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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. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.
- Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see "SRS AIR BAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

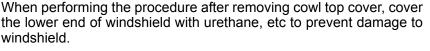
WARNING:

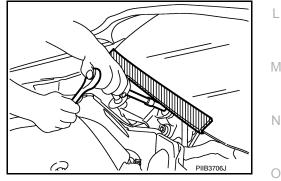
Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery or batteries, and wait at least 3 minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

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Precautions for Removing Battery Terminal

When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.

P

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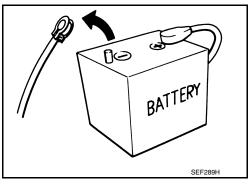
PRECAUTIONS

< PRECAUTION >

[6MT: RS6F94R]

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

D4D engine	: 20 minutes	YS23DDT	: 4 minutes
HRA2DDT	: 12 minutes	YS23DDTT	: 4 minutes
K9K engine	: 4 minutes	ZD30DDTi	: 60 seconds
M9R engine	: 4 minutes	ZD30DDTT	: 60 seconds
R9M engine	: 4 minutes		
V9X engine	: 4 minutes		
YD25DDTi	: 2 minutes		



NOTE:

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

After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

NOTE:

- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
- Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
- Driving for 30 minutes or more on a steep slope.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

NOTE:

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

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

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

Service Notice or Precautions for Manual Transaxle

INFOID:000000012200751

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-17, "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.

< PREPARATION >
PREPARATION
PREPARATION

Special Service Tools

The actual shapes of TechMate tools may differ from those of special service tools illustrated here.

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

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< PREPARATION >

Tool number (TechMate No.) 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	 Installing input shaft rear bearing Installing mainshaft front bearing inner race
ST33052000 (-) Drift a: 22 mm (0.87 in) dia. b: 28 mm (1.10 in) dia.	a b b zzA0969D	 Removing mainshaft rear bearing inner race Removing 6th main gear Removing 5th main gear Removing 4th main gear Removing 1st main gear Removing 1st-2nd synchronizer hub assembly Removing 2nd main gear Removing bushing Removing 3rd main gear Removing mainshaft front bearing inner race
KV32102700 (-) Drift a: 48.6 mm (1.913 in) dia. b: 41.6 mm (1.638 in) dia.	a bl	 Installing bushing Installing 2nd main gear Installing 3rd main gear Installing 4th main gear Installing 5th main gear Installing 6th main gear
ST30901000 (J-26010-01) Drift a: 79 mm (3.11 in) dia. b: 45 mm (1.77 in) dia. c: 35.2 mm (1.386 in) dia.	S-NT065	Installing mainshaft rear bearing inner race
ST33061000 (J-8107-2) Drift a: 28.5 mm (1.122 in) dia. b: 38 mm (1.50 in) dia.	ZZA0978D	Removing differential side bearing inner race (clutch housing side)
KV32300QAM (-) (Renault SST: B.vi 1823) Drift	CIB2078J	Removing and installing input shaft rear bear- ing mounting bolt

< PREPARATION >

Commercial Service Tools

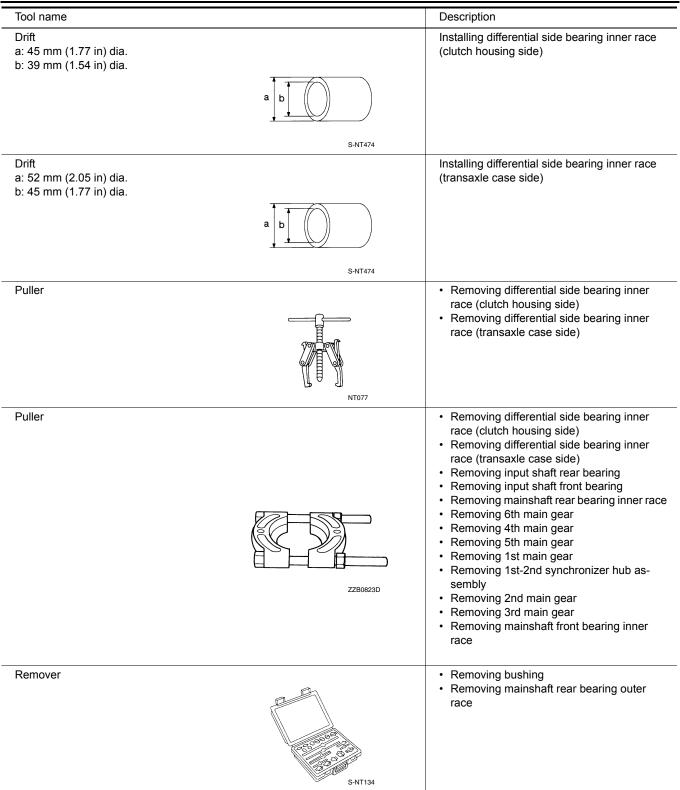
[6MT: RS6F94R]

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Tool name		Description
Socket a: 8 mm (0.31 in) b: 5 mm (0.20 in)	a	Removing and installing drain plug
Spacer a: 25 mm (0.98 in) dia. b: 25 mm (0.98 in)	PCIB1776E	Removing mainshaft front bearing outer race
Drift a: 17 mm (0.67 in) dia.	a PCIB1780E	Installing bushing
	a	
Drift a: 24 mm (0.94 in) dia.	S-NT063	Removing input shaft rear bearing
	PCIB1779E	
Drift 1: 35 mm (1.38 in) dia. 1: 25 mm (0.98 in) dia.		Installing input shaft front bearing
	a b l	
Drift a: 43 mm (1.69 in) dia.	S-NT065	 Installing input shaft rear bearing Removing differential side bearing inner race (transaxle case side)
	a	
	NT109	

< PREPARATION >



<system description > SYSTEM DESCRIPTION COMPONENT PARTS

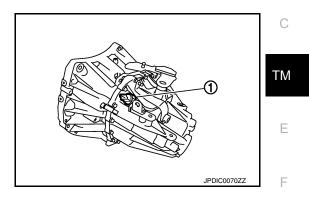
Component Parts Location

POSITION SWITCH

1 : Position switch

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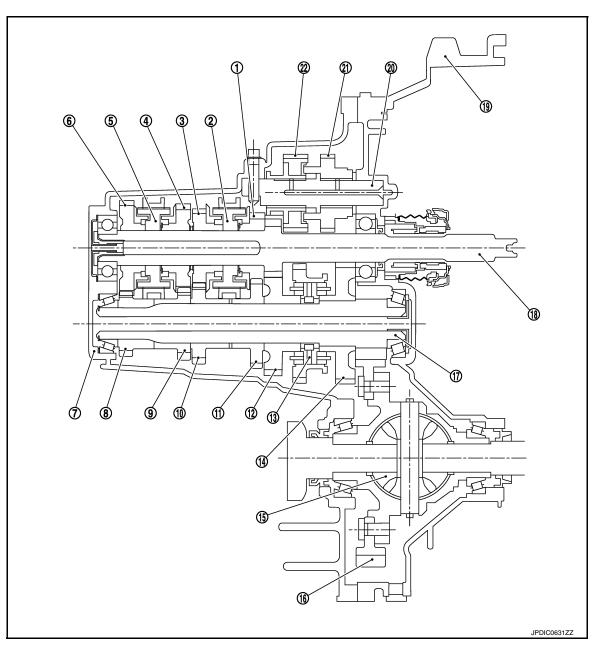
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< SYSTEM DESCRIPTION >

STRUCTURE AND OPERATION

Sectional View

INFOID:000000012200755



- 1. 3rd input gear
- 4. 5th input gear
- 7. Transaxle case
- 10. 4th main gear
- 13. 1st-2nd synchronizer hub assembly 1
- 16. Final gear
- 19. Clutch housing
- 22. Reverse output gear

System Description

TRIPLE-CONE SYNCHRONIZER

- 2. 3rd-4th synchronizer hub assembly
- 5. 5th-6th synchronizer hub assembly
- 8. 6th main gear
- 11. 3rd main gear
- 14. 1st main gear
- 17. Mainshaft
- 20. Reverse idler shaft

- 3. 4th input gear
- 6. 6th input gear
- 9. 5th main gear
- 12. 2nd main gear
- 15. Differential
- 18. Input shaft
- 21. Reverse input gear

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[6MT: RS6F94R]

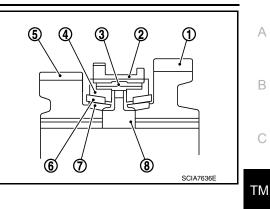
STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[6MT: RS6F94R]

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

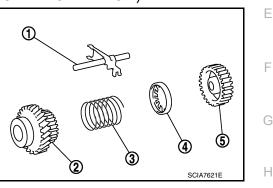
- 1 : 1st main gear
- 2 : 1st-2nd coupling sleeve
- 3 : Insert key
- 4 : Outer baulk ring
- 5 : 2nd main gear
- 6 : Synchronizer cone
- 7 : Inner baulk ring
- 8 : 1st-2nd synchronizer hub



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



Revision: November 2015

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DTC/CIRCUIT DIAGNOSIS POSITION SWITCH

BACK-UP LAMP SWITCH

BACK-UP LAMP SWITCH : Component Inspection

1.CHECK BACK-UP LAMP SWITCH

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

2. Check continuity between position switch terminals.

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

Is the inspection result normal?

YES >> INSPECTION END

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

PARK/NEUTRAL POSITION (PNP) SWITCH

PARK/NEUTRAL POSITION (PNP) SWITCH : Component Inspection

INFOID:000000012200758

1. CHECK PARK/NEUTRAL POSITION (PNP) SWITCH

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

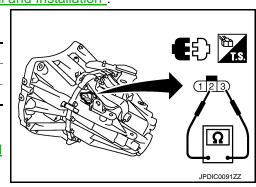
2. Check continuity between position switch terminals.

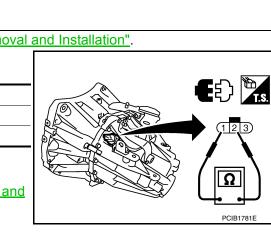
Term	ninals	Condition	Continuity
2	3	Neutral gear position	Existed
2	5	Except neutral gear position	Not existed

Is the inspection result normal?

YES >> INSPECTION END

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





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

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.

		1		1	1	1	1	1	1			1	1	0
														TM
SUSPECTED (Possible caus		OIL (Oil level is low)	OIL (Wrong oil)	OlL (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 (Wom or damaged)	INSERT SPRING (Damaged)	F G H
Reference			TM-22			TM-32		<u>TM-28</u>	<u>TM-32</u>		CC ML	70-11	1	J
	Noise	1	2							3	3			-
Symptoms	Oil leakage		3	1	2	2	2							-
Gymptoms	Hard to shift or will not shift		1	1				2				3	3	K
	Jumps out of gear							1	2	2				

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< 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.

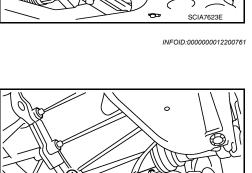
4. Tighten filler plug to the specified torque. Refer to <u>TM-32</u>. <u>"Exploded View"</u>.

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.

4. Tighten drain plug to the specified torque. Refer to <u>TM-32</u>, <u>"Exploded View"</u>.



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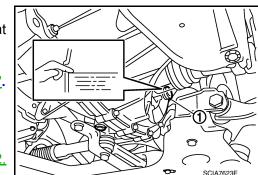
Refilling

- 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 MA-11, "Fluids and Lubricants".viscosityOil capacity: Refer to TM-67, "General Specifica-

tions".

- After refilling gear oil, check the oil level. Refer to <u>TM-22</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-32, "Exploded View".



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< REMOVAL AND INSTALLATION >

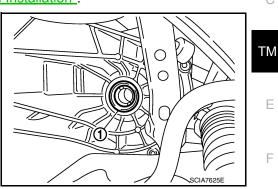
REMOVAL AND INSTALLATION SIDE OIL SEAL

Removal and Installation

REMOVAL

- 1. Remove front drive shafts. Refer to FAX-83, "2WD : 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 (-)].
 - : Transaxle case side А
 - 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.

Inspection

INSPECTION AFTER INSTALLATION Check the oil level and oil leakage. Refer to TM-22, "Inspection". [6MT: RS6F94R]

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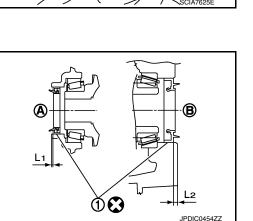
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< REMOVAL AND INSTALLATION >

POSITION SWITCH

Removal and Installation

REMOVAL

- 1. Remove battery. Refer to PG-105, "Removal and Installation".
- 2. Disconnect position switch connector.
- 3. Remove position switch from transaxle case.

INSTALLATION

- 1. Apply recommended sealant to threads of position switch.
 - Use Genuine Silicone RTV or an equivalent. Refer to <u>GI-22, "Recommended Chemical Products</u> <u>and Sealants"</u>. 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-32, "Exploded View".
- 4. For the next step and after, install in the reverse order of removal.

Inspection

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INSPECTION AFTER INSTALLATION

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

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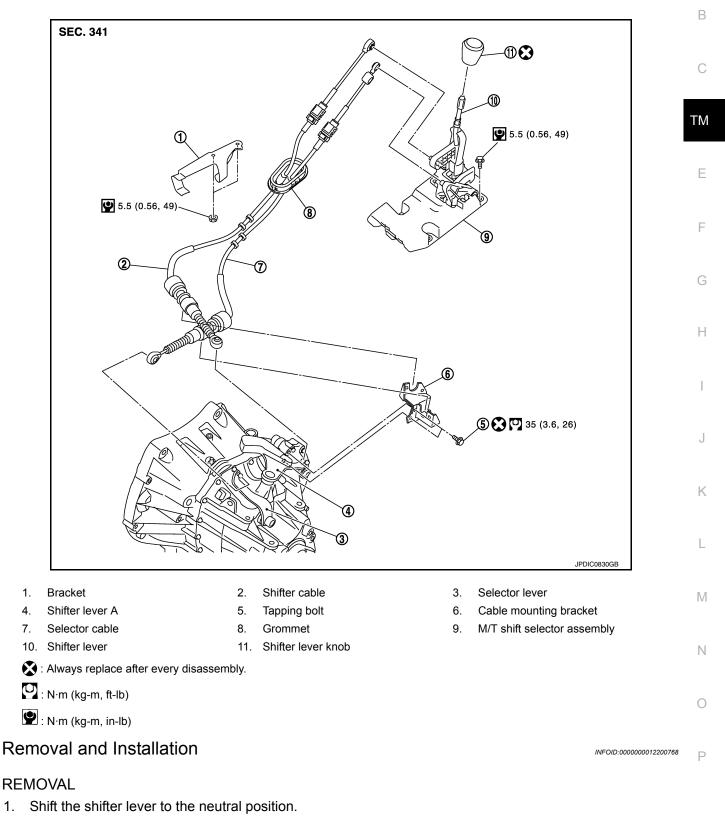
< REMOVAL AND INSTALLATION >

CONTROL LINKAGE

Exploded View

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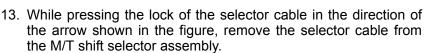
2. Remove air cleaner case. Refer to EM-192, "Removal and Installation".

[6MT: RS6F94R]

< REMOVAL AND INSTALLATION >

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

- a. Disconnect clips (A) from bracket.
- b. Remove bolts (B) from bracket.
- c. Remove bracket.
- 4. Pull out and disconnect the each cable from the shifter lever A and the selector lever, using a suitable remover.
- 5. While pressing the lock of the selector cable in the direction of the arrow shown in the figure, remove the selector cable from the cable mounting bracket.
- 6. While pressing the lock of the shifter cable in the direction of the arrow shown in the figure, remove the shifter cable from the cable mounting bracket.
- 7. Remove cable mounting bracket from transaxle case.
- 8. Pull the shifter lever knob upward to remove.
- 9. Remove center console assembly. Refer to <u>IP-24</u>, "Removal and <u>Installation"</u>.
- 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.

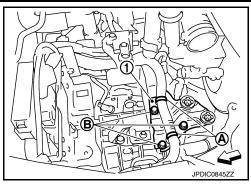


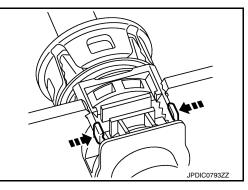
- 14. While pressing the lock of the shifter cable in the direction of the arrow shown in the figure, remove the shifter cable from the M/T shift selector assembly.
- 15. Remove the M/T shift selector assembly.
- 16. Remove three way catalyst and heat plate. Refer to <u>EX-10.</u> <u>"Removal and Installation"</u>.
- 17. Remove the bracket from the vehicle.

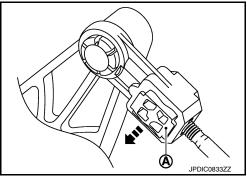


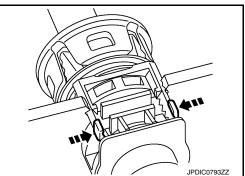
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[6MT: RS6F94R]



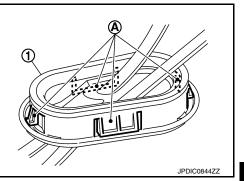






< REMOVAL AND INSTALLATION >

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



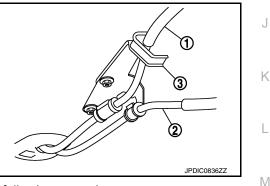
INSTALLATION

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

- Install each cable without causing interference with other parts, a 120 mm (4.72 in)-or-less bend, and a 180-degrees-or-more twist.
- Install boot of each cable without causing interference with other parts and a 90-degrees-or-more twist.
- Fit boot of to center console assembly the groove on shifter lever knob.
- To install the shifter lever knob, press it into the shifter lever. **CAUTION:**
 - Never reuse shifter lever knob.
- · Be careful with orientation of shifter lever knob.
- Tapping work for tapping bolts is not applied to new transaxle case. Do not perform tapping by other than screwing tapping bolts because tapping is formed by screwing tapping bolts into transaxle case. **CAUTION:**

Never reuse tapping bolt.

- Insert the each cable until it reaches the cable mounting bracket and M/T shift selector assembly.
- Insert the each cable until it reaches the shifter lever A and the selector lever.
- Shift the shifter lever to the neutral position.
- Install the shifter cable (1) and the selector cable (2) to the bracket (3) as shown in the figure.



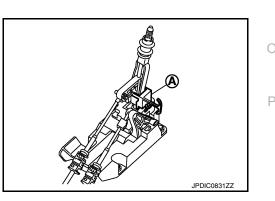
Install the selector cable (the M/T shift selector assembly side), as per the following procedure.

When M/T shift selector assembly is replaced:

- Install the selector cable to the M/T shift selector assembly.
- 2. Shift the shifter lever to the neutral position.
- 3. Install the lever stopper (A) to the M/T shift selector assembly as shown in the figure. CAUTION:

Selector cable cannot be adjusted accurately without using the lever stopper.

4. Check that the shifter lever does not move in the direction of the select. If it moves, repeat step 3.



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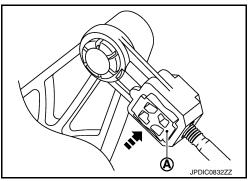
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< REMOVAL AND INSTALLATION >

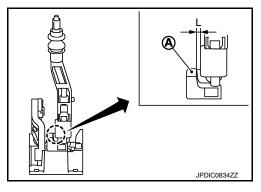
- 5. Insert the stopper (A) until it reaches the selector cable.
- 6. Remove the lever stopper from the M/T shift selector assembly.
- 7. Shift the shifter lever to each gear position to check that there are no bindings. If any, repeat step 3.



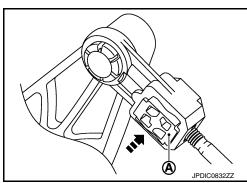
When M/T shift selector assembly is not replaced:

- 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.



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.

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AIR BREATHER HOSE

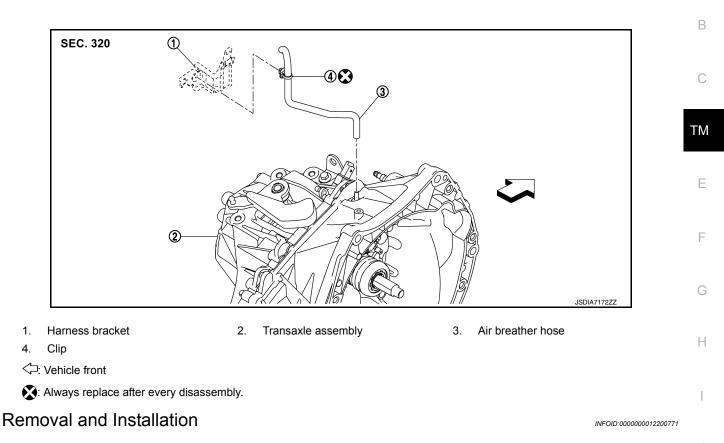
< REMOVAL AND INSTALLATION >

AIR BREATHER HOSE

Exploded View

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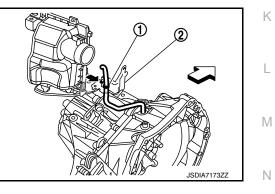


REMOVAL

- 1. Remove air cleaner case. Refer to EM-192. "Removal and Installation".
- 2. Remove clip (1) from harness bracket (2).

Remove air breather hose from the 2 way connector of transaxle assembly.
 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 clip in the mounting hole of harness bracket.
- Never reuse clip.

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[6MT: RS6F94R]

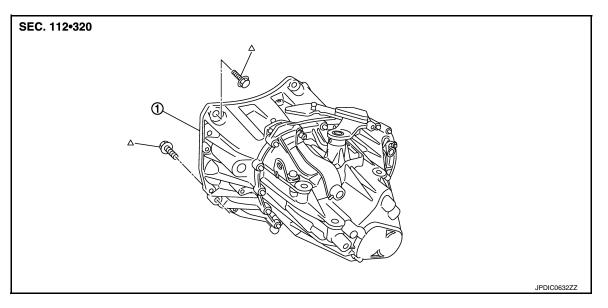
< UNIT REMOVAL AND INSTALLATION >

[6MT: RS6F94R]

UNIT REMOVAL AND INSTALLATION TRANSAXLE ASSEMBLY

Exploded View

INFOID:000000012200772



- 1. Transaxle assembly
- Δ : Refer to "INSTALLATION" in <u>TM-30</u>, "Removal and Installation" for the locations and tightening torque.

Removal and Installation

INFOID:000000012200773

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-17, "Removal and Installation"</u>.

