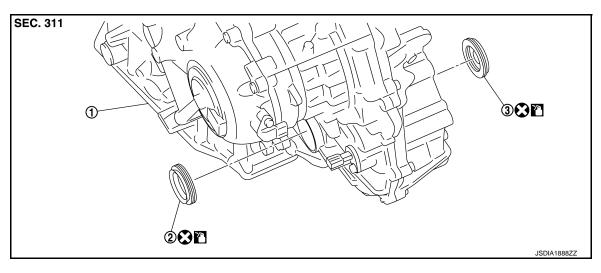
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#### DIFFERENTIAL SIDE OIL SEAL

#### Exploded View

INFOID:000000006487775



- 1. Transaxle assembly
- 2. Differential side oil seal (left side)

- $\triangleleft$ : Vehicle front
- : Always replace after every disassembly.
- : Genuine NISSAN CVT Fluid NS-2

#### **Removal and Installation**

INFOID:000000006487776

#### 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:** 

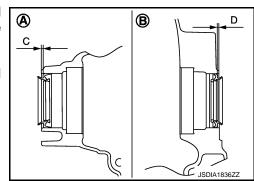
- Never reuse differential side oil seal.
- Apply Genuine NISSAN CVT Fluid NS-2 to the differential side oil seal lip and around the oil seal.
- When inserting the drive shaft, be sure to use a protector (SST: KV38107900). Refer to <u>FAX-53</u>, <u>"Removal and Installation"</u>.

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)



3. Differential side oil seal (right side)

#### DIFFERENTIAL SIDE OIL SEAL

< REMOVAL AND INSTALLATION >

Dimension "C"	:Height difference from case 0.020 in).	e end surface is within 1.8 $\pm$ 0.5 mm (0.071 $\pm$
Dimension "D"	:Height difference from case 0.020 in).	e end surface is within 1.8 $\pm$ 0.5 mm (0.071 $\pm$
NOTE:		
The reference is the pull-in dir	ection 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 in- ner dia. 50 mm (1.97 in)
Converter housing side		
nspection and Adju	ustment	INFOID:00000000648777
NSPECTION AFTER		
	age. Refer to <u>TM-480, "Inspect</u>	ion".
ADJUSTMENT AFTER	-	
	el. Refer to <u>TM-379, "Adjustmer</u>	ıt".
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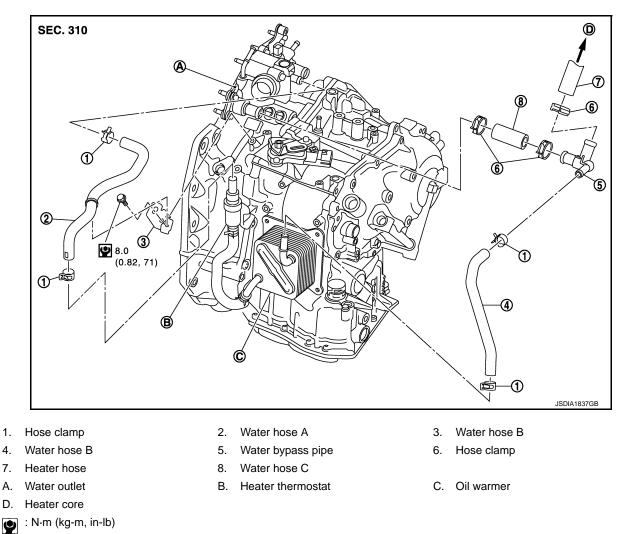
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#### < REMOVAL AND INSTALLATION > WATER HOSE

# **Exploded View**

INFOID:00000006487778

[CVT: RE0F11A]



## Removal and Installation

INFOID:000000006487779

#### 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 <u>CO-52, "Exploded View"</u>.
- 5. Remove the bracket.

#### **INSTALLATION**

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

#### TM-500

#### WATER HOSE

#### < REMOVAL AND INSTALLATION >

#### [CVT: RE0F11A]

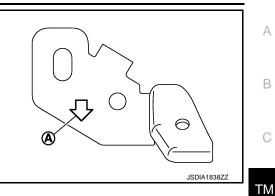
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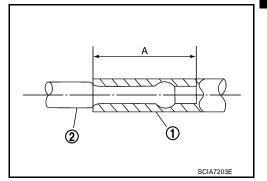
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• To install bracket to the CVT assembly, face the from arrow (A) of the bracket ahead of the vehicle.



• 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).