REMOVAL

- 1. Disconnect battery cable from negative terminal. Refer to PG-105. "Removal and Installation".
- 2. Shift the shifter lever to the neutral position.
- 3. Remove battery. Refer to PG-105, "Removal and Installation".
- 4. Remove air cleaner case. Refer to EM-192, "Removal and Installation".
- 5. Remove air breather hose. Refer to TM-29, "Removal and Installation".
- 6. Disconnect position switch connector. Refer to TM-24, "Removal and Installation".
- 7. Remove harness clip from transaxle assembly.
- 8. Disconnect selector cable and shifter cable from transaxle assembly. Refer to <u>TM-25</u>, "<u>Removal and</u> <u>Installation</u>".
- 9. Remove starter motor. Refer to <u>STR-28, "MR16DDT : Removal and Installation"</u>.
- Remove clutch tube from CSC (Concentric Slave Cylinder). Refer to <u>CL-15, "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-31, "Removal and Installation".
- 13. Disconnect ground cable.
- 14. Remove front suspension member. Refer to FSU-15. "Removal and Installation".
- 15. Remove front drive shafts. Refer to FAX-83, "2WD : Removal and Installation".

Revision: November 2015

TM-30

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NOTE:

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

16. Set a suitable jack to transaxle assembly and then set a suitable jack to engine assembly. CAUTION:

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

- 17. Remove engine mounting bracket (LH) mounting bolts from transaxle assembly. Refer to EM-217, "2WD : Removal and Installation".
- 18. Remove rear torgue rod bracket and rear torgue rod. Refer to EM-217, "2WD : Removal and Installation".
- 19. Remove transaxle assembly mounting bolts.

< UNIT REMOVAL AND INSTALLATION >

- 20. Remove transaxle assembly from the engine. CAUTION:
 - Fix transaxle assembly to a suitable jack.
 - The transaxle assembly must not interfere with the wire harnesses and clutch tube.
- Remove CSC. Refer to CL-17, "Removal and Installation".

INSTALLATION

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

CAUTION:

Fix transaxle assembly to a suitable jack.

The figure is the view from the engine.

- The transaxle assembly must not interfere with the wire harnesses and clutch tube.
- When installing transaxle assembly, never bring input shaft into contact with clutch cover.
- Tapping work for tapping bolts is not applied to new transaxle case. Do not perform tapping by other than screwing tapping bolts because tapping is formed by screwing tapping bolts into transaxle case.

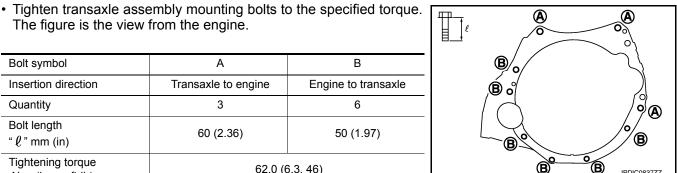
Bolt symbol	A B					
Insertion direction	Transaxle to engine	Engine to transaxle				
Quantity	3	6				
Bolt length " ℓ " mm (in)	60 (2.36)	50 (1.97)				
Tightening torque N·m (kg-m, ft-lb)	62.0 (6.3, 46)					

Inspection

INSPECTION AFTER INSTALLATION

- Check the operation of the control linkage. Refer to TM-28, "Inspection".
- Check the oil leakage and the oil level. Refer to <u>TM-22</u>, "Inspection".

TM-31



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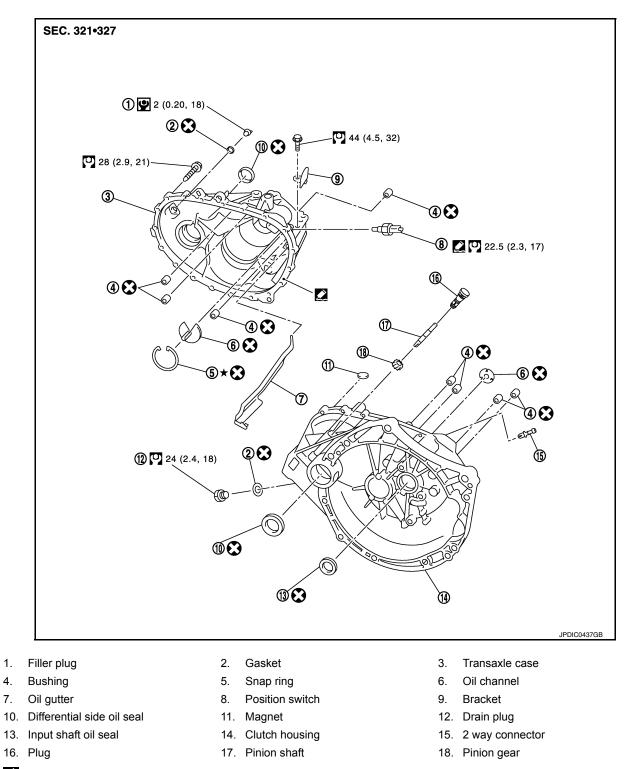
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UNIT DISASSEMBLY AND ASSEMBLY TRANSAXLE ASSEMBLY

Exploded View

CASE AND HOUSING



Apply Genuine Silicone RTV or an equivalent. Refer to <u>GI-22, "Recommended Chemical Products and Sealants"</u>.

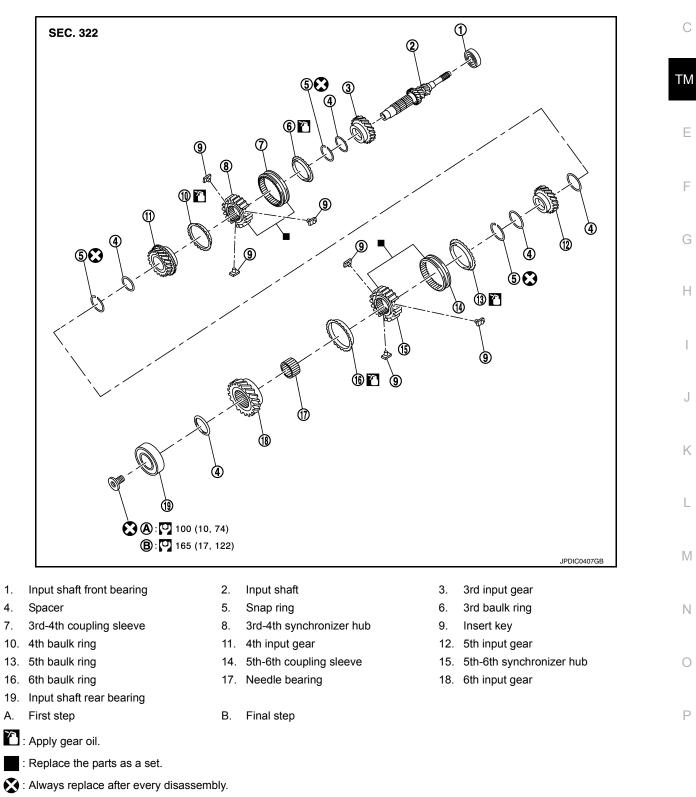
🔀 : Always replace after every disassembly.

< 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



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: N·m (kg-m, ft-lb)

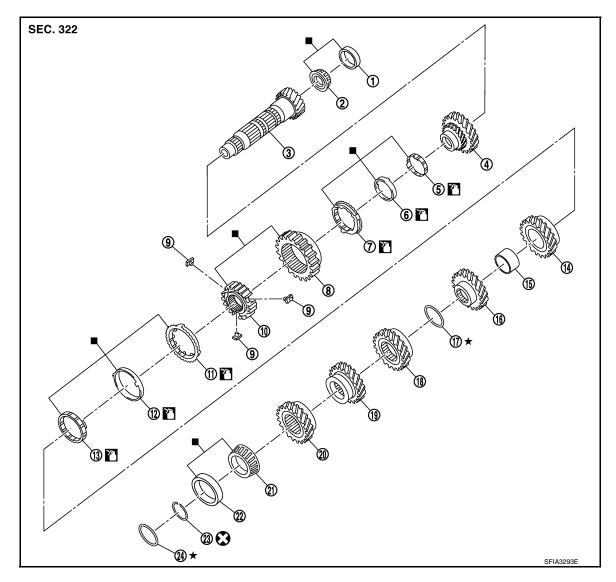
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< UNIT DISASSEMBLY AND ASSEMBLY >



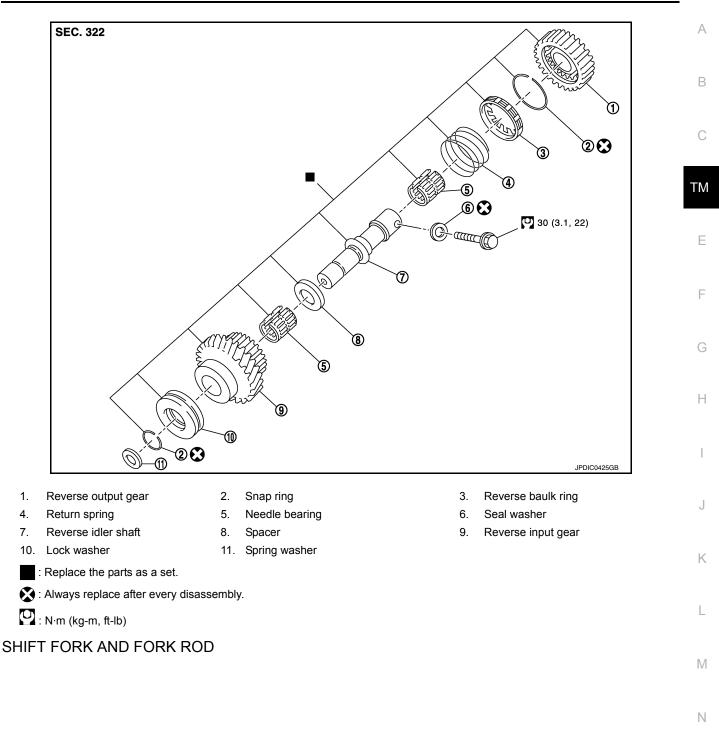
- 1. Mainshaft front bearing outer race
- 4. 1st main gear
- 7. 1st outer baulk ring
- 10. 1st-2nd synchronizer hub
- 13. 2nd inner baulk ring
- 16. 3rd main gear
- 19. 5th main gear
- 22. Mainshaft rear bearing outer race 23. Snap ring
- : Apply gear oil.
 - : Replace the parts as a set.
- ★ : Select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

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

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

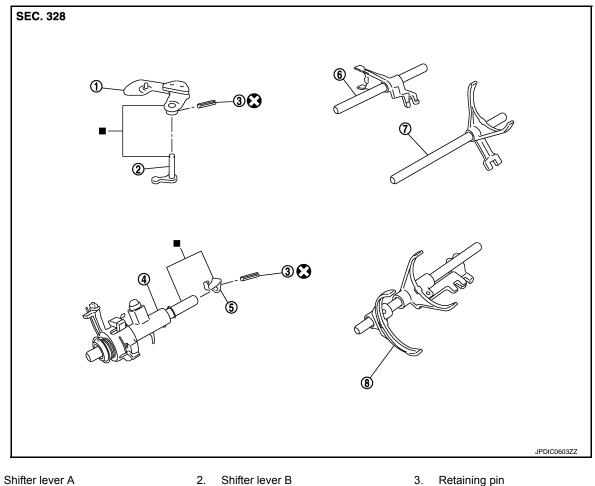
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< UNIT DISASSEMBLY AND ASSEMBLY >



4. Selector

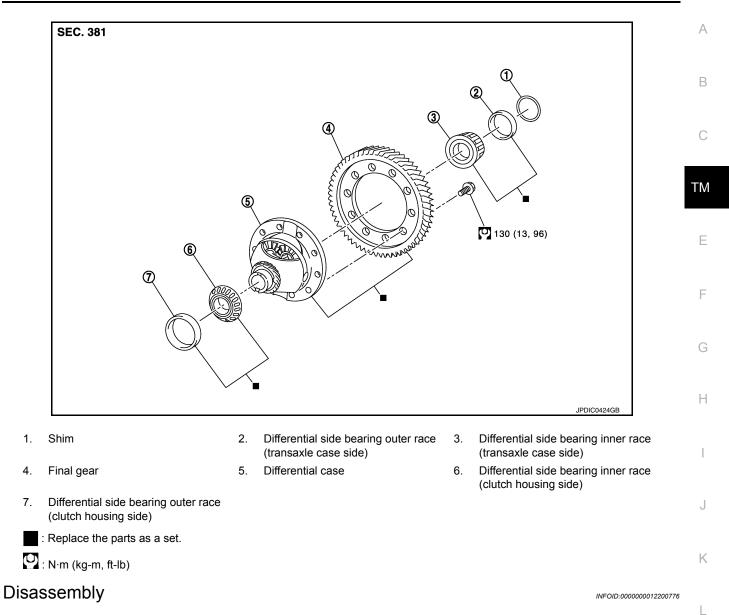
1.

- 7. 1st-2nd fork rod
- : Replace the parts as a set.
- 🗱 : Always replace after every disassembly.
- **FINAL DRIVE**

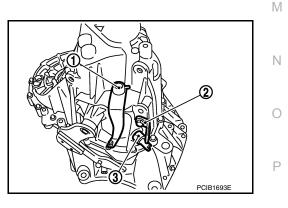
- Shifter lever B
- 5. Selector lever
- 8. Fork rod

- 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).

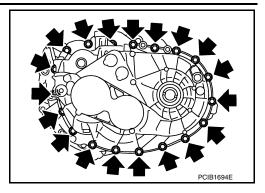
9. Shift 1st-2nd fork rod (1), fork rod (2), and reverse fork rod (3) to

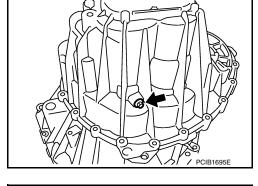
Revision: November 2015

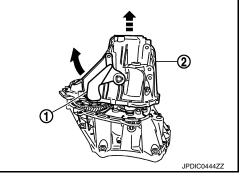
the neutral position.

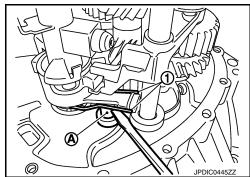
10. Remove selector (4) from clutch housing.

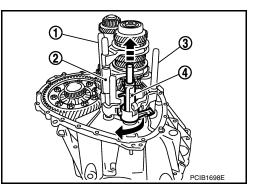












< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: RS6F94R]

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

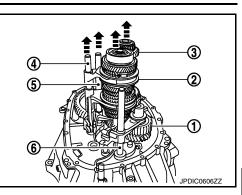
- b. Remove reverse idler shaft assembly and reverse fork rod (6) from clutch housing.
- 12. Remove spring washer from clutch housing.
- Pull up and remove input shaft assembly (1), mainshaft assembly (2), fork rod (3), and 1st-2nd fork rod (4) from clutch housing.
 NOTE:

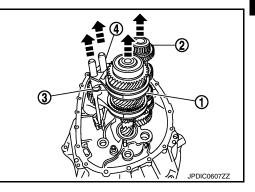
It is easier to pull up when shifting each fork rod to each shaft side.

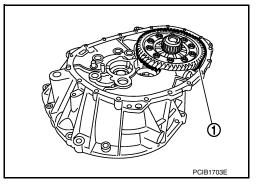
- 14. Remove final drive assembly (1) from clutch housing.
- 15. Remove magnet from clutch housing.

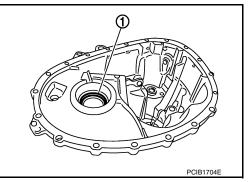
Remove differential side oil seals (1) from clutch housing and transaxle case.
 CAUTION:

Never damage clutch housing and transaxle case.

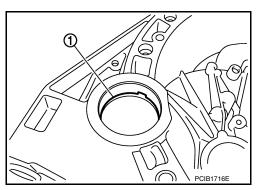








17. Remove differential side bearing outer race (1) from clutch housing, using a brass rod.
 CAUTION:
 Never damage clutch housing.



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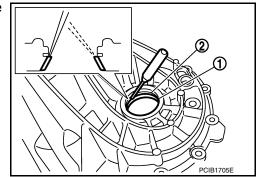
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< UNIT DISASSEMBLY AND ASSEMBLY >

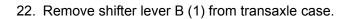
Remove differential side bearing outer race (1) from transaxle case, using a brass rod.
 CAUTION:

Never damage transaxle case.

19. Remove shim (2) from transaxle case.

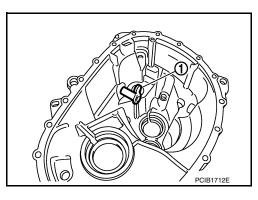


- 20. Remove shifter lever A (1) retaining pin, using a pin punch.
- 21. Remove shifter lever A from transaxle case.

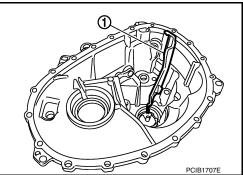


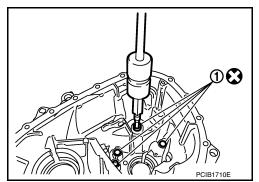
23. Remove oil gutter (1) from transaxle case.

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



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[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.

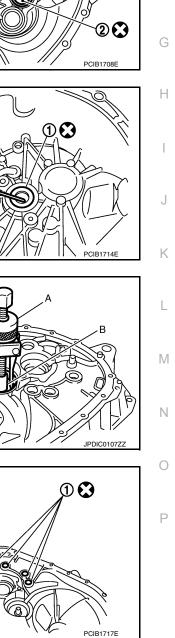
27. Remove snap ring (1) and oil channel (2) from transaxle case.

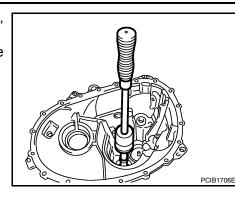
28. Remove input shaft oil seal (1) from clutch housing, using an oil seal remover. **CAUTION:**

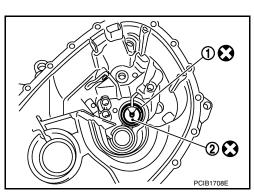
Never damage clutch housing.

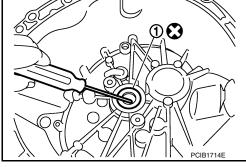
- 29. Remove mainshaft front bearing outer race (1) from clutch housing, using the puller (A) [SST: KV381054S0 (J-34286)] and a spacer (B) [Commercial service tool].
- 30. Remove oil channel (2) from clutch housing.

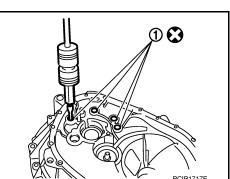
31. Remove bushing (1) from clutch housing, using a remover [Commercial service tool].











[6MT: RS6F94R]

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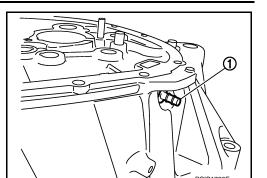
< UNIT DISASSEMBLY AND ASSEMBLY >

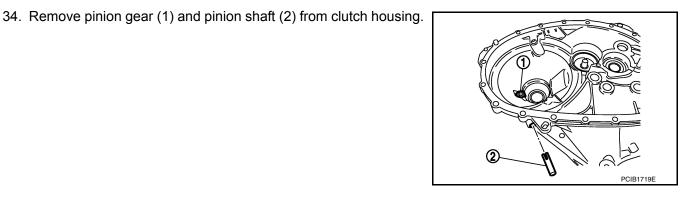
- 32. Remove 2 way connector (1) from clutch housing.
- 33. Remove plug from clutch housing.

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

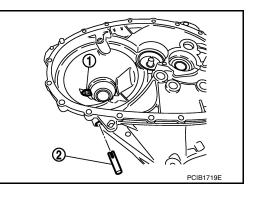
Assembly

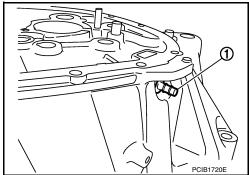
3. Install 2 way connector (1) to clutch housing.











< UNIT DISASSEMBLY AND ASSEMBLY >

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

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

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

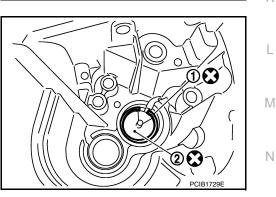
7. Install input shaft oil seal (1) to clutch housing, using the drift (A) [SST: ST33220000 (-)].

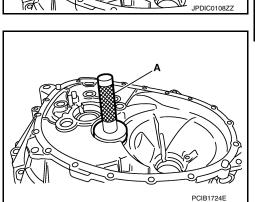
- 8. Install snap ring (1) and oil channel (2) to transaxle case. CAUTION:
 - Select and install snap ring that has the same thickness as previous one.
 - Replace transaxle assembly when replacing transaxle case.
- Install mainshaft rear bearing adjusting shim to transaxle case. CAUTION:

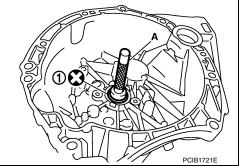
Select mainshaft rear bearing adjusting shim, as per the following procedure when replacing mainshaft adjusting shim, 6th main gear, 5th main gear, or 4th main gear.

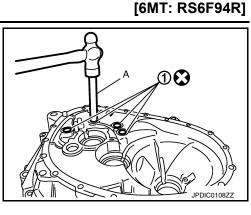
- Replace mainshaft adjusting shim.
- If new mainshaft adjusting shim is thinner than previous one, offset the thickness difference by selecting thicker mainshaft rear bearing adjusting shim.
- If new mainshaft adjusting shim is thicker than previous one, offset the thickness difference by selecting 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:

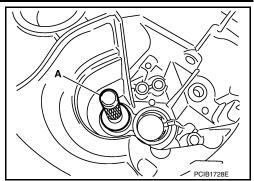
Replace mainshaft rear bearing outer race and mainshaft rear bearing inner race as a set.

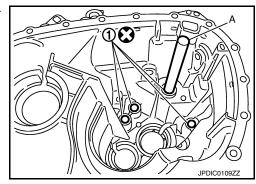
11. Install bushings (1) to transaxle case, using a drift (A) [Commercial service tool].

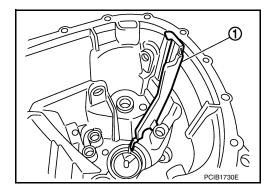
12. Install oil gutter (1) to transaxle case.

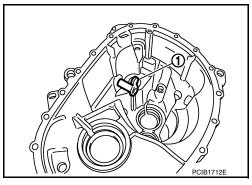
- Install shifter lever B (1) to transaxle case.
 CAUTION: Replace shifter lever A and shifter lever B as a set.
- Install shifter lever A to transaxle case.
 CAUTION: Replace shifter lever A and shifter lever B as a set.
- 15. Install retaining pin to shifter lever A (1), using a pin punch.
 CAUTION: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

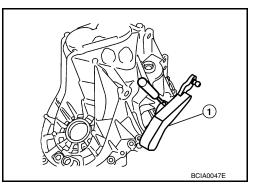












< UNIT DISASSEMBLY AND ASSEMBLY >

17. Install differential side bearing outer race (transaxle case side) to transaxle case, using the drift (A) [SST: ST33400001 (J-26082)].

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:**

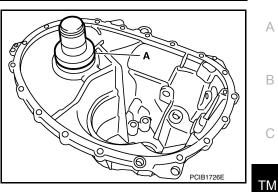
Replace differential side bearing outer race (clutch housing side) and differential side bearing inner race (clutch housing side) as a set.

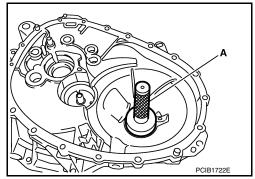
- 19. Install differential side oil seals (1) to clutch housing and transaxle case, using the drift [Stamping number: B.vi 1666-B] of the drift set [SST: KV32500QAA (-)].
 - А : Transaxle case side
 - В : Clutch housing side

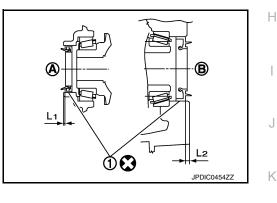
Dimension "L1"	: 1.2 – 1.8 mm (0.047 – 0.071 in)
Dimension "L2"	: 2.7 – 3.3 mm (0.106 – 0.130 in)

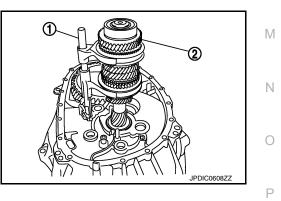
CAUTION:

- 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 >

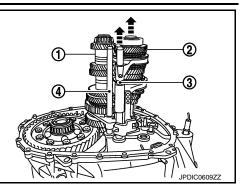
- 23. Install mainshaft assembly (1), as per the following procedure.
- a. Pull up input shaft assembly (2) and fork rod (3).
- b. Set 1st-2nd fork rod (4) to mainshaft assembly, and then install them to clutch housing.

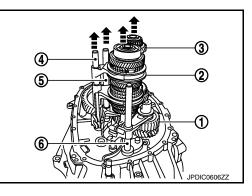
- 24. Install reverse idler shaft assembly (1), as per the following procedure.
- a. Install spring washer to clutch housing.
- b. Pull up input shaft assembly (2), mainshaft assembly (3), fork rod (4), and 1st-2nd fork rod (5).
 NOTE:

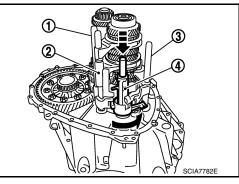
It is easier to pull up when shifting each fork rod to each shaft side.

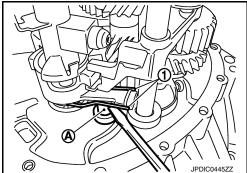
- c. Set reverse fork rod (6) to reverse idler shaft assembly, and then install them to clutch housing.
- 25. Shift 1st-2nd fork rod (1), fork rod (2), and reverse fork rod (3) to the neutral position.
- 26. Install selector (4) to clutch housing. CAUTION: Replace selector lever and selector as a set.

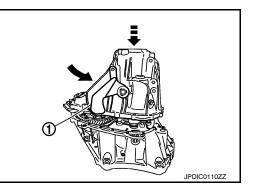
- 27. Install selector spring (1) to return bushing (A).
- 28. Apply recommended sealant to mounting surface of transaxle case.
 - Use Genuine Silicone RTV or an equivalent. Refer to <u>GI-22, "Recommended Chemical Products and Sealants"</u>. CAUTION:
 - Never allow old liquid gasket, moisture, oil, 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.

a. Install seal washer to reverse idler shaft mounting bolt, and install reverse idler shaft mounting bolt to transaxle case. CAUTION:

Never reuse seal washer.

- b. Tighten reverse idler shaft mounting bolt to the specified torque.
- 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 Silicone RTV or an equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants". 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:**

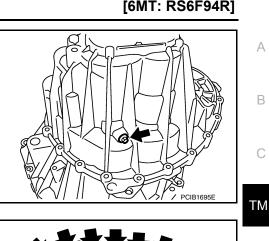
Never reuse retaining pin.

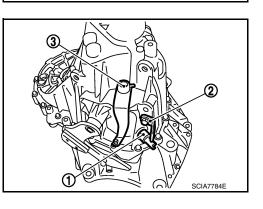
- 35. Install drain plug, as per the following procedure.
- Install gasket to drain plug. a. CAUTION: Never reuse gasket.
- Install drain plug to clutch housing, using a socket [Commercial service tool].
- c. Tighten drain plug to the specified torque.
- 36. Install filler plug, as per the following 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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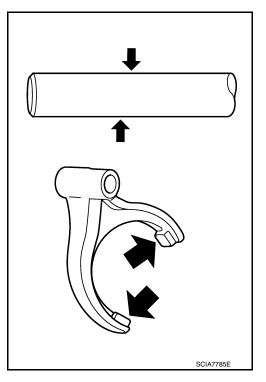
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< UNIT DISASSEMBLY AND ASSEMBLY >

Inspection

INSPECTION AFTER DISASSEMBLY

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



INFOID:000000012200778

< UNIT DISASSEMBLY AND ASSEMBLY >

INPUT SHAFT AND GEAR

Exploded View

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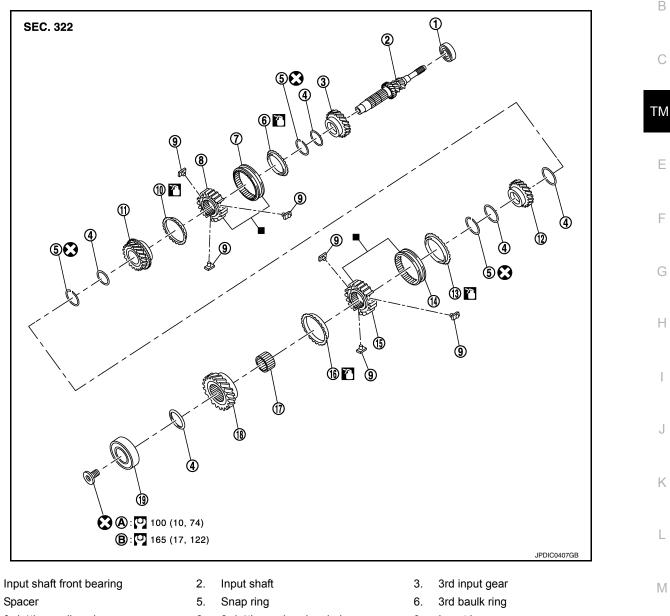
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- 4.
- 7. 3rd-4th coupling sleeve
- 10. 4th baulk ring

1.

- 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.
- : N·m (kg-m, ft-lb)

Disassembly

CAUTION:

Revision: November 2015

- 8. 3rd-4th synchronizer hub
- 11. 4th input gear
- 14. 5th-6th coupling sleeve

TM-49

- Needle bearing 17.
- Β. Final step

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

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< UNIT DISASSEMBLY AND ASSEMBLY >

- Fix input shaft in a vise with back plate, and then remove gears and snap rings.
- For removal of snap ring, set snap ring pliers and flat pliers at both sides of snap ring. While expanding snap ring with snap ring pliers, move snap ring with flat pliers.
- Disassemble gear components putting direction marks on the parts that do not affect any functions.

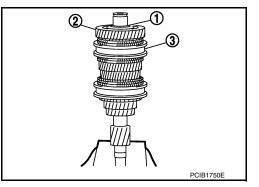
1. Remove input shaft rear bearing mounting bolt (1), using the drift (A) [SST: KV32300QAM (-)].

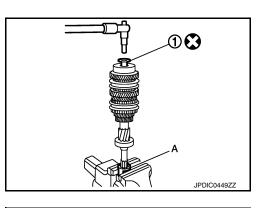
- 2. Remove input shaft rear bearing (1), as per the following procedure.
- a. Set a puller [Commercial service tool] to input shaft rear bearing.
- b. Remove input shaft rear bearing, using a drift (A) [Commercial service tool].
- 3. Remove spacer (1), 6th input gear (2), needle bearing, 6th baulk ring,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





JPDIC0111ZZ



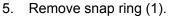


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< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: RS6F94R]



7. Remove snap ring (1).

synchronizer hub.

10. Remove snap ring (1).

synchronizer hub assembly (3).

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

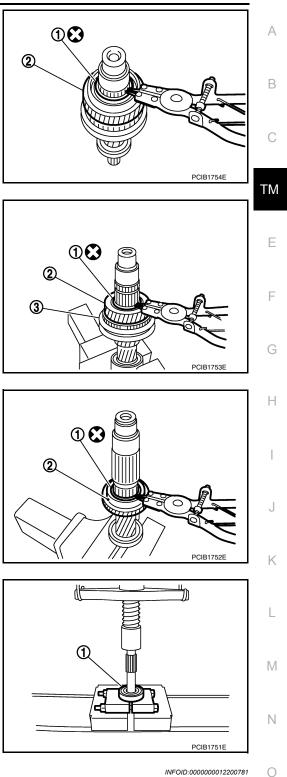
8. Remove spacer, 4th input gear (2), 4th baulk ring, and 3rd-4th

9. Remove insert keys and 3rd-4th coupling sleeve from 3rd-4th

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

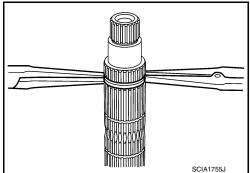
Note the following procedures, and assemble in the reverse order of disassembly. **CAUTION:**

• Replace transaxle assembly when replacing input shaft.

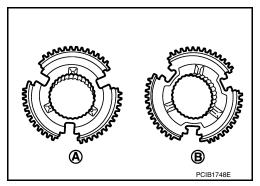
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< UNIT DISASSEMBLY AND ASSEMBLY >

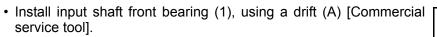
- For installation of snap ring, set snap ring pliers and flat pliers at both sides of snap ring. While expanding snap ring with snap ring pliers, move snap ring with flat pliers.
- Never reuse snap ring.
- Check that snap ring is securely installed in a groove.
- Replace 3rd-4th coupling sleeve and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

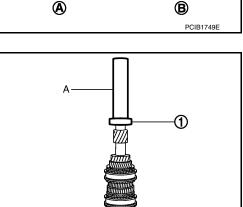


- Be careful to install 3rd-4th synchronizer hub according to the specified direction.
 - A : 3rd input gear side
 - B : 4th input gear side



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





[6MT: RS6F94R]

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< 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.
- 3. Loosen input shaft rear bearing mounting bolt by a half turn.
- 4. Tighten input shaft rear bearing mounting bolt to the specified torque of the final step.

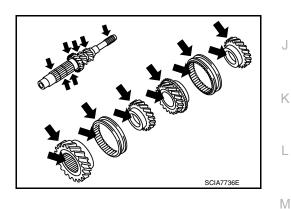
Inspection

INSPECTION AFTER DISASSEMBLY

Input Shaft and Gear

Check the following items and replace if necessary.

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



Synchronizer Hub and Coupling Sleeve

Check the following items and replace if necessary.

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

Baulk Ring

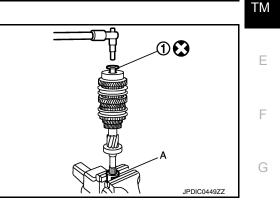
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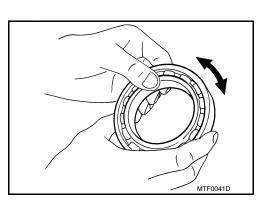
< UNIT DISASSEMBLY AND ASSEMBLY >

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

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Bearing

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



< UNIT DISASSEMBLY AND ASSEMBLY >

MAINSHAFT AND GEAR

Exploded View

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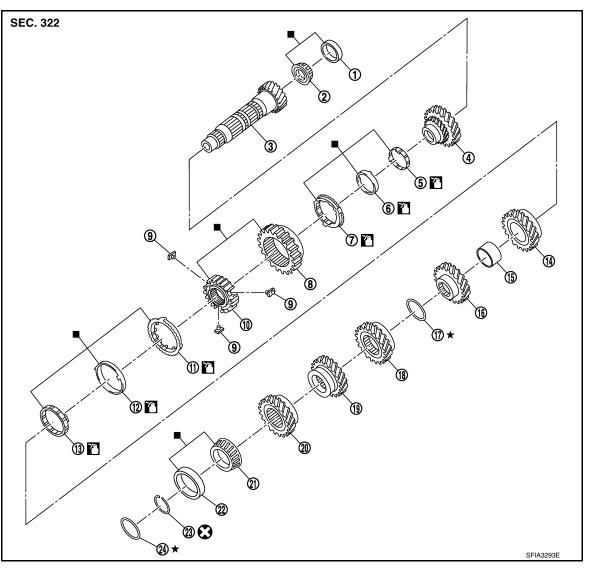
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- 1. Mainshaft front bearing outer race
- 4. 1st main gear
- 7. 1st outer baulk ring
- 10. 1st-2nd synchronizer hub
- 13. 2nd inner baulk ring
- 16. 3rd main gear
- 19. 5th main gear
- 22. Mainshaft rear bearing outer race 23.

: Apply gear oil.

: Replace the parts as a set.

 \star : Select with proper thickness.

Always replace after every disassembly.

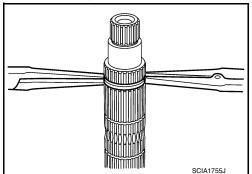
- 2. Mainshaft front bearing inner race
- 5. 1st inner baulk ring
- 8. 1st-2nd coupling sleeve
- 11. 2nd outer baulk ring
- 14. 2nd main gear
- 17. Mainshaft adjusting shim
- 20. 6th main gear
- 23. Snap ring

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

< UNIT DISASSEMBLY AND ASSEMBLY >

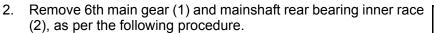
Disassembly

- 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.

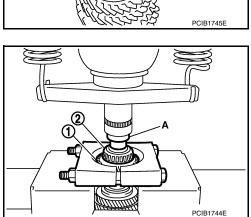


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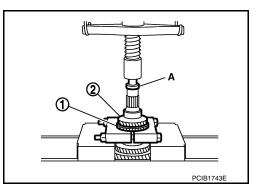
1. Remove snap ring (1).



- 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 (-)].

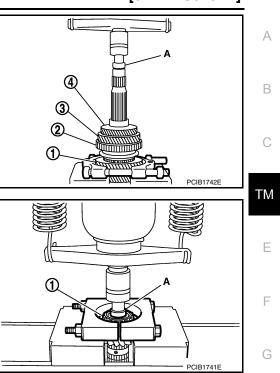


- 3. Remove 4th main gear (1) and 5th main gear (2), as per the following procedure.
- a. Set a puller [Commercial service tool] to 4th main gear.
- b. Remove 5th main gear and 4th main gear, using the drift (A) [SST: ST33052000 ()].
- 4. Remove mainshaft adjusting shim.



< UNIT DISASSEMBLY AND ASSEMBLY >

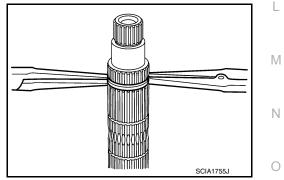
- 5. Remove 1st main gear (1), 1st-2nd synchronizer hub assembly (2), 2nd main gear (3), and 3rd main gear (4), as per the following procedure.
- a. Set a puller [Commercial service tool] to 1st main gear.
- b. Remove 3rd main gear, busing, 2nd main gear, 2nd inner baulk ring, 2nd synchronizer cone, 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 ()].



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.



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< UNIT DISASSEMBLY AND ASSEMBLY >

1. Install mainshaft front bearing inner race (1), using the drift (A) [SST: ST36720030 (-)]. **CAUTION:**

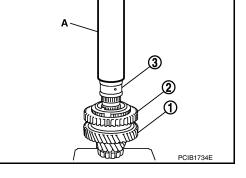
Replace mainshaft front bearing outer race and mainshaft front bearing inner race as a set.

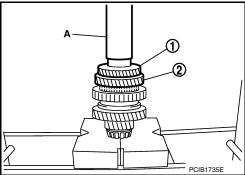
- 2. Apply gear oil to 1st inner baulk ring, 1st synchronizer cone, 1st outer baulk ring, 2nd inner baulk ring, 2nd synchronizer cone, and 2nd outer baulk ring. **CAUTION:**
 - Replace 1st inner baulk ring, 1st synchronizer cone, and 1st outer baulk ring as a set.
 - · Replace 2nd inner baulk ring, 2nd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

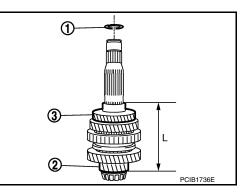
Replace 1st-2nd synchronizer hub and 1st-2nd coupling sleeve as a set.

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

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



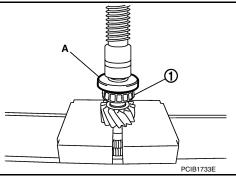




- Measure dimension "L" as shown in the figure. Select mainshaft 7. adjusting shim (1) according to the following list, and then install it to mainshaft.
 - 2 : Mainshaft
 - 3 : 3rd main gear

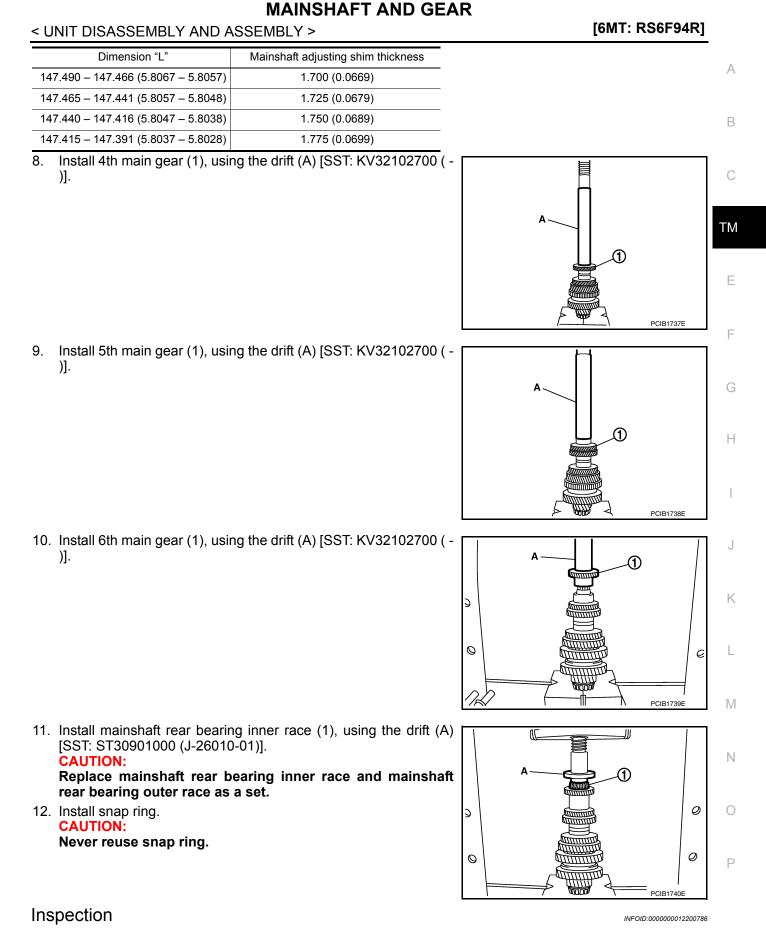
(A) [SST: KV32102700 (-)].

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



[6MT: RS6F94R]

Revision: November 2015



INSPECTION AFTER DISASSEMBLY

Mainshaft and Gear

Revision: November 2015

< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: RS6F94R]

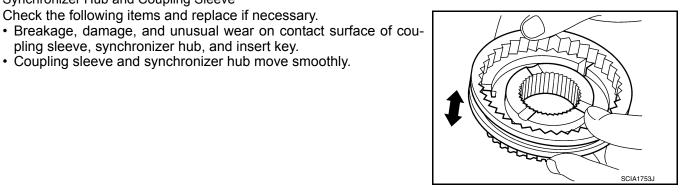
- Check the following items and replace if necessary.
- Damage, peeling, bend, uneven wear, and distortion of shaft.
- · Excessive wear, damage, and peeling of gear.

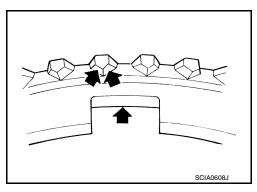
Check the following items and replace if necessary.

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

Synchronizer Hub and Coupling Sleeve

PCIB1775E





Baulk Ring

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

Bearing

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

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.



< UNIT DISASSEMBLY AND ASSEMBLY >

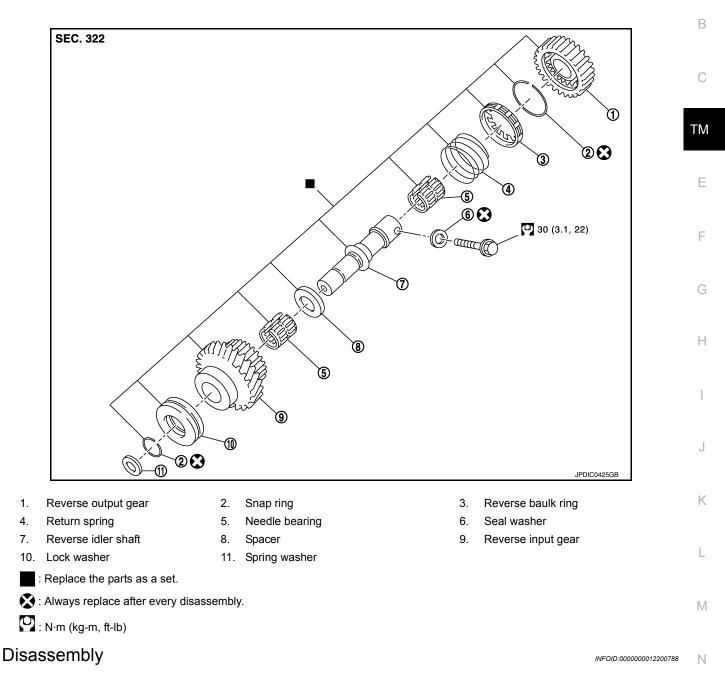
REVERSE IDLER SHAFT AND GEAR

Exploded View

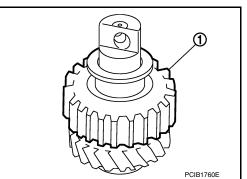
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[6MT: RS6F94R]



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).