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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

#### **INSPECTION AFTER INSTALLATION**

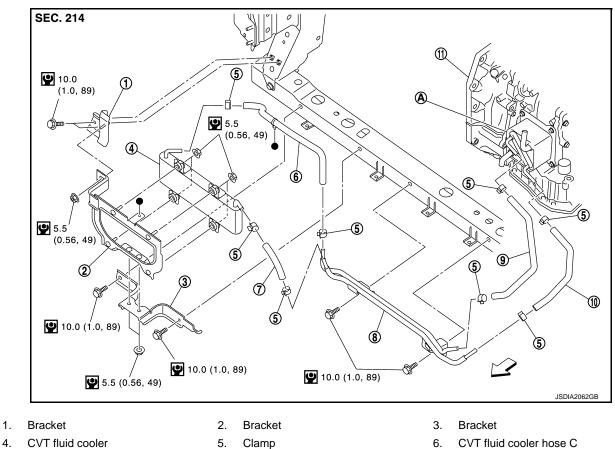
Start the engine, and check the joints for coolant leakage.

INFOID:000000006487780

FLUID COOLER SYSTEM

**Exploded View** 

INFOID:00000006598467



CVT fluid cooler tube assembly

11. Transaxle assembly

- 7. CVT fluid cooler hose B
- 10. CVT fluid cooler hose A
- A. CVT oil warmer
- C: Vehicle front
- : N·m (kg-m, in-lb) Q

#### **Removal and Installation**

#### 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".

8.

Remove air guide (LH and RH). Refer to DLK-147, "HR16DE : Exploded View". 3.

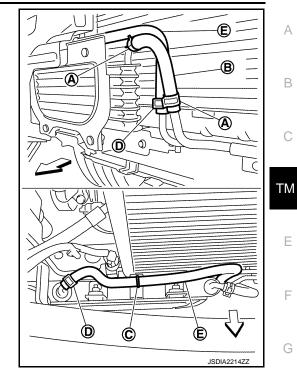
- 9. CVT fluid cooler hose D

INFOID:000000006598468

#### FLUID COOLER SYSTEM

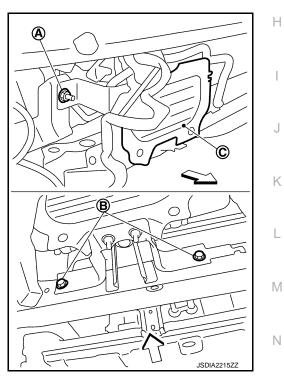
#### < REMOVAL AND INSTALLATION >

- 4. Remove hose clamps (A) and fluid cooler hose B (B).
- 5. Disconnect clip (C) from bracket.
- 6. Remove hose clamps (D) and fluid cooler hose C (E).



7. Remove nut (A) and bolts (B).

8. Remove CVT fluid cooler (with brackets) (C) from the vehicle.



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#### **FLUID COOLER SYSTEM**

#### < REMOVAL AND INSTALLATION >

9. Remove clamps (A) and fluid cooler hose A (B).

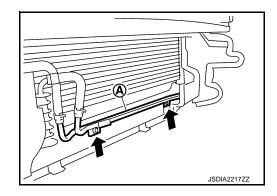
#### NOTE:

#### 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 IIUIU COOIEI HOSE A	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.

#### **FLUID COOLER SYSTEM**

#### < REMOVAL AND INSTALLATION >

#### [CVT: RE0F11A]

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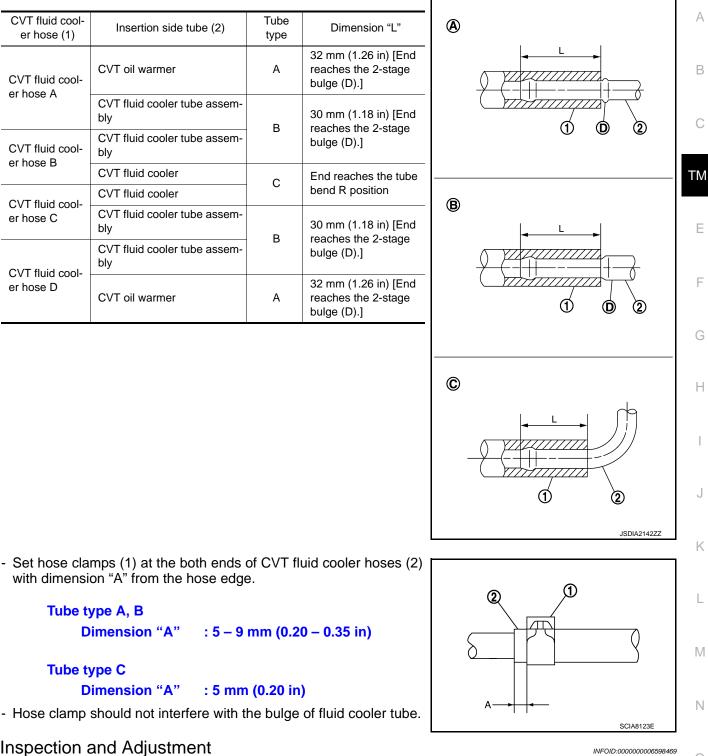
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Inspection and Adjustment