Revision: November 2015

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

- **CAUTION:** • Never reuse snap ring.
- Check that snap ring is securely installed in a groove.

Remove needle bearings (1) and washer.

· Replace reverse output gear, snap ring, reverse baulk ring, return spring, needle bearing, reverse idler shaft, spacer, reverse input gear, and lock washer as a set.

Inspection

5.

INSPECTION AFTER DISASSEMBLY

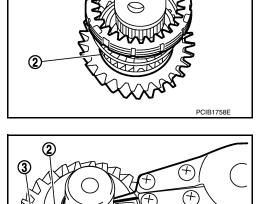
(3)

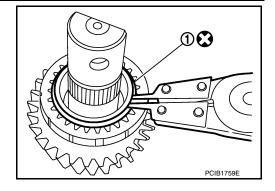
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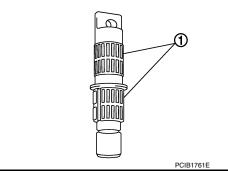
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[6MT: RS6F94R]

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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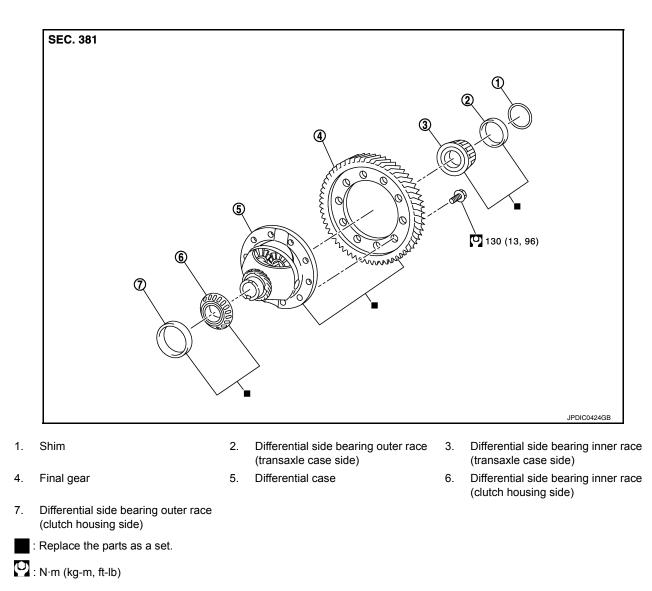
В

FINAL DRIVE

FINAL DRIVE

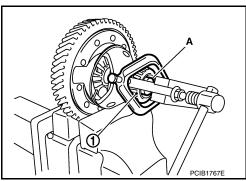
Exploded View

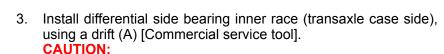
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Disassembly

- 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 (J-8107-2)].





Replace differential side bearing inner race (transaxle case side) and differential side bearing outer race (transaxle case side) as a set.

inner race (transaxle case side).

side) (1), as per the following procedure.

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

Assembly

2.

(1).

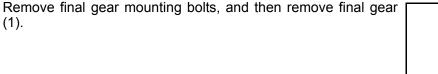
Install final gear, and then tighten final gear mounting bolts to the specified torque. 1. **CAUTION:**

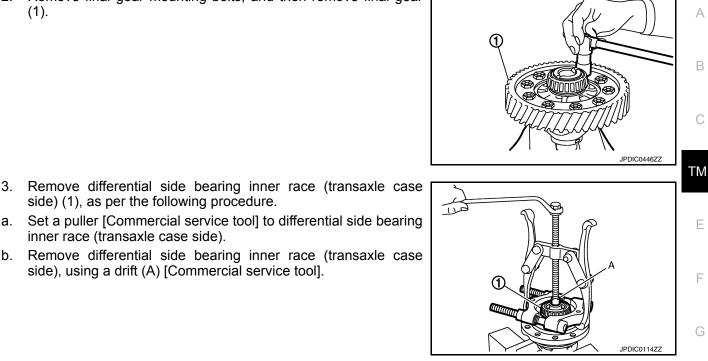
Replace final gear and differential case as a set.

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.







[6MT: RS6F94R]

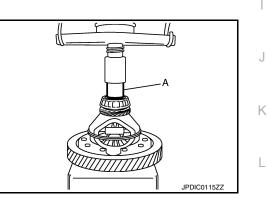
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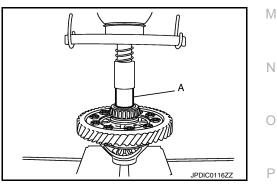
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Inspection

INSPECTION AFTER DISASSEMBLY

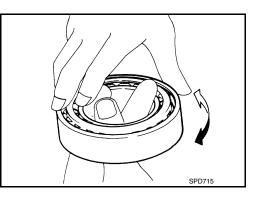
Gear and Case

Check final gear and differential case. Replace if necessary.

< 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:000000012200795

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[6MT: RS6F94R]

Transaxle type		RS6F94R		
Engine type		MR16DDT	C	
Axle type		2WD		
Number of speed		6	TN	
Synchromesh type	9		Warner	
Shift pattern				
			$\begin{array}{c} R \\ 1 \\ 3 \\ 5 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7$	F
Gear ratio	1st		3.7273	
	2nd		2.1053	
	3rd		1.5185	
	4th		1.1714	
	5th		0.9143	
	6th		0.7674	
	Reverse		3.6865	
	Final gear		3.9333	
Number of teeth	Input gear	1st	11	
		2nd	19	
		3rd	27	K
		4th	35	
		5th	35	
		6th	43	
	Reverse	11		
	Main gear	1st	41	N
	2nd	40		
	3rd	41		
	4th	41	— N	
	5th	32		
	6th	33	C	
	Reverse	42		
	Reverse idler gear	Input/Output	28/29	
	Final gear	Final gear/Pinion	59/15	F
	Side gear/Pinion mate gear	13/10		
Oil capacity (Refe	rence)	ℓ (US pt, Imp pt)	Approx. 2.0 (4-1/4, 3-1/2)	
Remarks Reverse synchronizer		Installed		
Triple-cone synchronizer		1st and 2nd		

< PRECAUTION > 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. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.
- Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see "SRS AIR BAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

WARNING:

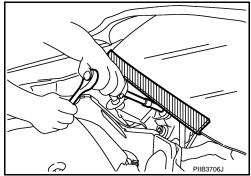
Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery or batteries, and wait at least 3 minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

INFOID:000000012200797

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



Precautions for Removing Battery Terminal

When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.

Revision: November 2015

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PRECAUTIONS

< PRECAUTION >

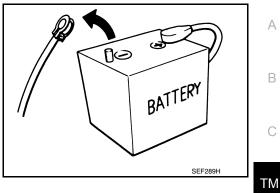
[6MT: RS6F52H]

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- · When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- · For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

D4D engine	: 20 minutes	•
HRA2DDT	: 12 minutes	Ň
K9K engine	: 4 minutes	2
M9R engine	: 4 minutes	-
R9M engine	: 4 minutes	
V9X engine	: 4 minutes	
YD25DDTi	: 2 minutes	

YS23DDT : 4 minutes YS23DDTT : 4 minutes ZD30DDTi : 60 seconds ZD30DDTT : 60 seconds



NOTE:

ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal E is removed before ECU stops, then a DTC detection error or ECU data corruption may occur. After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal. F NOTE: Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF. Example of high-load driving - Driving for 30 minutes or more at 140 km/h (86 MPH) or more. - Driving for 30 minutes or more on a steep slope. For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch. Н NOTE: If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected. After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC. NOTE: The removal of 12V battery may cause a DTC detection error. Precaution for Work INFOID:0000000012200799 · When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth. Κ When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it. Protect the removed parts with a shop cloth and prevent them from being dropped. · Replace a deformed or damaged clip. L • If a part is specified as a non-reusable part, always replace it with new one. • Be sure to tighten bolts and nuts securely to the specified torque. · After installation is complete, be sure to check that each part works properly. Μ · Follow the steps below to clean components. - Water soluble dirt: Dip a soft cloth into lukewarm water, and wring the water out of the cloth to wipe the dirty area. Ν Then rub with a soft and dry cloth. - Oily dirt: Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%), and wipe the dirty area.

Then dip a cloth into fresh water, and wring the water out of the cloth to wipe the detergent off. Then rub with a soft and dry cloth.

- · Do not use organic solvent such as thinner, benzene, alcohol, or gasoline.
- For genuine leather seats, use a genuine leather seat cleaner.

Service Notice or Precaution

- Do not reuse transaxle oil, once it has been drained.
- Check oil level or replace 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 do not interfere with the function of the parts they are applied.

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PRECAUTIONS

< PRECAUTION >

- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, use it.
- Be careful not to damage sliding surfaces and mating surfaces.

PREPARATION

PREPARATION

Special Service Tool

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[6MT: RS6F52H]

The actual shapes of TechMate tools may differ from those of special service tools illustrated here.

Tool number (TechMate No.) Tool name		Description	(
KV381054S0 (J-34286) Puller	ZZA0601D	 Removing differential side bearing outer race (clutch housing side) Removing differential side bearing outer race (transaxle case side) Removing mainshaft front bearing 	T
ST33400001 (J-26082) Drift	ZZA0814D	Installing differential side oil seal (clutch hous- ing side) a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.	 (
ST35321000 (—) Drift	ZZA1000D	 Installing input shaft oil seal Installing reverse main gear Installing 1st main gear bushing Installing 1st-2nd synchronizer hub assembly Installing 2nd main gear bushing Installing 3rd main gear a: 49 mm (1.93 in) dia. b: 41 mm (1.61 in) dia. 	Ţ
KV40105320 (—) Drift	a ZZA0698D	Installing differential side bearing outer race (clutch housing side) a: 88 mm (3.46 in) dia.	1
ST33200000 (J-26082) Drift	a b ZZA1002D	 Installing mainshaft front bearing Installing 6th input gear bushing Installing 4th main gear Installing 5th main gear Installing 6th main gear a: 60 mm (2.36 in) dia. b: 44.5 mm (1.752 in) dia. 	1

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PREPARATION

< PREPARATION >

Tool number (TechMate No.) Tool name		Description
ST30720000 (J-25405) Drift	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 (transaxle case side) Installing differential side bearing outer race (clutch housing side) Installing differential side bearing outer race (transaxle case side) Installing mainshaft rear bearing Installing differential side bearing (clutch housing side) Installing differential side bearing (transaxle case side) Installing differential side bearing (transaxle case side) Installing differential side bearing (transaxle case side) a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia.
ST33061000 (J-8107-2) Drift	zZA1000D	 Installing bore plug Removing differential side bearing (transax- le case side) Removing differential side bearing (clutch housing side) a: 38 mm (1.50 in) dia. b: 28.5 mm (1.122 in) dia.
ST33052000 (—) Drift	a b zza1023D	 Removing input shaft rear bearing Removing 6th input gear, 6th input gear bushing, 5th-6th synchronizer hub assem- bly, and 5th input gear Removing 5th input gear bushing, 4th input gear, 4th input gear bushing, 3rd-4th syn- chronizer hub assembly, and 3rd input gear Installing input shaft front bearing Removing mainshaft rear bearing Removing 6th main gear Removing 4th main gear and 5th main gear a: 22 mm (0.87 in) dia. b: 28 mm (1.10 in) dia.
KV40105020 (—) Drift	b c zZA1133D	Removing 3rd main gear, 2nd main gear, 2nd main gear bushing, 1st-2nd synchronizer hub assembly, 1st main gear, 1st main gear bush- ing, and reverse main gear a: 39.7 mm (1.563 in) dia. b: 35 mm (1.38 in) dia. c: 15 mm (0.59 in)
ST30031000 (J-22912-01) Puller	ZZA0537D	Measuring wear of inner baulk ring

PREPARATION

< PREPARATION >

[6MT: RS6F52H]

Tool number (TechMate No.) Tool name		Description
<v40105710 () Press stand</v40105710 	b ZZA1058D	 Installing 3rd-4th synchronizer hub assembly Installing 4th input gear bushing Installing 5th input gear bushing Installing 5th-6th synchronizer hub assembly Installing 2nd main gear bushing Installing 3rd main gear a: 46 mm (1.81 in) dia. b: 41 mm (1.61 in)
ST30901000 (J-26010-01) Drift	a b c ZZA0976D	 Installing input shaft rear bearing Installing 4th main gear Installing 5th main gear Installing 6th main gear Installing mainshaft rear bearing a: 79 mm (3.11 in) dia. b: 45 mm (1.77 in) dia. c: 35.2 mm (1.386 in) dia.
ST30032000 (J-26010-01) Drift	a b c ZZA0976D	Installing input shaft front bearing a: 80 mm (3.15 in) dia. b: 38 mm (1.50 in) dia. c: 31 mm (1.22 in) dia.
ST38220000 (—) Press stand	b ZZA1058D	 Installing reverse main gear Installing 1st main gear bushing Installing 1st-2nd synchronizer hub assembly a: 63 mm (2.48 in) dia. b: 65 mm (2.56 in)
KV40101630 (J-35870) Drift	ZZA1003D	Installing reverse main gear a: 68 mm (2.68 in) dia. b: 60 mm (2.36 in) dia.

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PREPARATION

< PREPARATION >

Tool number (TechMate No.) Tool name		Description
KV38102510 (—) Drift	a b ZZA0838D	 Installing 1st main gear bushing Installing 1st-2nd synchronizer hub assembly Installing differential side bearing (transaxle case side) Installing differential side bearing (clutch housing side) a: 71 mm (2.80 in) dia. b: 65 mm (2.56 in) dia.
 (J-46534) Trim tool set	AWJIA0483ZZ	For removing trim

Commercial Service Tool

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Tool name		Description
Pin punch		Removing and installing retaining pin a: 4.5 mm (0.177 in) dia.
	a	
	NT410	
Pin punch		Removing and installing retaining pin of selec- tor lever a: 5.5 mm (0.217 in) dia.
	a	
	NT410	
Pin punch		Removing and installing retaining pin of each shifter lever a: 7.5 mm (0.295 in) dia.
	a	
	NT410	
Drift		Installing striking rod oil seal and shifter lever oil seal a: 24.5 mm (0.965 in) dia.
	a	
	S-NT063	

PREPARATION

< PREPARATION >

[6MT: RS6F52H]

Tool name		Description	
Puller		Removing each bearing, gear, and bushing	
	ZZA0537D		
Puller		Removing each bearing, gear, and bushing	
	277 - N		
	NT077		
Power tool		Loosening bolts and nuts	
	PBIC0190E		

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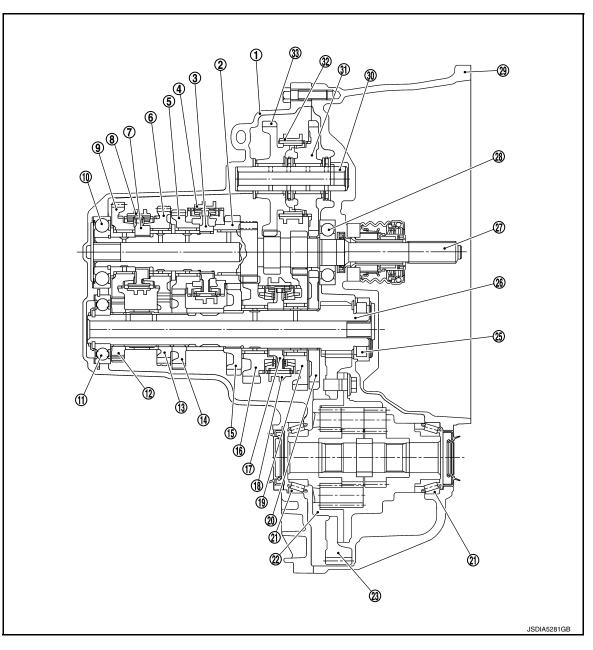
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SYSTEM DESCRIPTION STRUCTURE AND OPERATION

Sectional View

INFOID:000000012200803



- 1. Transaxle case
- 4. 3rd-4th coupling sleeve
- 7. 5th-6th synchronizer hub
- 10. Input shaft rear bearing
- 13. 5th main gear
- 16. 2nd main gear
- 19. 1st main gear
- 22. Differential case assembly
- 25. Mainshaft
- 28. Clutch housing
- 31. Reverse coupling sleeve

- 2. 3rd input gear
- 5. 4th input gear
- 8. 5th-6th coupling sleeve
- 11. Mainshaft rear bearing
- 14. 4th main gear
- 17. 1st-2nd synchronizer hub
- 20. Reverse main gear
- 23. Final gear
- 26. Input shaft
- 29. Reverse idler shaft
- 32. Reverse idler gear(rear)

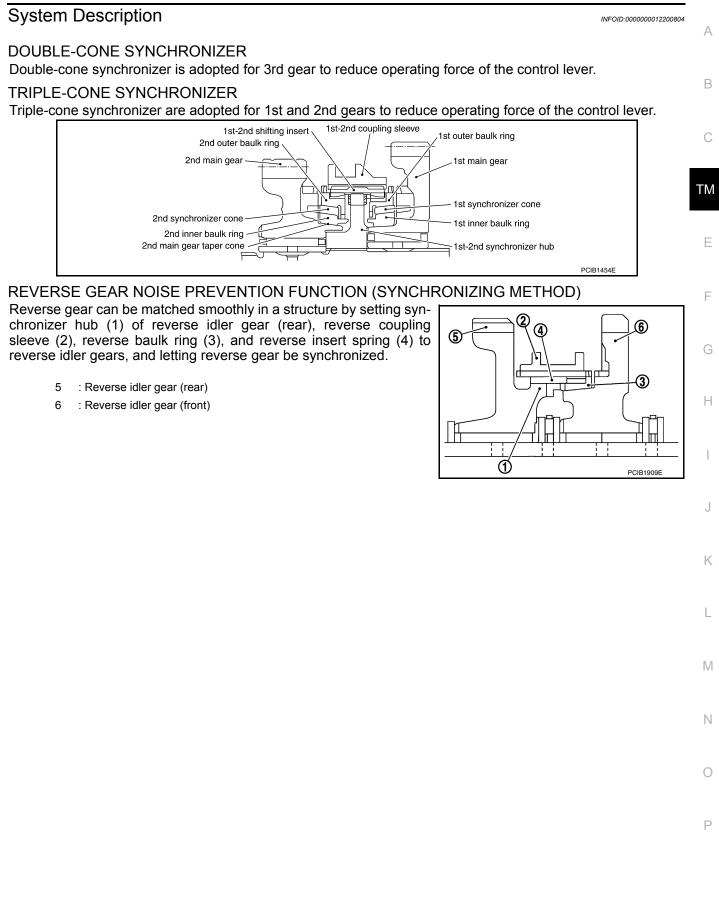
- 3. 3rd-4th synchronizer hub
- 6. 5th input gear
- 9. 6th input gear
- 12. 6th main gear
- 15. 3rd main gear
- 18. 1st-2nd coupling sleeve
- 21. Differential side bearing
- 24. Mainshaft front bearing
- 27. Input shaft front bearing
- 30. Reverse idler gear (front)



STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

[6MT: RS6F52H]



DTC/CIRCUIT DIAGNOSIS POSITION SWITCH BACK-UP LAMP SWITCH

BACK-UP LAMP SWITCH : Component Inspection

1.CHECK BACK-UP LAMP SWITCH

1. Disconnect position switch connector. Refer to TM-82, "Removal and Installation".

2. Check continuity between position switch terminals.

Gear position	Continuity
Reverse	Yes
Except reverse	No

- 1 : Park/Neutral position (PNP) switch
- 2 : Back-up lamp switch

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace position switch. Refer to <u>TM-82</u>, "<u>Removal and Installation</u>". PARK/NEUTRAL POSITION (PNP) SWITCH

PARK/NEUTRAL POSITION (PNP) SWITCH : Component Inspection

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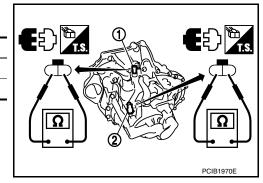
1. CHECK PARK/NEUTRAL POSITION (PNP) SWITCH

- 1. Disconnect position switch connector. Refer to TM-82, "Removal and Installation".
- 2. Check continuity between position switch terminals.

Gear position	Continuity
Neutral	Yes
Except neutral	No

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> Replace position switch.



INFOID:000000012200805

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING < SYMPTOM DIAGNOSIS > [6MT: RS6F52H]

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

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

	sary, repair or replace thes	c parts												
SUSPECTED (Possible caus		OIL (Oil level is low.)	OIL (Wrong oil.)	OIL (Oil level is high.)	GASKET (Damaged)	OIL SEAL (Worn or damaged)	SHIFT CONTROL LINKAGE (Worn)	STRIKING ROD ASSEMBLY (Worn or damaged)	SHIFT FORK (Worn)	GEAR (Worn or damaged)	BEARING (Worn or damaged)	BAULK RING (Worn or damaged)	INSERT SPRING (Damaged)	Т
Reference pag	ge		<u>TM-80</u>		00 MT		<u>TM-83</u>	TM 105	<u>C71 - M1</u>		TM 88 TM 117 TM 105 TM 136 TM 136			
Symptoms	Noise	1	2							3	3			-
	Oil leakage		3	1	2	2								-
	Hard to shift or will not shift		1	1			2					3	3	-
	Jumps out of gear						1	2	3	3				-

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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.
- Check the oil level from filler plug mounting hole as shown in the figure.
 CAUTION:

Never start engine while checking oil level.

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

Never reuse gasket.

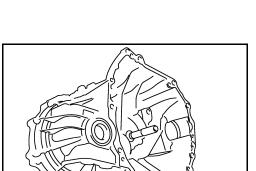
4. Tighten filler plug to the specified torque. Refer to <u>TM-88.</u> <u>"Exploded View"</u>.

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.

4. Tighten drain plug to the specified torque. Refer to <u>TM-86.</u> <u>"Exploded View"</u>.



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Refilling

Refilling

1. Remove plug (1). Fill the transaxle with new oil and check the oil level (L) using suitable gauge (A) as shown.

Oil grade and capacity

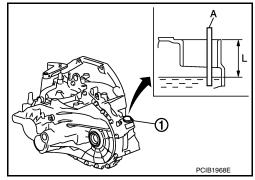
: Refer to <u>TM-143, "General</u> <u>Specification"</u>.

Oil level (L)

: 38.5 - 45.5 mm (1.516 - 1.791 in)

 Install a new O-ring onto plug (1) and then install it to transaxle. Tighten to the specified torque. Refer to <u>TM-88</u>, "Exploded <u>View"</u>.
 CAUTION:

Do not reuse O-ring.



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< REMOVAL AND INSTALLATION >

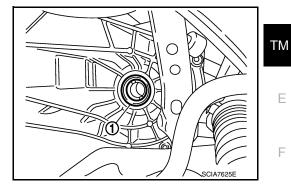
REMOVAL AND INSTALLATION SIDE OIL SEAL

Removal and Installation

REMOVAL

- 1. Remove front drive shafts from transaxle assembly. Refer to <u>FAX-28, "2WD : Removal and Installation"</u>.
- 2. Remove differential side oil seal (1) using a suitable tool. CAUTION:

Do not damage transaxle case and clutch housing.



INSTALLATION

Installation is in the reverse order of removal.

 Install differential side oil seal to clutch housing and transaxle case to the specified dimension (A) using Tools.

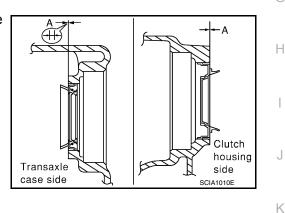
> Dimension A) : -0.5 - 0.5 mm (-0.020 - 0.020 in) Tool numbers : ST30720000 (J-25405)

ers : ST30720000 (J-25405) : ST33400001 (J-26082)

CAUTION:

Do not reuse oil seal.

Check oil level after installation. Refer to <u>TM-80, "Inspection"</u>.



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[6MT: RS6F52H]

INFOID:000000012200811

< REMOVAL AND INSTALLATION >

POSITION SWITCH

Removal and Installation

REMOVAL

- 1. Remove battery. Refer to PG-105, "Removal and Installation".
- 2. Disconnect position switch connector.
- 3. Remove position switch from transaxle case.

INSTALLATION

- 1. Apply recommended sealant to threads of position switch.
 - Use Genuine Silicone RTV or an equivalent. Refer to <u>GI-22, "Recommended Chemical Products</u> <u>and Sealants"</u>. 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 <u>TM-88, "Exploded View"</u>.
- 4. For the next step and after, install in the reverse order of removal.

Inspection

INFOID:000000012200813

INSPECTION AFTER INSTALLATION

- Check continuity between position switch terminals. Refer to <u>TM-78</u>, "<u>BACK-UP LAMP SWITCH</u>: <u>Component Inspection</u>" (Back-up lamp switch) and <u>TM-78</u>, "<u>PARK/NEUTRAL POSITION (PNP) SWITCH</u>: <u>Component Inspection</u>" (PNP switch).
- Check the oil leakage. Refer to <u>TM-80, "Inspection"</u>.

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CONTROL LINKAGE

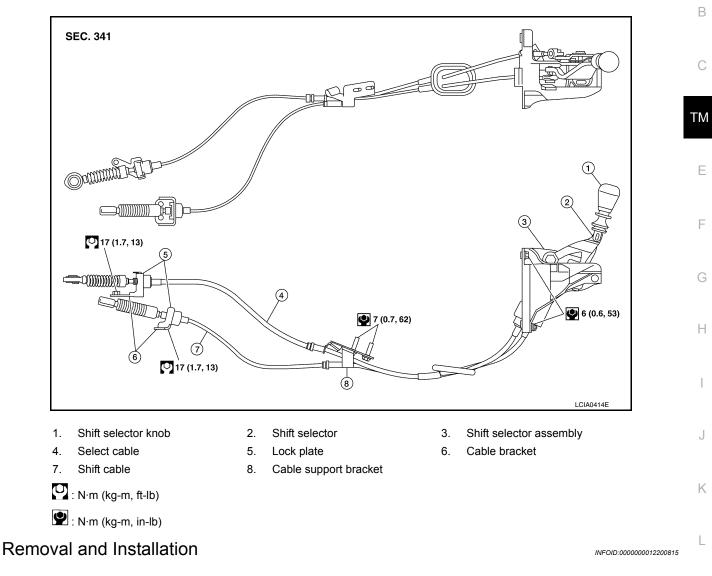
< REMOVAL AND INSTALLATION >

CONTROL LINKAGE

Exploded View

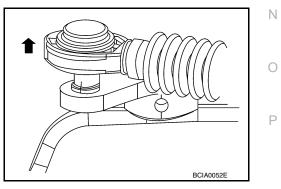
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REMOVAL

- 1. Remove battery. Refer to PG-105, "Removal and Installation".
- 2. Remove air cleaner and air duct. Refer to EM-27, "Removal and Installation".
- 3. Remove shift cable from shifter lever as shown.

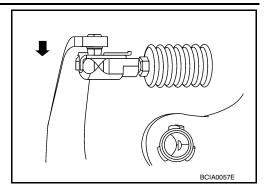


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CONTROL LINKAGE

< REMOVAL AND INSTALLATION >

4. Remove select cable from selector lever A as shown.



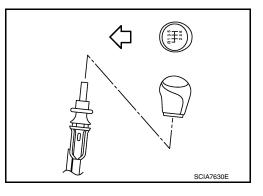
[6MT: RS6F52H]

- 5. Move shift selector to neutral position.
- 6. Remove shift selector knob.
- 7. Remove center console assembly. Refer to IP-24, "Removal and Installation".
- 8. Remove shift selector assembly nuts.
- 9. Remove exhaust front tube, center muffler and heat shield. Refer to EX-10, "Removal and Installation".
- 10. Remove cable support bracket.
- 11. Remove select cable and shift cable from cable bracket.
- 12. Remove shift selector assembly from the vehicle.

INSTALLATION

Installation is in the reverse order of removal.

- Securely install each cable to shifter lever and selector lever.
- Be careful about the installation direction, and screw shift selector knob onto shift selector.
 Front



- When shift selector is selected to 1st-2nd side and 5th-6th side, confirm shift selector returns to neutral position smoothly.
- When shift selector is shifted to each position, make sure there is no binding or disconnection in each boot.

AIR BREATHER HOSE

< REMOVAL AND INSTALLATION >

AIR BREATHER HOSE

Exploded View

INFOID:000000012200816

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[6MT: RS6F52H]

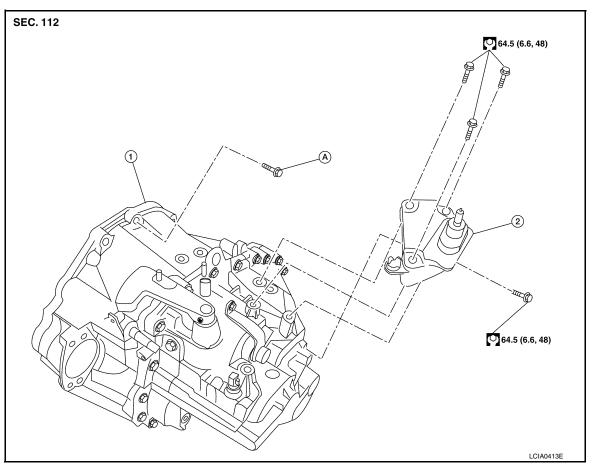
< UNIT REMOVAL AND INSTALLATION >

[6MT: RS6F52H]

UNIT REMOVAL AND INSTALLATION TRANSAXLE ASSEMBLY

Exploded View

INFOID:000000012200818



- 1. Transaxle assembly 2. LH engine mount bracket
- A. Refer to TM-86, "Removal and Installation".

Removal and Installation

INFOID:000000012200819

CAUTION:

If transaxle assembly is removed from the vehicle, always replace CSC (Concentric Slave Cylinder). Inserted CSC returns to the original position when removing transaxle assembly. Dust on clutch disc sliding parts may damage CSC seal, and may cause clutch fluid leakage.

REMOVAL

 Remove clutch tube from CSC. Refer to <u>CL-17. "Removal and Installation"</u>. CAUTION: Do not depress clutch pedal during removal procedure.

NOTE:

Cap or plug opening(s) to prevent fluid from spilling.

- 2. Remove engine and transaxle assembly. Refer to EM-64, "2WD : Removal and Installation".
- 3. Remove starter motor. Refer to STR-28, "MR16DDT : Removal and Installation".
- 4. Remove transaxle assembly to engine bolts.
- 5. Separate transaxle assembly from engine.

INSTALLATION

Installation is in the reverse order of removal.

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< UNIT REMOVAL AND INSTALLATION >

- If transaxle assembly is removed from the vehicle, always replace CSC. Refer to <u>CL-17</u>, "<u>Removal and</u> <u>Installation</u>".
- When installing the transaxle assembly to the engine, use the specified tightening torgue in the numerical sequence shown:
 - : Transaxle to engine
 - X : Engine to transaxle

CAUTION:

When installing transaxle assembly, do not allow the transaxle input shaft to make contact with the clutch cover.

Bolt symbol	А	В	С	D	E	F
Quantity	1	3	1	2	2	1
Bolt length "ℓ" mm (in)	-	45 (1.77)		45 (1.77)	35 (1.38)	45 (1.77)
Tightening torque N·m (kg-m, ft-lb)	35.3 (3.6, 26)	-	4.5 6, 55)		2.6 3, 31)	48.0 (4.9, 35)

• Bleed the air from the clutch hydraulic system. Refer to <u>CL-10</u>, "Air Bleeding".

• After installation, check oil level and check for leaks and loose mechanisms. Refer to TM-80, "Inspection".



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Revision: November 2015

[6MT: RS6F52H]

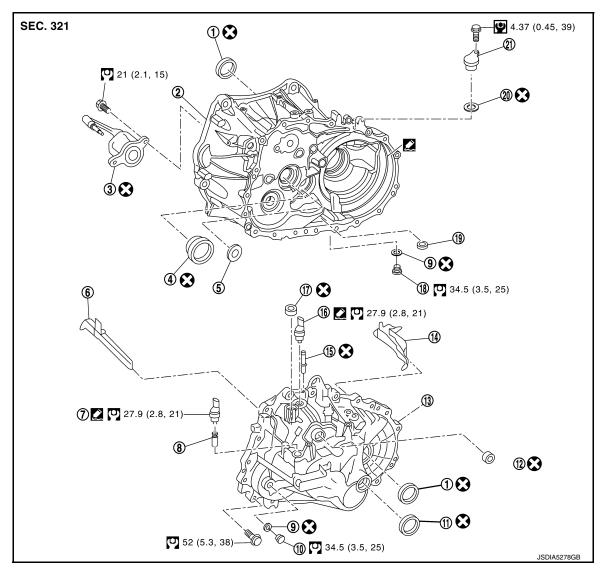
[6MT: RS6F52H]

UNIT DISASSEMBLY AND ASSEMBLY TRANSAXLE ASSEMBLY

Exploded View

INFOID:000000012200820

CASE AND HOUSING



- 1. Differential side oil seal
- 4. Input shaft oil seal
- Back-up lamp switch 7.
- 10. Plug
- 13. Transaxle case
- 19. Magnet

- 2. Clutch housing

- 5. Oil channel
- 8. Plunger
- 11. Bore plug
- 14. Oil gutter B
- 16. Park/Neutral position (PNP) switch 17. Shifter lever oil seal

20. O-ring

- 3. CSC (Concentric Slave Cylinder)
- Oil gutter A 6.
- Gasket 9.
- 12. Striking rod oil seal
- 15. Air breather tube
- 18. Drain plug
- 21. Plug

Apply Genuine Silicone RTV or an equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants".

🔀 : Always replace after every disassembly.

★ : Select with proper thickness.

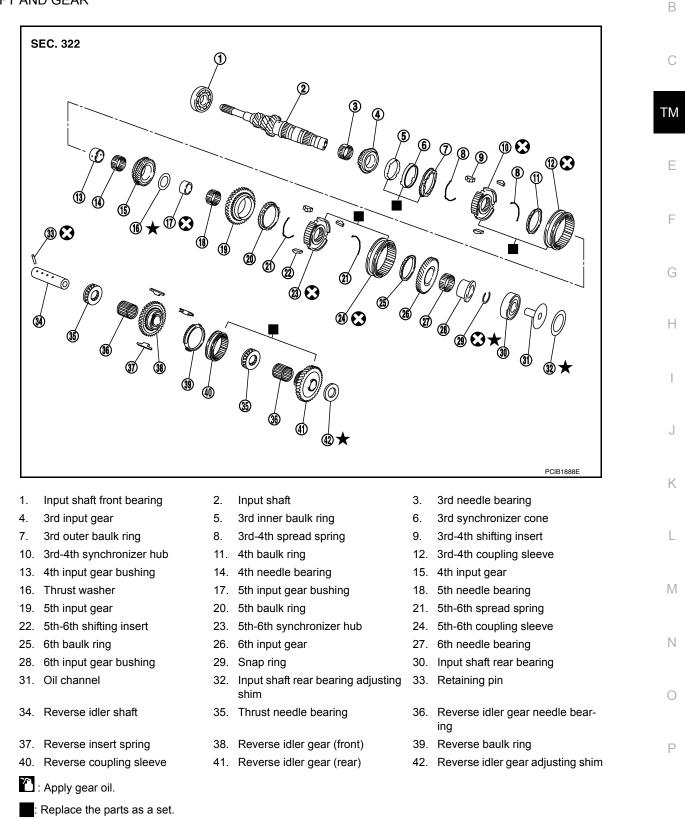
< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: RS6F52H]

: N·m (kg-m, ft-lb)

🖳 : N·m (kg-m, in-lb)

SHAFT AND GEAR

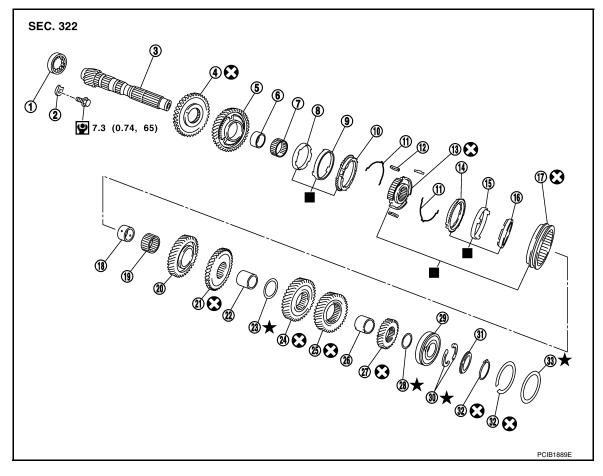


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: N·m (kg-m, ft-lb)

Always replace after every disassembly.

< UNIT DISASSEMBLY AND ASSEMBLY >



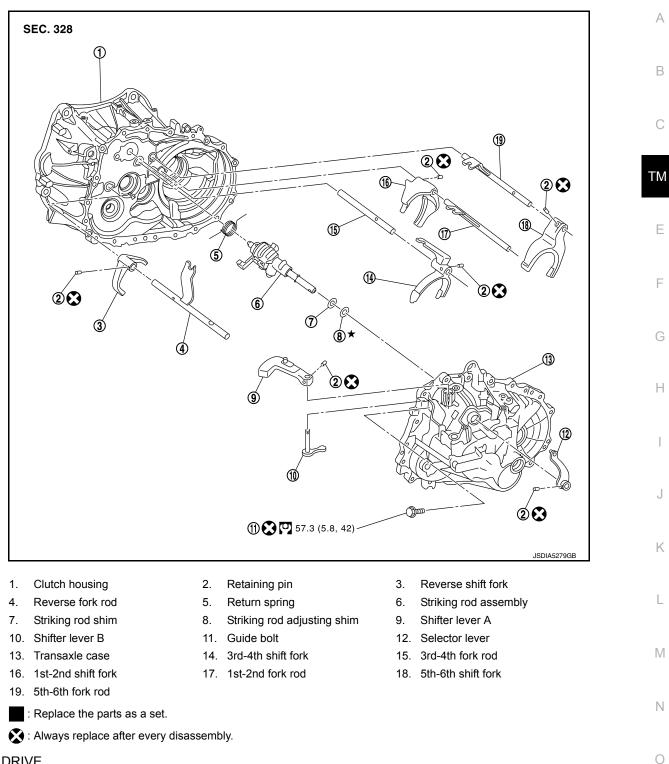
- 1. Mainshaft front bearing
- 4. Reverse main gear
- 7. 1st needle bearing
- 10. 1st outer baulk ring
- 13. 1st-2nd synchronizer hub
- 16. 2nd inner baulk ring
- 19. 2nd needle bearing
- 22. 3rd-4th mainshaft spacer
- 25. 5th main gear
- 28. 6th main gear adjusting shim 29.
- 31. C-ring holder
- : Apply gear oil.
- : Replace the parts as a set.
- S: Always replace after every disassembly.
- : N·m (kg-m, ft-lb)

SHIFT FORK AND FORK ROD

- 2. Mainshaft bearing retainer
- 5. 1st main gear
- 8. 1st inner baulk ring
- 11. 1st-2nd spread spring
- 14. 2nd outer baulk ring
- 17. 1st-2nd coupling sleeve
- 20. 2nd main gear
- 23. 4th main gear adjusting shim
- 26. 5th-6th mainshaft spacer
- 29. Mainshaft rear bearing
- 32. Snap ring

- 3. Mainshaft
- 6. 1st main gear bushing
- 9. 1st synchronizer cone
- 12. 1st-2nd shifting insert
- 15. 2nd synchronizer cone
- 18. 2nd main gear bushing
- 21. 3rd main gear
- 24. 4th main gear
- 27. 6th main gear
- 30. Mainshaft C-ring
- 33. Mainshaft rear bearing adjusting shim

< UNIT DISASSEMBLY AND ASSEMBLY >

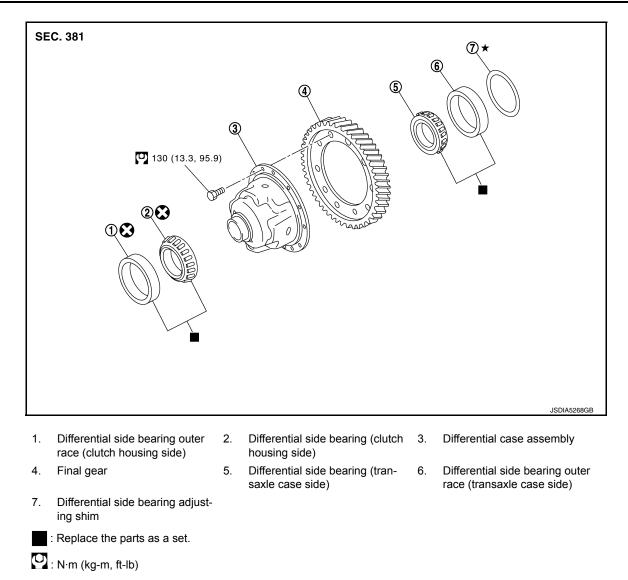


FINAL DRIVE

Revision: November 2015

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< UNIT DISASSEMBLY AND ASSEMBLY >

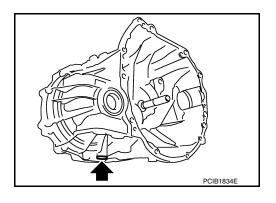


Disassembly

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DISASSEMBLY

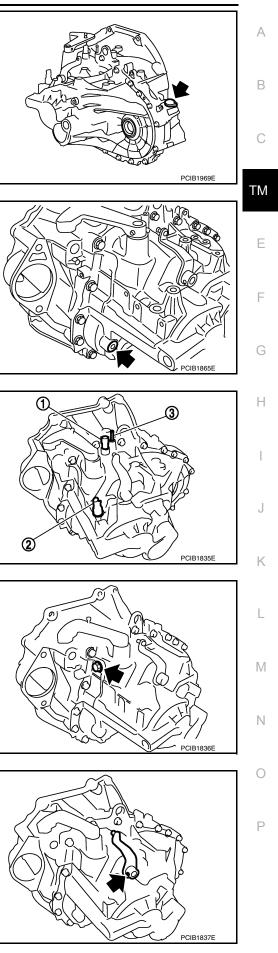
1. Remove drain plug and gasket from clutch housing.



< UNIT DISASSEMBLY AND ASSEMBLY >

2. Remove plug bolt and then plug and O-ring from clutch housing.





3. Remove plug and gasket from transaxle case.

- 4. Remove park/neutral position (PNP) switch (1) from transaxle case.
- Remove back-up lamp switch (2) and plunger from transaxle case.
 CAUTION:

Do not lose plunger.

- 6. Remove air breather tube (3) from transaxle case.
- 7. Remove guide bolt from transaxle case.

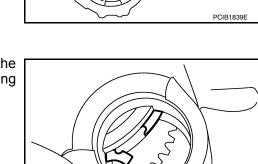
8. Remove retaining pin using suitable tool and then remove selector lever from transaxle case.

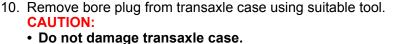
< UNIT DISASSEMBLY AND ASSEMBLY >

9. Remove transaxle case bolts.

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 Access bore plug from cutout (A) of transaxle case when removing.

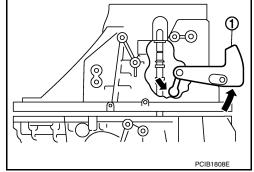
- 11. Remove transaxle case following the procedures below.
- a. Expand snap ring at mainshaft rear bearing accessing from the bore plug hole. Then pull up transaxle case from clutch housing until snap ring comes off.

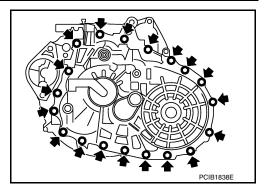
b. With shifter lever A (1) held in the position shown, remove transaxle case from clutch housing.

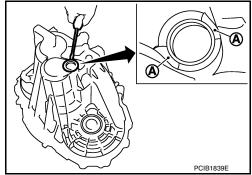
CAUTION:

Do not drop adjusting shims. NOTE:

Make sure to hold shifter lever A in the position shown. Otherwise transaxle case cannot be removed from clutch housing.