**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".

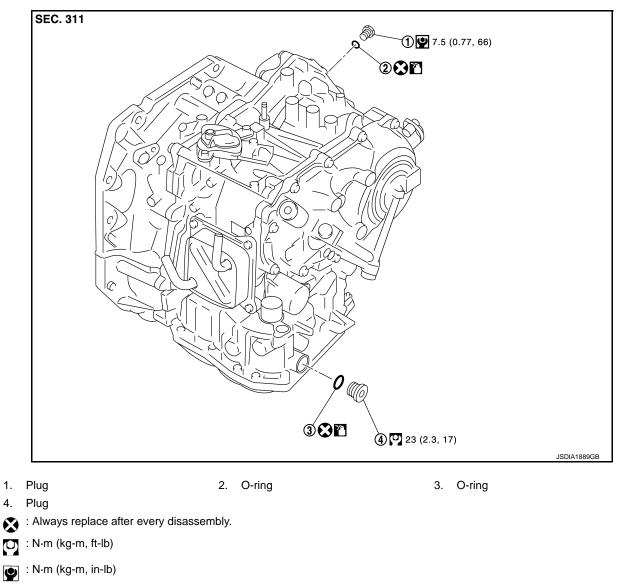
#### Description

Replace the O-ring if oil leakage or exudes from the plug.

#### Exploded View

INFOID:000000006487782

INFOID:000000006487781



Genuine NISSAN CVT Fluid NS-2

#### Removal and Installation

#### 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.

INFOID:000000006487783

< REMOVAL AND INSTALLATION >	
Increation and Adjustment	

inspection and Adjustment	INFOID:000000006487784
INSPECTION AFTER INSTALLATION Check for CVT fluid leakage. Refer to <u>TM-480, "Inspection"</u> .	
ADJUSTMENT AFTER INSTALLATION Adjust the CVT fluid level. Refer to <u>TM-379, "Adjustment"</u> .	

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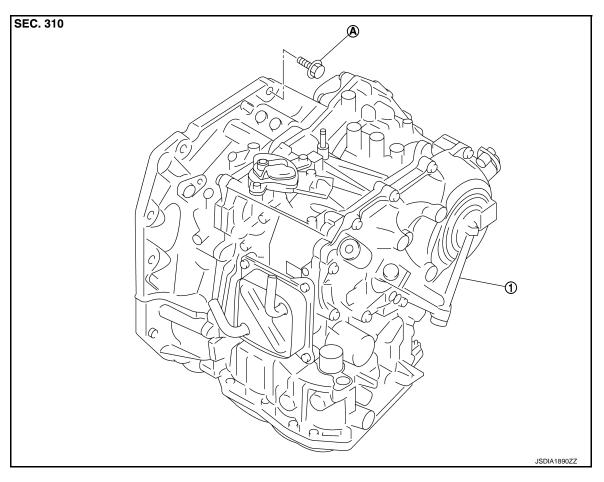
TM-507

[CVT: RE0F11A]

#### UNIT REMOVAL AND INSTALLATION TRANSMISSION ASSEMBLY

Exploded View

INFOID:000000006487785



- 1. Transaxle assembly
- A: : For the tightening torque, refer to TM-508, "Removal and Installation".

#### Removal and Installation

INFOID:000000006487786

#### REMOVAL

#### WARNING:

Never open the radiator cap or drain plug when the engine is hot. Hot liquid may spray out, causing serious injury.