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< UNIT DISASSEMBLY AND ASSEMBLY >

- 12. Remove oil gutter A (1) and oil gutter B (2) from transaxle case.
 - А : Tab of oil gutter

13. Remove snap ring from transaxle case.

14. Remove retaining pin using suitable tool and then remove shifter lever A and shifter lever B from transaxle case.

15. Remove differential side bearing outer race (transaxle case side) from transaxle case using Tool. Then remove differential side bearing adjusting shim from transaxle case.

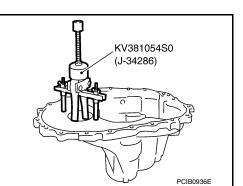
Tool number : KV381054S0 (J-34286)

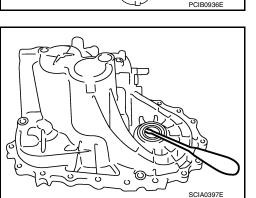
CAUTION:

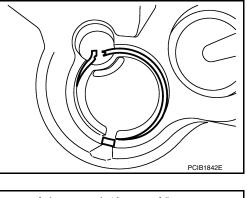
Do not damage transaxle case or differential side bearing outer race.

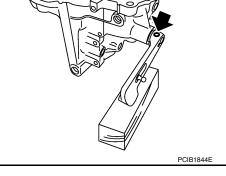
16. Remove differential side oil seal from transaxle case using suitable tool. **CAUTION:**

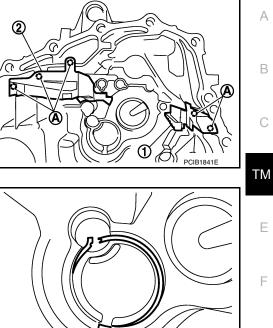
Do not damage transaxle case.











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< UNIT DISASSEMBLY AND ASSEMBLY >

17. Remove shifter lever oil seal (1) and striking rod oil seal (2) from transaxle case. **CAUTION:**

Do not damage transaxle case.

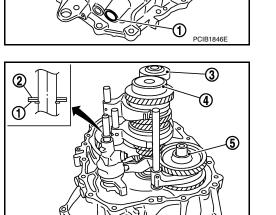
18. Remove striking rod shim (1), striking rod adjusting shim (2), mainshaft rear bearing adjusting shim (3), input shaft rear bearing adjusting shim (4), and reverse idler gear adjusting shim (5).

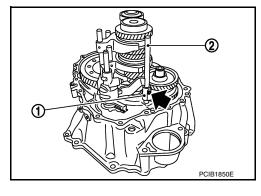
- 19. Remove retaining pin of reverse shift fork (1) using suitable tool.
 - 2 : Reverse fork rod

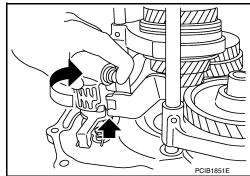
- 20. Rotate striking lever of striking rod assembly as shown. Then rotate reverse fork rod to a position where bracket of reverse fork rod does not interfere with striking lever of striking rod assembly.
- 21. Pull out reverse shift fork and reverse fork rod.

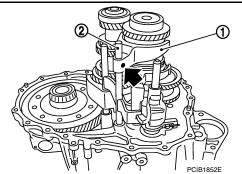
- 22. Remove retaining pin of 5th-6th shift fork (1) using suitable tool.
 - : 5th-6th fork rod 2











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< UNIT DISASSEMBLY AND ASSEMBLY >

- 23. Remove retaining pin of 3rd-4th shift fork (1) using suitable tool.
- 24. Pull out 3rd-4th fork rod (2).

25. Pull out 5th-6th shift fork (1) and 5th-6th fork rod (2).

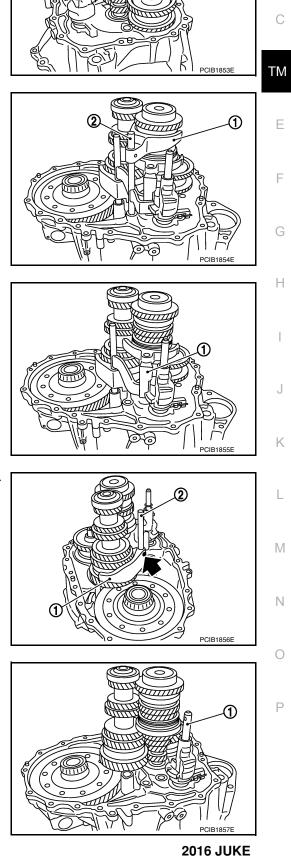
26. Pull out 3rd-4th shift fork (1).

27. Remove retaining pin of 1st-2nd shift fork (1) using suitable tool.

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28. Pull out 1st-2nd shift fork and 1st-2nd fork rod (2).

29. Remove striking rod assembly (1).



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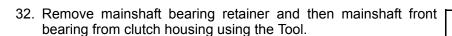
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< UNIT DISASSEMBLY AND ASSEMBLY >

- Remove gear components from clutch housing in the following procedure.
- a. Remove a set of input shaft assembly, mainshaft assembly, and reverse idler gear assembly by tapping the tip of input shaft from the back of the clutch housing with a plastic hammer. CAUTION:

Always withdraw mainshaft straight out. Failure to do so can damage resin oil channel on clutch housing side.

- b. Remove final drive assembly.
- 31. Remove magnet from clutch housing.



Tool number : KV381054S0 (J-34286)

CAUTION:

Do not damage clutch housing, mainshaft front bearing, or oil channel.

- 33. Remove oil channel from clutch housing.
- 34. Remove differential side bearing outer race (clutch housing side) from clutch housing using the puller.

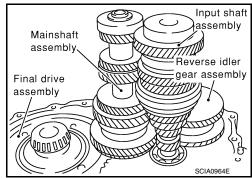
Tool number : KV381054S0 (J-34286)

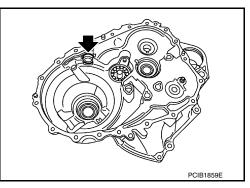
CAUTION:

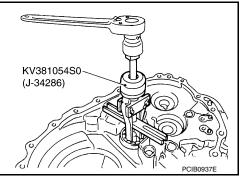
Do not damage clutch housing or differential side bearing outer race.

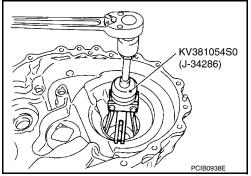
35. Remove input shaft oil seal from clutch housing, using a suitable tool. CAUTION:

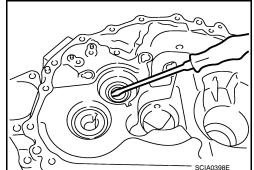
Do not damage clutch housing.







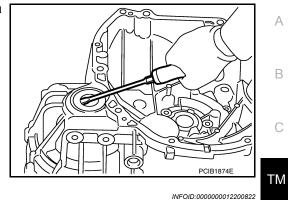






< UNIT DISASSEMBLY AND ASSEMBLY >

36. Remove differential side oil seal from clutch housing, using a suitable tool.
 CAUTION:
 Do not damage clutch housing.



Assembly

ASSEMBLY

 Install differential side oil seal (1) to clutch housing using Tool (A).

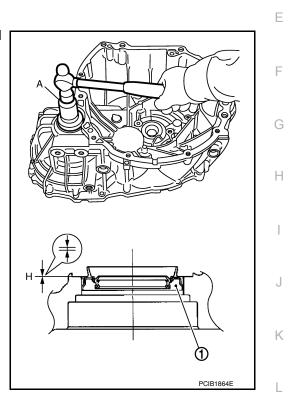
Dimension (H) : -0.5 - 0.5 mm (-0.020 - 0.020 in)

Tool number

: ST33400001 (J-26082)

CAUTION:

- Do not reuse differential side oil seal.
- When installing, do not incline differential side oil seal.
- Do not damage clutch housing.



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< UNIT DISASSEMBLY AND ASSEMBLY >

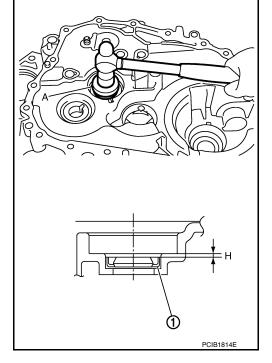
2. Install input shaft oil seal (1) to clutch housing using Tool (A).

Dimension (H) : 1.1 - 2.0 mm (0.043 - 0.078 in)

Tool number : ST35321000 (—)

CAUTION:

- Do not reuse input shaft oil seal.
- When installing, do not incline input shaft oil seal.
- Do not damage clutch housing.



3. Install differential side bearing outer race (clutch housing side) to clutch housing using Tools.

Tool number : KV40105320 (—) : ST30720000 (J-25405)

CAUTION:

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

4. Install oil channel (1) on mainshaft side. CAUTION:

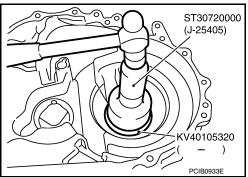
When installing oil channel, fit the rib (A) of oil channel into the processed area of the spot facing (B).

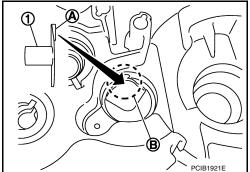
5. Install mainshaft front bearing to clutch housing using Tool.

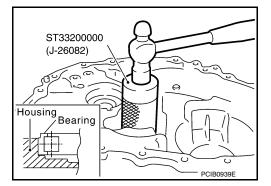
Tool number : ST33200000 (J-26082)

CAUTION:

Be careful with the orientation of mainshaft front bearing.







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< UNIT DISASSEMBLY AND ASSEMBLY >

- 6. Install mainshaft bearing retainer (1) to clutch housing and tighten bolt to the specified torque.
 - 2 : Mainshaft front bearing
 - 3 : Oil channel

CAUTION:

8.

Install with punched surface facing up.

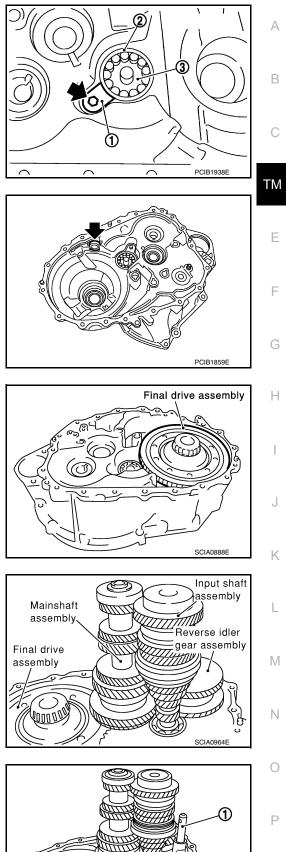
Install final drive assembly into clutch housing.

7. Install magnet to clutch housing.

- Install input shaft assembly, mainshaft assembly, and reverse idler gear assembly into clutch housing. CAUTION:
 - Wrap a tape, etc. to the spline of input shaft so as not to damage the input shaft oil seal.
 - Be careful with the orientation of reverse idler shaft.
- 10. Install striking rod assembly (1) into clutch housing.



[6MT: RS6F52H]



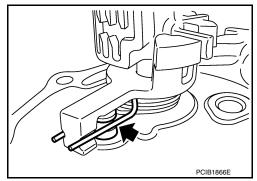
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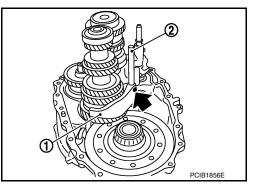
< UNIT DISASSEMBLY AND ASSEMBLY >

CAUTION:

• Check that return spring is securely seated in the groove on return pin.



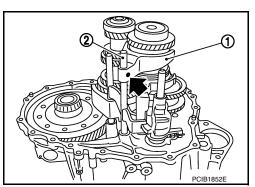
- 11. Install 1st-2nd shift fork (1) and 1st-2nd fork rod (2) and then install retaining pin to 1st-2nd shift fork.
 - CAUTION:
 - Do not reuse retaining pin.
 - Be careful with the orientation of 1st-2nd shift fork and 1st-2nd fork rod.
 - Assemble retaining pin from the direction shown by the arrow until it becomes flush with the end surface of 1st-2nd shift fork.



12. Install 3rd-4th shift fork (1) to 3rd-4th coupling sleeve.

Be careful with the orientation of 3rd-4th shift fork.

- 13. Install 5th-6th shift fork (1) and 5th-6th fork rod (2) and then install retaining pin to 5th-6th shift fork. CAUTION:
 - Do not reuse retaining pin.
 - Be careful with the orientation of 5th-6th shift fork and 5th-6th fork rod.
 - Assemble retaining pin from the direction shown by the arrow until it becomes flush with the end surface of 5th-6th shift fork.



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< UNIT DISASSEMBLY AND ASSEMBLY >

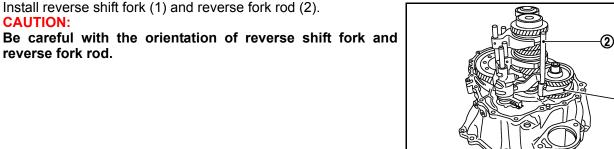
15. Install reverse shift fork (1) and reverse fork rod (2).

- 14. Install 3rd-4th fork rod (2) and then install retaining pin to 3rd-4th shift fork (1).
 - **CAUTION:**

CAUTION:

reverse fork rod.

- Do not reuse retaining pin.
- Be careful with the orientation of 3rd-4th fork rod. • Assemble retaining pin from the direction shown by the arrow until it becomes flush with the end surface of 3rd-4th shift fork.



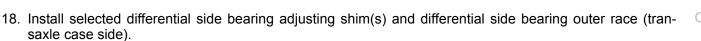
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16. Rotate striking lever of striking rod assembly as shown. Then rotate reverse fork rod to a position where bracket of reverse fork rod does not interfere with striking lever of striking rod assembly.

- 17. Install retaining pin to reverse shift fork (1).
 - 2 : Reverse fork rod

CAUTION:

- Do not reuse retaining pin.
- Assemble retaining pin from the direction shown by the arrow until it becomes flush with the end surface of reverse shift fork.



- 19. Install selected reverse idler gear adjusting shim onto reverse idler gear assembly.
- 20. Install selected input shaft rear bearing adjusting shim onto input shaft.
- 21. Install selected striking rod adjusting shim and striking rod shim onto striking rod assembly.

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< UNIT DISASSEMBLY AND ASSEMBLY >

22. Install shifter lever oil seal (1) and striking rod oil seal (2) to transaxle case using suitable tool.

Dimension (H) : 0 - 1.0 mm (0 - 0.039 in)

CAUTION:

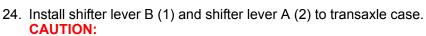
- Do not reuse shifter lever oil seal or striking rod oil seal.
- When installing, do not incline shifter lever oil seal and striking rod oil seal.
- Do not damage transaxle case.
- 23. Install differential side oil seal (1) to transaxle case using Tool (A).

Dimension (H) : -0.5 - 0.5 mm (-0.020 - 0.020 in)

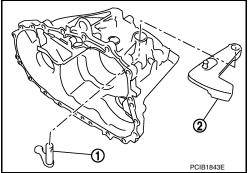
Tool number : ST30720000 (J-25405)

CAUTION:

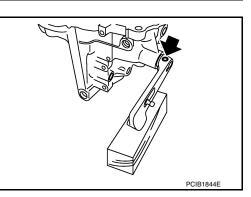
- Do not reuse differential side oil seal.
- When installing, do not incline differential side oil seal.
- Do not damage transaxle case.

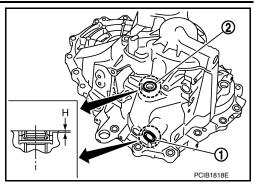


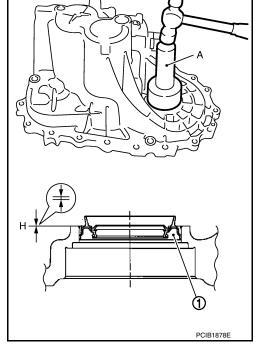
Be careful with the orientation of shifter lever B and shifter lever A.



- 25. Install retaining pin to shifter lever A. CAUTION:
 - Do not reuse retaining pin.
 - Assemble retaining pin from the direction shown by the arrow until it becomes flush with the end surface of shifter lever A.



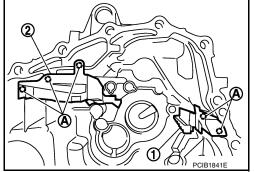




< UNIT DISASSEMBLY AND ASSEMBLY >

- 26. Install transaxle case following the procedures below.
- a. Install selected mainshaft rear bearing adjusting shim into transaxle case.
- b. Install oil gutter A (1) and oil gutter B (2) to transaxle case.

CAUTION: Insert the tab (A) of oil gutter A and oil gutter B into transaxle case.



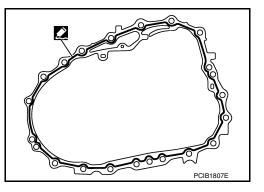
 Temporarily install snap ring of mainshaft rear bearing into transaxle case.
 CAUTION:

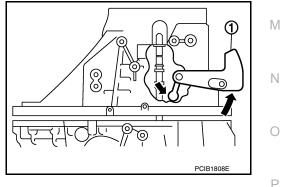
Do not reuse snap ring.

- d. Apply recommended sealant to mating surface of clutch housing as shown.
 - Use Genuine Silicone RTV or an equivalent. Refer to MA-<u>11, "Fluids and Lubricants"</u>.
 - CAUTION:
 - Remove old sealant adhering to the mounting surfaces. Also remove any moisture, oil, or foreign material adhering to both mounting surfaces.
 - Apply sealant so as not to break the bead.
 - The width of sealant bead is 1 2 mm (0.04 0.08 in).
 - The height of sealant bead is 0.4 1 mm (0.016 0.04 in).
 - The overlap length of both ends of sealant bead is 3 5 mm (0.12 0.20 in).
- With shifter lever A (1) held in the position shown, temporarily assemble transaxle case to clutch housing.
 CAUTION:

Do not damage striking rod oil seal. NOTE:

Make sure to hold shifter lever A in the position shown. Otherwise transaxle case cannot be installed to clutch housing.





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< UNIT DISASSEMBLY AND ASSEMBLY >

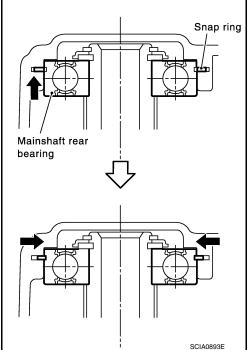
- f. While rotating shifter lever A (1) in the direction of the arrow shown, assemble transaxle case to clutch housing.
 - 2 : shifter lever B

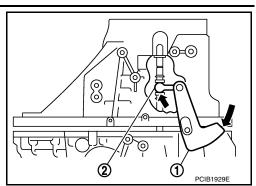
- g. Accessing from the bore plug hole, expand snap ring at mainshaft rear bearing so that the ring catches the periphery of mainshaft rear bearing.
- h. Temporarily tighten transaxle case bolts.

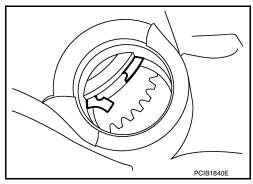
i. Shift the shifter lever A (1) to 2nd gear position.
NOTE:
The 2nd gear position is attained when shifter lever A is in the

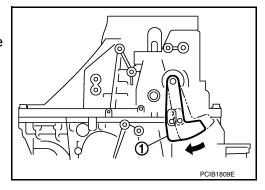
position shown.

- When transaxle is shifted to the 2nd gear position, mainshaft assembly is lifted.
- j. Seat snap ring in the groove on mainshaft rear bearing. If snap ring is not seated in the groove on mainshaft rear bearing, remove transaxle case and repeat the procedure from step d.







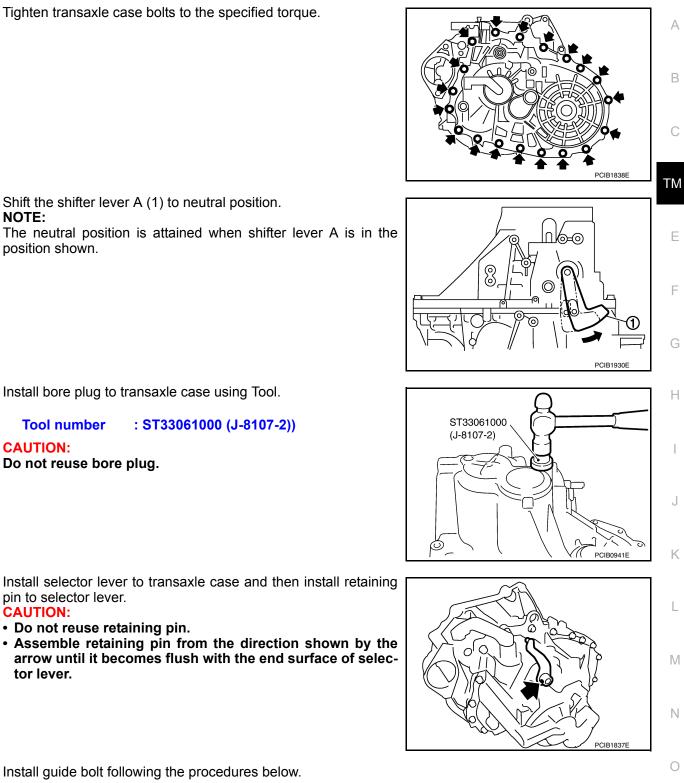


[6MT: RS6F52H]

< UNIT DISASSEMBLY AND ASSEMBLY >

k. Tighten transaxle case bolts to the specified torque.

Shift the shifter lever A (1) to neutral position.



- 27. Install bore plug to transaxle case using Tool.

Tool number : ST33061000 (J-8107-2))

CAUTION: Do not reuse bore plug.

- 28. Install selector lever to transaxle case and then install retaining pin to selector lever.
 - **CAUTION:**

Ι.

NOTE:

position shown.

· Do not reuse retaining pin.

29. Install guide bolt following the procedures below.

a. Shift the shifter lever A and selector lever to neutral position.

• Assemble retaining pin from the direction shown by the arrow until it becomes flush with the end surface of selector lever.

Revision: November 2015

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< UNIT DISASSEMBLY AND ASSEMBLY >

- b. Visually confirm from the guide bolt hole (C) that the lever is securely set to neutral position (A). If it is not in the neutral position, repeat the procedure from step a.
 - 1 : Guide bolt

CAUTION:

The guide groove (D) of striking rod assembly will be damaged when assembling guide bolt with the lever is in except neutral position (B).

c. Check continuity between terminals of park/neutral position (PNP) switch to confirm it in the neutral position. If it is not in the neutral position, remove park/neutral position (PNP) switch and repeat the procedure from step a. Refer to <u>TM-78</u>, "PARK/NEU-TRAL POSITION (PNP) SWITCH : Component Inspection".

 Install guide bolt to transaxle case and then tighten guide bolt to the specified torque.
 CAUTION:

Do not reuse guide bolt.

- 30. Apply recommended sealant to threads of park/neutral position (PNP) switch (1). Then install it to transaxle case and tighten to the specified torque.
 - Use Genuine Silicone RTV or an equivalent. Refer to <u>MA-11, "Fluids and Lubricants"</u>.
 CAUTION:

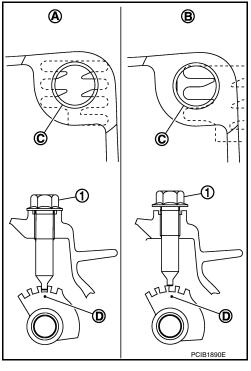
Remove old sealant and oil adhering to threads.

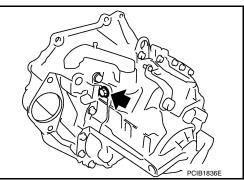
- 31. Install plunger to transaxle case.
- 32. Apply recommended sealant to threads of back-up lamp switch (2). Then install it to transaxle case and tighten to the specified torque.

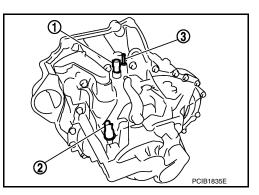
Use Genuine Silicone RTV or an equivalent. Refer to <u>MA-11, "Fluids and Lubricants"</u>.
CAUTION:

Remove old sealant and oil adhering to threads.

- 33. Install air breather tube (3) to transaxle case.
 - CAUTION:
 - Do not reuse air breather tube.
 - Assemble air breather tube until its collar element contacts with transaxle case.







< UNIT DISASSEMBLY AND ASSEMBLY >

34. Install gasket onto plug and then install them into transaxle case. Tighten plug to the specified torque. CAUTION: Do not reuse gasket.

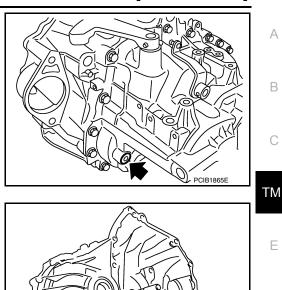
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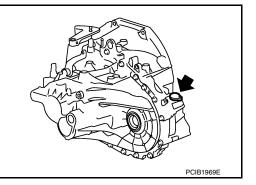


35. Install gasket onto drain plug and then install them into clutch housing. Tighten drain plug to the specified torque. CAUTION: Do not reuse gasket.

36. Install O-ring onto plug and then install it into clutch housing. Tighten bolt to the specified torque. **CAUTION:**

Do not reuse O-ring.

• After oil is filled, tighten bolt to specified torque.



Adjustment

ADJUSTMENT

Differential Side Bearing Preload

 When adjusting differential side bearing preload, select adjusting shim for differential side bearing. To select adjusting shim, measure clearance (L) between transaxle case and differential side bearing outer race. Refer to TM-147, "Available Shims". **CAUTION:**

Up to 2 adjusting shims can be selected.

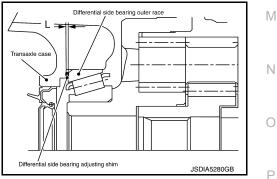
Calculate dimension (L) (thickness of adjusting shim) using the following procedure to satisfy specification of preload for differential side bearing.

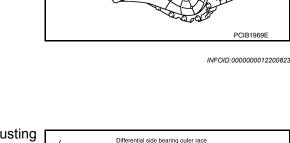
Preload : Refer to TM-147, "Available Shims".

Dimension L = (L1 - L2) + Preload

L : Thickness of adjusting shim

- L1 : Distance between transaxle case end face and mounting face of adjusting shim
- L2 : Distance between differential side bearing outer race and clutch housing end face







< UNIT DISASSEMBLY AND ASSEMBLY >

- Using a depth micrometer and straightedge, measure dimension (L1) between transaxle case end face and mounting face of adjusting shim.
- 2. Install differential side bearing outer race onto differential side bearing on final gear side. Holding lightly differential side bearing outer race horizontally by hand, rotate final gear five times or more (for smooth movement of bearing roller).
- Using a depth micrometer and straightedge as shown, measure dimension (L2) between differential side bearing outer race and clutch housing end face.
 CAUTION:

L2: Measure at 4 point by approximately 90 degrees and use the average value.

4. Install selected differential side bearing adjusting shim and then install differential side bearing outer race (transaxle case side) using Tool.

Tool number : ST30720000 (J25405)

CAUTION:

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



 When adjusting reverse idler gear end play, select adjusting shim for reverse idler gear. To select adjusting shim (1), measure clearance between transaxle case (2) and reverse idler gear (rear) (3). Refer to <u>TM-146</u>, "Available Adjusting Shims".
 CAUTION:

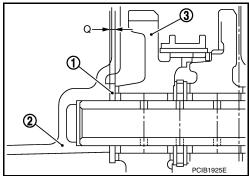
Only 1 adjusting shim can be selected.

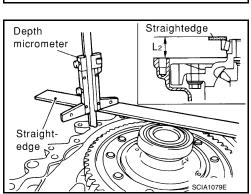
• Calculate dimension (Q) (thickness of adjusting shim) using the following procedure to satisfy specification of end play for reverse idler gear.

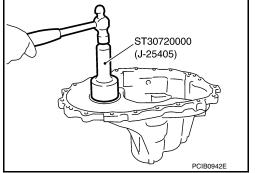
End play	: Refer to <u>TM-146, "Available Adjusting</u> <u>Shims"</u> .
Dimens	sion Q = (Q1 - Q2) - End play

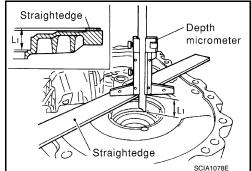
- Q : Thickness of adjusting shim
- Q1 : Distance between transaxle case end face and mounting face of adjusting shim
- Q2 : Distance between clutch housing end face and end face of reverse idler gear (rear)











< UNIT DISASSEMBLY AND ASSEMBLY >

Using a depth micrometer and straightedge, measure dimension 1 (Q1) between transaxle case end face and mounting face of adjusting shim.

O1: Measure at 4 point by approximately 90 degrees and

use the average value.

adjusting shim. CAUTION:

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Input Shaft End Play

CAUTION:

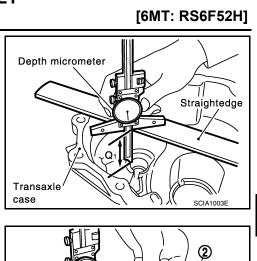
rear bearing.

146, "Available Adjusting Shims".

Only 1 adjusting shim can be selected.

Shims".

TM-111



2. Using a depth micrometer and straightedge as shown, measure dimension (Q2) between clutch housing (1) end face and end face of reverse idler gear (rear) (2). **CAUTION:**

Q2: Measure at 4 point by approximately 90 degrees and use the average value.

3. Install selected reverse idler gear adjusting shim onto reverse idler gear (rear).

End play : Refer to TM-146, "Available Adjusting

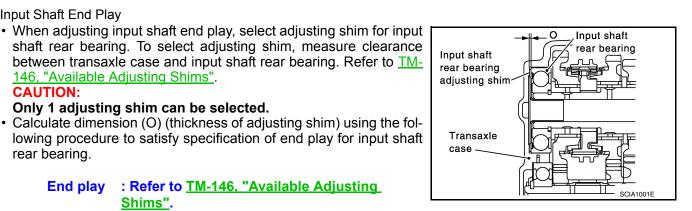
: Thickness of adjusting shim

: Distance between transaxle case end face

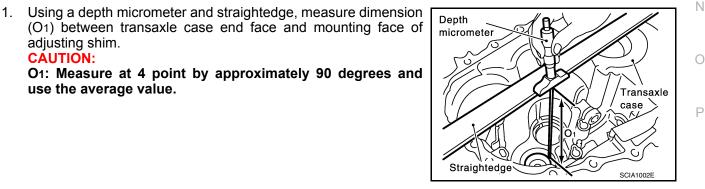
: Distance between clutch housing end face and end face of input shaft rear bearing

and mounting face of adjusting shim

Dimension $O = (O_1 - O_2) - End play$



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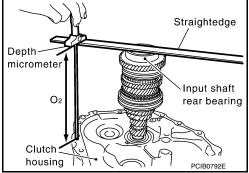
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< UNIT DISASSEMBLY AND ASSEMBLY >

 Using a depth micrometer and straightedge as shown, measure dimension (O2) between clutch housing end face and end face of input shaft rear bearing.
 CAUTION:

(O2): Measure at 4 point by approximately 90 degrees and use the average value.

3. Install selected input shaft rear bearing adjusting shim onto input shaft.



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[6MT: RS6F52H]

Striking rod End Play

• When adjusting striking rod end play, select adjusting shim (1) for striking rod (2). To select adjusting shim, measure clearance between transaxle case (3) and striking rod shim (4). Refer to <u>TM-146</u>, "Available Adjusting Shims".

CAUTION:

Only 1 adjusting shim can be selected.

• Calculate dimension (R) (thickness of adjusting shim) using the following procedure to satisfy specification of end play for striking rod.

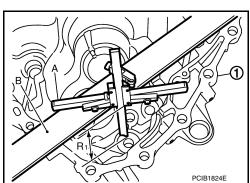
End play : Refer to <u>TM-146</u>, "Available Adjusting <u>Shims"</u>.

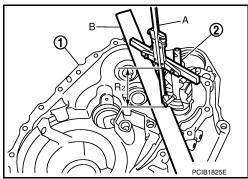
Dimension R = (R1 - R2) - End play

- R : Thickness of adjusting shim
- R1 : Distance between transaxle case end face and mounting face of adjusting shim
- R2 : Distance between clutch housing end face and end face of striking rod shim
- Using a depth micrometer (A) and straightedge (B), measure dimension (R1) between transaxle case (1) end face and mounting face of adjusting shim.
 CAUTION:

R1: Measure at 4 point by approximately 90 degrees and use the average value.

- Using a depth micrometer (A) and straightedge (B) as shown, measure dimension (R2) between clutch housing (1) end face and end face of striking rod shim (2).
 CAUTION:
 - R2: Measure at 4 point by approximately 90 degrees and use the average value.
 - When measuring, be careful for the inclination of striking rod assembly and striking rod shim.
- 3. Install selected striking rod adjusting shim onto striking rod assembly.





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< UNIT DISASSEMBLY AND ASSEMBLY >

- When adjusting mainshaft end play, select adjusting shim (1) for mainshaft rear bearing (2). To select adjusting shim, measure clearance (M) between transaxle case (3) and dummy adjusting shim (4) on mainshaft rear bearing. Refer to <u>TM-146</u>, "Available <u>Adjusting Shims</u>".
 - 5 : Snap ring
 - 6 : Mainshaft

CAUTION:

Only 1 adjusting shim can be selected.

 Calculate dimension (P) (thickness of adjusting shim) using the following procedure to satisfy specification of end play for mainshaft rear bearing.

End play : Refer to <u>TM-146</u>, "Available Adjusting <u>Shims"</u>.

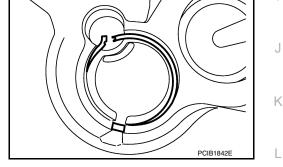
Dimension P = (M + N) - End play

- P : Thickness of adjusting shim
- M : Distance between dummy adjusting shim on mainshaft rear bearing end face and transaxle case end face
- N* : Thickness of dummy adjusting shim
- *: Refer to the latest parts information to use a dummy adjusting shim of which part number is the thinnest in thickness. Refer to <u>TM-</u><u>146</u>, "Available Adjusting Shims".
- 1. Install transaxle case following the procedures below.
- Temporarily install snap ring of mainshaft rear bearing into transaxle case.
 CAUTION:

Install dummy adjusting shim (1) to mainshaft assembly.

Do not reuse snap ring.

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< UNIT DISASSEMBLY AND ASSEMBLY >

With shifter lever A (1) held in the position shown, temporarily C. assemble transaxle case to clutch housing. **CAUTION:**

Do not damage striking rod oil seal. NOTE:

Make sure to hold shifter lever A in the position shown. Otherwise transaxle case cannot be installed to clutch housing.

- While rotating shifter lever A (1) in the direction of the arrow d. shown, assemble transaxle case to clutch housing.
 - 2 : shifter lever B

- e. Accessing from the bore plug hole, expand snap ring at mainshaft rear bearing so that the ring catches the periphery of mainshaft rear bearing.
- f. Temporarily tighten transaxle case bolts.

2. Shift the shifter lever A to 2nd gear position.

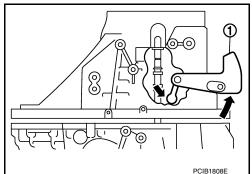
NOTE:

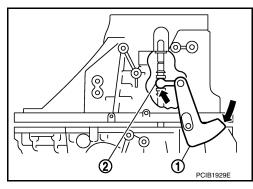
the position shown.

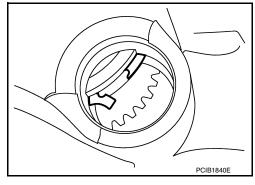
· When transaxle is shifted to the 2nd gear position, mainshaft assembly (1) is lifted.

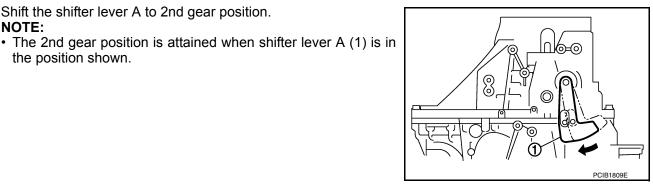


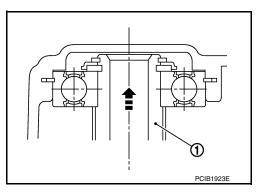












< UNIT DISASSEMBLY AND ASSEMBLY >

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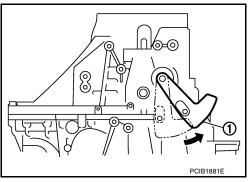
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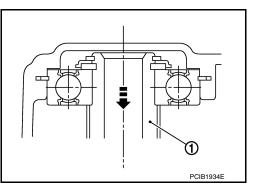
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- 3. Seat snap ring in the groove on mainshaft rear bearing. If snap ring is not seated in the groove on mainshaft rear bearing, remove transaxle case and repeat the procedure 1 from step c.
- 4. Shift the shifter lever A to 1st gear position, and then shift it to 2nd gear position. Repeat 3 times. NOTE:
 - · The mainshaft rear bearing position will be stabilized by shifting between 1st gear position and 2nd gear В position alternately.
 - The 1st gear position is attained when shifter lever A (1) is in the position shown.



· When transaxle is shifted to the 1st gear position, mainshaft assembly (1) is declined.



- Set the dial indicator (A) to dummy adjusting shim (1) through 5. the bore plug hole.
 - 2 : Mainshaft rear bearing
 - 3 : Snap ring

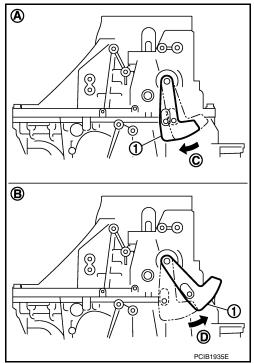
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< UNIT DISASSEMBLY AND ASSEMBLY >

- 6. Shift the shifter lever A (1) to 2nd gear position (A), and then rotate it in the direction of the arrow (C) shown until it stops. Using this position as the reference point, measure the amount of movement when shifting shifter lever A to 1st gear position (B) and rotating it in the direction of the arrow (D) shown until it stops. This measurement is the (M) dimension.
- 7. When measurement (M) is 0 0.06 mm (0 0.0024 in), adjustment terminates, and the dummy adjusting shim becomes regular adjusting shim. Select adjusting shim from the computed expressions when measurement (M) is over 0.06 mm (0.0024 in).



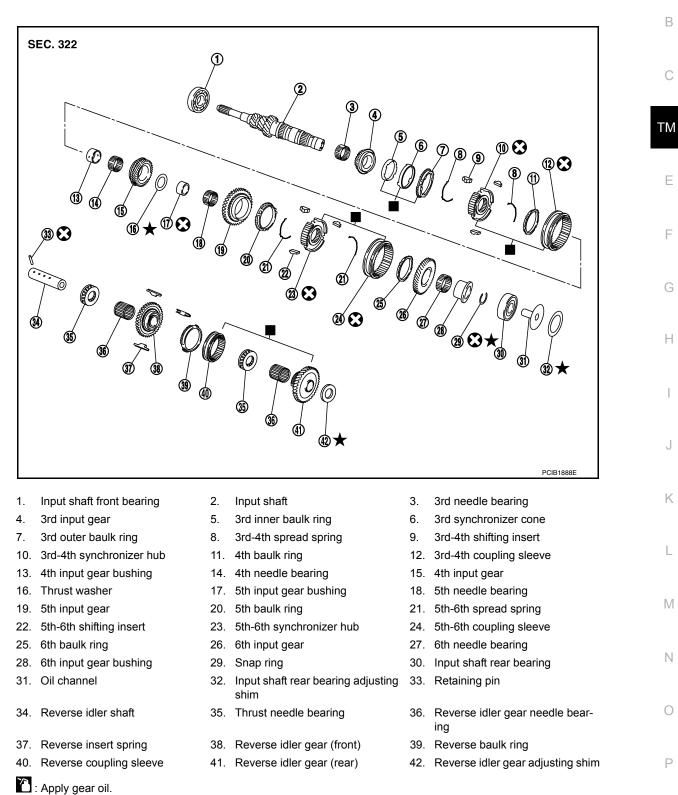
[6MT: RS6F52H]

< UNIT DISASSEMBLY AND ASSEMBLY >

INPUT SHAFT AND GEARS

Exploded View

INFOID:000000012200824



- : Replace the parts as a set.
- 🗙 : Always replace after every disassembly.
- . N·m (kg-m, ft-lb)

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< UNIT DISASSEMBLY AND ASSEMBLY >

Disassembly and Assembly

DISASSEMBLY

1. Before disassembling, measure end play for 3rd, 4th, 5th, and 6th input gears.

End play standard value : Refer to <u>TM-144, "Gear End Play"</u>.

- 2. Remove oil channel.
- 3. Press out input shaft rear bearing using Tool and a puller.

: ST33052000 (—)

Tool number

4. Remove snap ring.

5. Press out 6th input gear, 6th needle bearing, 6th input gear bushing, 5th-6th synchronizer hub assembly, and 5th input gear using Tool (A) and a puller (B).

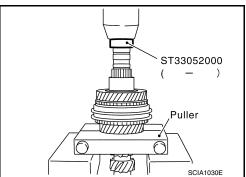
Tool number A: ST33052000 (—)

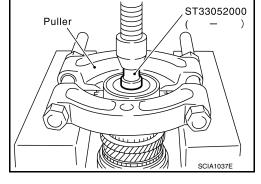
- 6. Remove 5th needle bearing.
- 7. Press out 5th input gear bushing, thrust washer, 4th input gear, 4th needle bearing, 4th input gear bushing, 3rd-4th synchronizer hub assembly, and 3rd input gear using Tool and a puller.

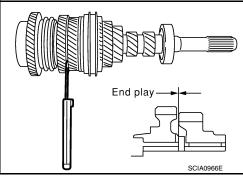
Tool number : ST33052000 (—)

8. Remove 3rd needle bearing.

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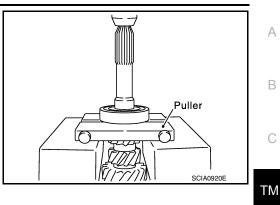


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< UNIT DISASSEMBLY AND ASSEMBLY >

9. Press out input shaft front bearing using a puller.

[6MT: RS6F52H]



INSPECTION AFTER DISASSEMBLY

Input Shaft and Gears

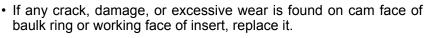
Check items below. If necessary, replace them with new ones. • Damage, peeling, dent, uneven wear, bending, etc. of shaft

Excessive wear, damage, peeling, etc. of gears

Synchronizer

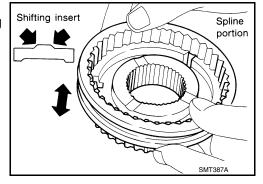
Check items below. If necessary, replace them with new ones.

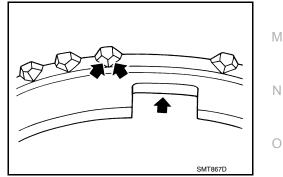
- Damage and excessive wear of contact surfaces of coupling sleeve, synchronizer hub and shifting insert
- · Coupling sleeve and synchronizer hub must move smoothly.



BAULK RING CLEARANCE

Single-cone synchronizer (4th, 5th, and 6th)





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< UNIT DISASSEMBLY AND ASSEMBLY >

Push baulk ring on the cone and measure the clearance between baulk ring and cone. If measurement is below limit, replace it with a new one.

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Limit value

Double-cone synchronizer (3rd)

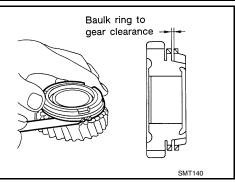
and inner baulk ring as follows.

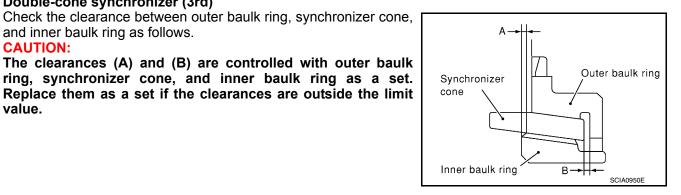
CAUTION:

value.

Clearance

: Refer to TM-144, "Baulk Ring Clearance".





1. Measure the clearance (A) at 2 points or more diagonally opposite using a dial indicator. And then calculate mean value.

> : ST30031000 (J-22912-01) **Tool number**

site using a feeler gauge. And then calculate mean value.

Standard value : Refer to TM-144, "Baulk Ring Clearance".

Clearance".