#### CAUTION:

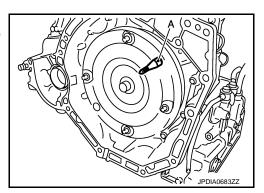
# Perform these steps after the coolant temperature has cooled sufficiently. NOTE:

- When replacing the TCM and transaxle assembly as a set, replace the transaxle assembly first and then replace the TCM. Refer to <u>TM-374</u>, "<u>Description</u>".
- Cap or plug openings to prevent fluid from spilling.
- 1. Remove the battery. Refer to <u>PG-124, "Exploded View"</u>.
- 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

#### TM-508

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< U	JNIT REMOVAL AND INSTALLATION > [CVT: REOF11A]	
	<ul> <li>Secondary pulley speed sensor connector</li> <li>Output speed sensor connector</li> <li>Ground</li> </ul>	A
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. <u>TM-500, "Removal and Installation"</u> . <b>NOTE:</b>	В
	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".	С
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:	ТМ
	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".	E
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.	F
	Be careful not to contact the drain plug when setting the transmission jack.	
14.	Set a transmission jack under the engine assembly.	G
4 -	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 <u>EM-215</u> , <u>"Exploded View"</u> .	Н
	. Remove the bolts that fasten the transaxle assembly and engine assembly.	
17.	Remove the transaxle assembly from the vehicle.	
	Never drop the torque converter.	
-	STALLATION	J
	te the following, and install in the reverse order of removal.	
	AUTION: Never reuse O-ring.	
	Apply Vaseline to the O-ring.	K
	When installing the transaxle assembly onto the engine assembly,	
	check the engagement of the dowel pin (<).	L

• 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.



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#### TRANSMISSION ASSEMBLY

#### < UNIT REMOVAL AND INSTALLATION >

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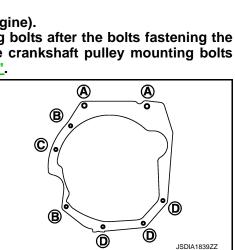
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- Rotate the crankshaft so that the drive plate location guide insert hole (A) of the drive plate is aligned with the drive plate location guide that is installed on the torque converter. CAUTION:
  - · Rotate the crankshaft clockwise (as viewed from 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	В	С	D
Direction of insertion	Transaxle assembly $\Rightarrow$ Engine assembly	Engine	e assembly $\Rightarrow$ Transaxle as	sembly
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)	1

#### Inspection and Adjustment

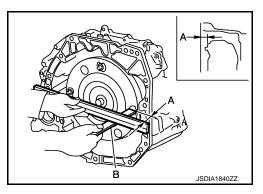
#### **INSPECTION BEFORE INSTALLATION**

Check the distance "A" between the converter housing and torque converter.

> В : Scale С

: Straightedge

**Dimension "A"** : TM-513, "Torque Converter"



#### INSPECTION AFTER INSTALLATION

Check the following items:

CVT fluid leakage. Refer to <u>TM-480, "Inspection"</u>

• For CVT position, refer to TM-383, "Inspection and Adjustment".

#### TM-510

#### TRANSMISSION ASSEMBLY

# <u>VINIT REMOVAL AND INSTALLATION</u> Start the engine and check for coolant leakage from the parts which are removed and reinstalled. ADJUSTMENT AFTER INSTALLATION Adjust the CVT fluid level. <u>TM-379, "Adjustment"</u>. Perform "ADDITIONAL SERVICE WHEN REPLACE TRANSAXLE ASSEMBLY". Refer to <u>TM-375, "Description"</u>. B C TM E

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#### SERVICE DATA AND SPECIFICATIONS (SDS)

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#### **General Specification**

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[CVT: RE0F11A]

Engine model		HR16DE	
Drive type		2WD	
Transaxle model		RE0F11A	
Transaxle model code number		3JX4B	
Stall torque ratio		1.91 : 1	
Dullau actic	Forward	2.200 - 0.550	
Pulley ratio	Reverse	2.200	
	1GR	1.821	
Auxiliary gearbox gear ratio	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) <sup>*2</sup>	

#### 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

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Unit: rpm

Throttle position	Shift pattern	Engine speed		
	Shin patient	At 40 km/h (25 MPH)	At 60 km/h (37 MPH)	
	"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	
2/8	"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	
	"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	
8/8	"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

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Stall speed
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#### SERVICE DATA AND SPECIFICATIONS (SDS)

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#### Line Pressure

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		INF 012.00000000000000000000000000000000000
		Unit: MPa (bar, kg/cm <sup>2</sup> , 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)
orque Converter		INFOID:00000006487791
Distance "A"between the convert	er housing and torque converter	16.2 mm