: Refer to TM-144, "Baulk Ring

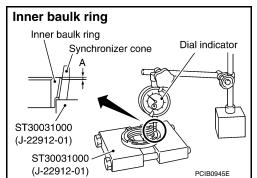
Clearance (A)

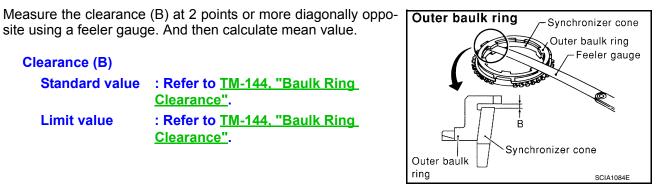
Clearance (B)

Limit value

Standard value : Refer to TM-144, "Baulk Ring Clearance". Limit value : Refer to TM-144, "Baulk Ring Clear-

ance".





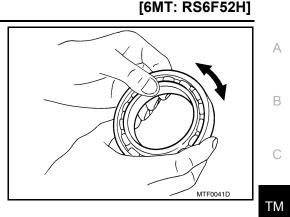
Bearing

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< UNIT DISASSEMBLY AND ASSEMBLY >

Check items below. If necessary, replace them with new ones.

Damage and rough rotation of bearing



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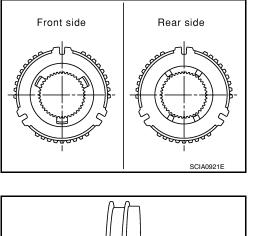
Μ

ASSEMBLY

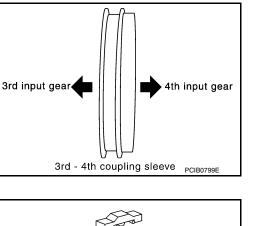
- 1. Install 3rd needle bearing to input shaft.
- Install 3rd input gear, 3rd inner baulk ring, 3rd synchronizer cone, and 3rd outer baulk ring to input shaft. CAUTION:

Replace 3rd inner baulk ring, 3rd synchronizer cone, and 3rd outer baulk ring as a set.

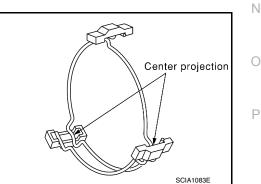
- 3. Install 3rd-4th spread springs, 3rd-4th shifting inserts, and 3rd-4th synchronizer hub onto 3rd-4th coupling sleeve.
 - CAUTION:
 - Be careful with orientation of 3rd-4th synchronizer hub.
 - Do not reuse 3rd-4th synchronizer hub and 3rd-4th coupling sleeve.
 - Replace 3rd-4th synchronizer hub and 3rd-4th coupling sleeve as a set.



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



• Be sure not to hook center projection of 2 spread springs on same shifting insert.



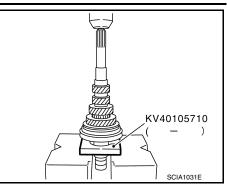
< UNIT DISASSEMBLY AND ASSEMBLY >

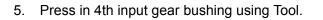
4. Press in 3rd-4th synchronizer hub assembly using Tool.

Tool number : KV40105710 (—)

CAUTION:

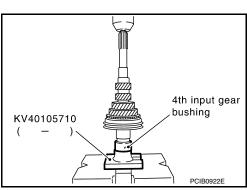
Align grooves of 3rd-4th shifting insert and 3rd outer baulk ring.





Tool number : KV40105710 (—)

- 6. Install 4th baulk ring.
- 7. Install 4th needle bearing and 4th input gear to input shaft.



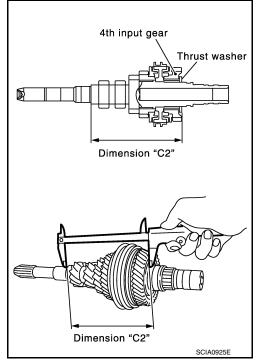
8. Select thrust washer so that dimension "C2" satisfies the standard value below. Then install thrust washer onto input shaft. Refer to <u>TM-145</u>, "Available Thrust Washer".

Standard value for dimension "C2"

: Refer to TM-145, "Available Thrust Washer".

CAUTION:

Only one thrust washer can be selected.



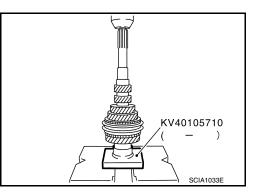
9. Press in 5th input gear bushing using Tool.

Tool number : KV40105710 (—)

CAUTION:

Do not reuse 5th input gear bushing.

- 10. Install 5th needle bearing and 5th input gear to input shaft.
- 11. Install 5th baulk ring.

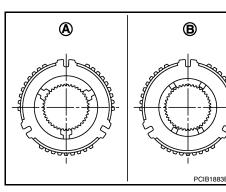


< UNIT DISASSEMBLY AND ASSEMBLY >

12. Install 5th-6th synchronizer hub, 5th-6th spread springs, and 5th-6th shifting inserts onto 5th-6th coupling sleeve.

CAUTION:

- Be careful with orientation of 5th-6th synchronizer hub.
 - A : Front side
 - B : Rear side
- Do not reuse 5th-6th synchronizer hub and 5th-6th coupling sleeve.
- Replace 5th-6th synchronizer hub and 5th-6th coupling sleeve as a set.

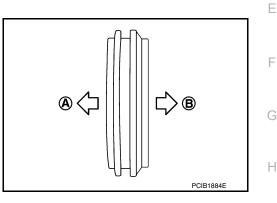




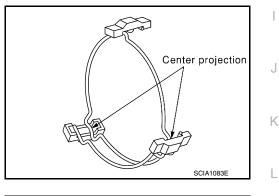
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[6MT: RS6F52H]

- Be careful with orientation of 5th-6th coupling sleeve.
 - A : 5th input gear side
 - B : 6th input gear side



• Be sure not to hook center projection of 2 spread springs on same shifting insert.

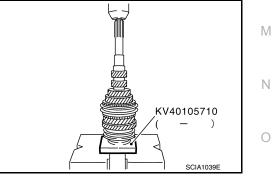


13. Press in 5th-6th synchronizer hub assembly using Tool.

Tool number : KV40105710 (—)

CAUTION:

Align grooves of 5th-6th shifting insert and 5th baulk ring.



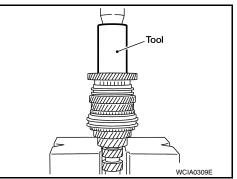
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< UNIT DISASSEMBLY AND ASSEMBLY >

14. Install 6th needle bearing, 6th input gear, 6th baulk ring onto 6th input gear bushing and then press in 6th input gear bushing onto input shaft using Tool.

Tool number : ST33200000 (J-26082)





15. Install snap ring onto input shaft and make sure that end play (gap between snap ring and groove) of 6th input gear bushing satisfies the standard value.

End play standard value

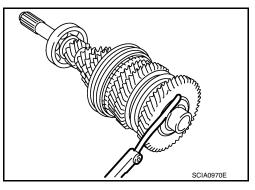
:Refer to TM-144, "Available Snap Rings".

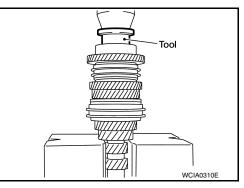
- If measurement is outside the standard range, select snap ring. Refer to <u>TM-144</u>, "<u>Available Snap Rings</u>".
 CAUTION: Do not reuse snap ring.
- 16. Press in input shaft rear bearing using Tool.

Tool number : ST30901000 (J-26010-01)

CAUTION:

Install input shaft rear bearing with its brown surface facing the 6th input gear side.

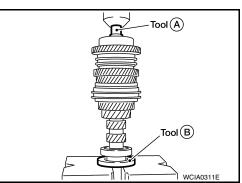




17. Press in input shaft front bearing using Tools.

Tool number A: ST33052000 (—) B: ST30032000 (J-26010-01)

18. Install oil channel onto input shaft.



- End play
- 19. Check end play of 3rd, 4th, 5th, and 6th input gears.

End play standard value : Refer to <u>TM-144, "Gear End Play"</u>. 43

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Mainshaft bearing retainer

4th main gear adjusting shim

TM-125

5th-6th mainshaft spacer

Mainshaft rear bearing

1st main gear

14. 2nd outer baulk ring

20. 2nd main gear

32. Snap ring

1st inner baulk ring

17. 1st-2nd coupling sleeve

1st-2nd spread spring

2.

5.

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< UNIT DISASSEMBLY AND ASSEMBLY >

(0.74, 65)

MAINSHAFT AND GEARS

Exploded View

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7.

Mainshaft front bearing

Reverse main gear

1st needle bearing

13. 1st-2nd synchronizer hub

22. 3rd-4th mainshaft spacer

: Replace the parts as a set.

28. 6th main gear adjusting shim 29.

Always replace after every disassembly.

10. 1st outer baulk ring

16. 2nd inner baulk ring

19. 2nd needle bearing

25. 5th main gear

31. C-ring holder

🗋 : Apply gear oil.

: N·m (kg-m, ft-lb)

Disassembly and Assembly

Revision: November 2015

DISASSEMBLY

17 🕄

PCIB1889E

13

3.

6.

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30.

Mainshaft

21. 3rd main gear

24. 4th main gear

ing shim

6th main gear

Mainshaft C-ring

33. Mainshaft rear bearing adjust-

1st main gear bushing

1st synchronizer cone

12. 1st-2nd shifting insert

15. 2nd synchronizer cone

18. 2nd main gear bushing

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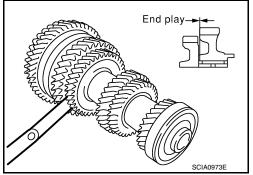
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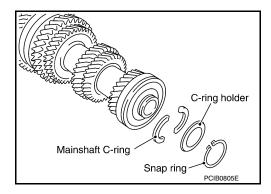
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< UNIT DISASSEMBLY AND ASSEMBLY >

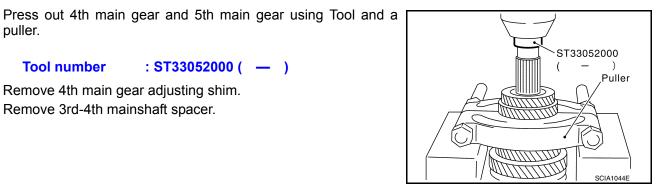
1. Before disassembling, measure the end play of 1st and 2nd main gears.

End play standard value : Refer to TM-144, "Gear End Play".





ST33052000 Puller SCIA1056E

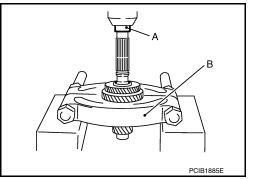


Press out 3rd main gear and 2nd main gear using Tool (A) and a 9. puller (B).

: ST33052000 (—)

Tool number A: KV40105020 (—)

10. Remove 2nd needle bearing.



Remove snap ring. Remove C-ring holder and then remove mainshaft C-rings.

2. 3.

6.

puller.

Tool number

7. Remove 4th main gear adjusting shim. 8. Remove 3rd-4th mainshaft spacer.

Press out mainshaft rear bearing, 6th main gear adjusting shim, 4. and 6th main gear using Tool and a puller.

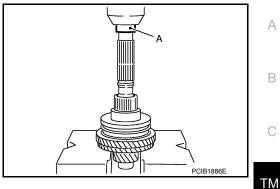
> **Tool number** : ST33052000 (—)

5. Remove 5th-6th mainshaft spacer.

< UNIT DISASSEMBLY AND ASSEMBLY >

11. Press out 2nd main gear bushing, 1st-2nd synchronizer hub assembly, 1st main gear, 1st needle bearing, 1st main gear bushing, and reverse main gear using Tool (A).

> A: KV40105020 (—) Tool number



[6MT: RS6F52H]

INSPECTION AFTER DISASSEMBLY

Mainshaft and Gears

Check items below. If necessary, replace them with new ones.

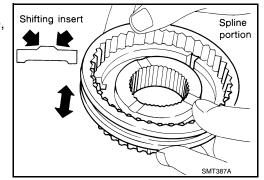
- · Damage, peeling, dent, uneven wear, bending, and other nonstandard conditions of the shaft.
- · Excessive wear, damage, peeling, and other non-standard conditions of the gears.

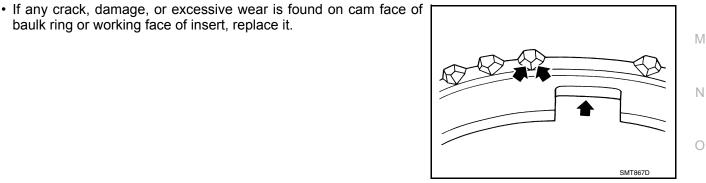
Synchronizer

Check items below. If necessary, replace them with new ones.

- Damage and unusual wear on contact surfaces of coupling sleeve, synchronizer hub and shifting insert.
- Coupling sleeve and synchronizer hub must move smoothly.

baulk ring or working face of insert, replace it.





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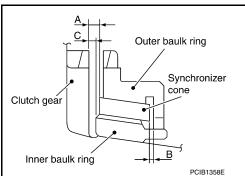
SCIA1076J

BAULK RING CLEARANCE

Triple-cone synchronizer (1st and 2nd)

- < UNIT DISASSEMBLY AND ASSEMBLY >
- · Check the clearance between outer baulk ring, synchronizer cone, and inner baulk ring as follows. **CAUTION:**

The clearances (A), B, and (C) are controlled with outer baulk ring, synchronizer cone, and inner baulk ring as a set. Replace them as a set if the clearances are outside the limit value.



[6MT: RS6F52H]

PCIB1359E

- Measure the clearance (A) at 2 points or more diagonally opposite using a feeler gauge when pressing baulk ring toward clutch Feeler gauge Synchronizer cone : Refer to TM-144, "Baulk Ring Push Inner baulk ring Outer baulk ring : Refer to TM-144, "Baulk Ring Gear taper cone
- 2. Measure the clearance (B) at 2 points or more diagonally opposite using a feeler gauge. And then calculate mean value.

Clearance".

Clearance".

gear taper cone. And then calculate mean value.

Clearance (B)

Clearance (A)

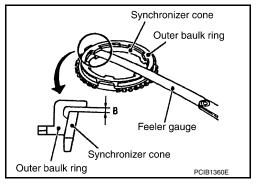
Limit value

Standard value

Standard value

Limit value

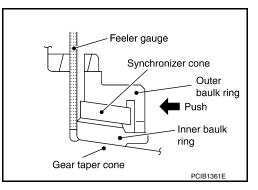
: Refer to TM-144, "Baulk Ring Clearance". : Refer to TM-144, "Baulk Ring Clearance".



Measure the clearance (C) at 2 points or more diagonally oppo-3. site using a feeler gauge when pressing baulk ring toward clutch gear taper cone. And then calculate mean value.

Clearance (C)

Standard value	: Refer to <u>TM-144, "Baulk Ring</u> <u>Clearance"</u> .
Limit value	: Refer to <u>TM-144, "Baulk Ring</u> <u>Clearance"</u> .



Bearing

1.

< UNIT DISASSEMBLY AND ASSEMBLY >

Check items below. If necessary, replace them with new ones.

Damage and rough rotation of bearing

[6MT: RS6F52H]

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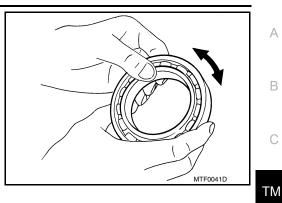
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ASSEMBLY

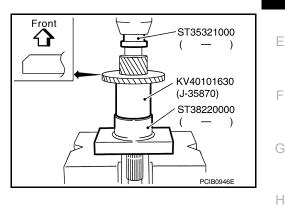
1. Press in reverse main gear using Tools.

Tool number

: KV40101630 (J-35870)

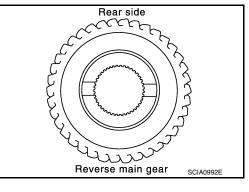
: ST35321000 (—)

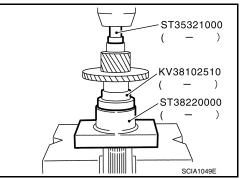
: ST38220000 (—)



CAUTION:

- Be careful with orientation of reverse main gear.
- Do not reuse reverse main gear.





2. Press in 1st main gear bushing using Tools.

Tool number : KV38102510 (—) : ST35321000 (—) : ST38220000 (—)

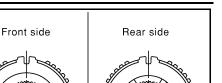
- 3. Install 1st needle bearing and then 1st main gear.
- 4. Install 1st-2nd spread springs, 1st-2nd shifting inserts, and 1st-2nd synchronizer hub onto 1st-2nd coupling sleeve. **CAUTION:**

< UNIT DISASSEMBLY AND ASSEMBLY >

• Be careful with orientation of 1st-2nd synchronizer hub.

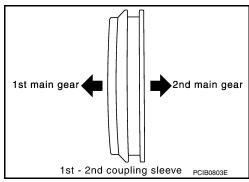
Be careful with orientation of 1st-2nd coupling sleeve.

- Do not reuse 1st-2nd synchronizer hub and 1st-2nd coupling sleeve.
- Replace 1st-2nd synchronizer hub and 1st-2nd coupling sleeve as a set.



[6MT: RS6F52H]

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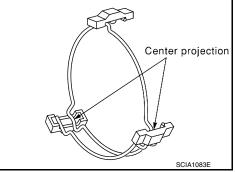
- Be sure not to hook center projection of 2 spread springs on same 1st-2nd shifting insert.

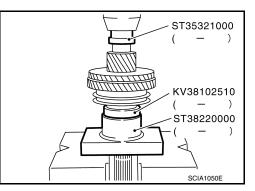
5. Install 1st inner baulk ring, 1st synchronizer cone, and 1st outer baulk ring onto mainshaft and then press in 1st-2nd synchronizer hub assembly onto mainshaft using Tools.

> Tool number : KV40101630 (J-35870) : ST35321000 (—) : ST38220000 (—)

CAUTION:

- Outer baulk ring, synchronizer cone, and inner baulk ring on 2nd gear-side must have been removed.
- Be careful with orientation of coupling sleeve.
- Replace 1st inner baulk ring, 1st synchronizer cone, and 1st outer baulk ring as a set.





< UNIT DISASSEMBLY AND ASSEMBLY >

6. Press in 2nd main gear bushing using Tools.

> **Tool number** : KV40105710 (—) : ST35321000 (—)

7. Install 2nd outer baulk ring, 2nd synchronizer cone, and 2nd inner baulk ring. **CAUTION:**

Replace 2nd outer baulk ring, 2nd synchronizer cone, and 2nd inner baulk ring as a set.

- 8. Install 2nd needle bearing and 2nd main gear.
- 9. Press in 3rd main gear using Tools.

Tool number : KV40105710 (—)

: ST35321000 (—)

CAUTION:

- · Be careful with orientation of 3rd main gear.
- Do not reuse 3rd main gear.
- 10. Install 3rd-4th mainshaft spacer.
- 11. Select 4th main gear adjusting shim so that dimension "C1" satisfies the standard value below and install 4th main gear adjusting shim onto mainshaft. Refer to TM-146, "Available Adjusting Shims".

Standard value for dimension "C1"

: Refer to TM-146, "Available Adjusting Shims".

CAUTION:

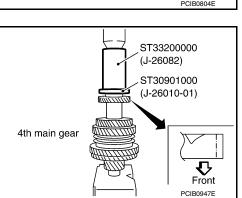
Only one adjusting shim can be selected.

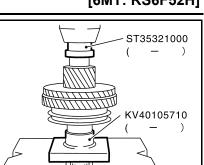
12. Press in 4th main gear using Tools.

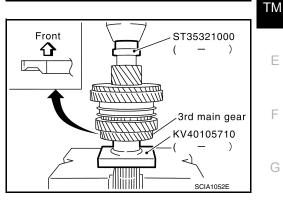
Tool number

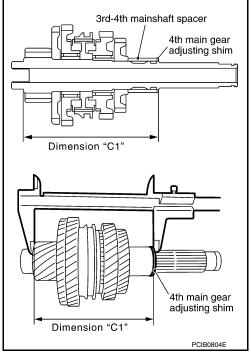
: ST33200000 (J-26082) : ST30901000 (J-26010-01)

- CAUTION:
- Be careful with orientation of 4th main gear.
- Do not reuse 4th main gear.









[6MT: RS6F52H]

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< UNIT DISASSEMBLY AND ASSEMBLY >

13. Press in 5th main gear using Tools.

Tool number : ST33200000 (J-26082) : ST30901000 (J-26010-01)

CAUTION:

- Be careful with orientation of 5th main gear.
- Do not reuse 5th main gear.
- 14. Install 5th-6th mainshaft spacer.
- 15. Press in 6th main gear using Tools (A), (B).

Tool number A: ST33200000 (J-26082) B: ST30901000 (J-26010-01)

CAUTION:

Do not reuse 6th main gear.



- Calculate thickness (S) of 6th main gear adjusting shim following the procedure below so that end play dimension between 6th main gear and mainshaft rear bearing becomes the dimension shown below. Refer to <u>TM-146</u>, "Available Adjusting <u>Shims"</u>.
 - End play :Refer to <u>TM-146</u>, "Available Adjusting <u>Shims"</u>.

Dimension S = (S1 - S2) - End play

- S : Thickness of adjusting shim
- S1 : Dimension from mainshaft standard face to mainshaft rear bearing press-fit end face
- S2 : Dimension from mainshaft standard face to 6th main gear end face

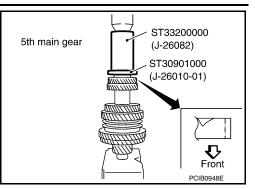
CAUTION:

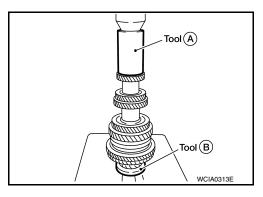
Only one adjusting shim can be selected.

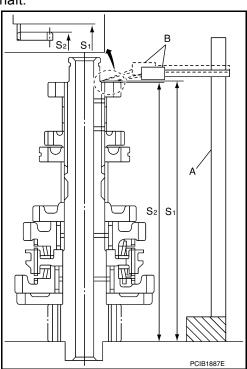
- a. Measure dimension (S1) and (S2) using a height gauge (A) and pick tester (B).
- b. Install selected 6th main gear adjusting shim to mainshaft.
- 17. Press in mainshaft rear bearing using Tools.

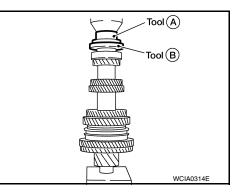
Tool number

A: ST30720000 (J-25405) B: ST30901000 (J-26010-01)









[6MT: RS6F52H]

< UNIT DISASSEMBLY AND ASSEMBLY >

[6MT: RS6F52H]

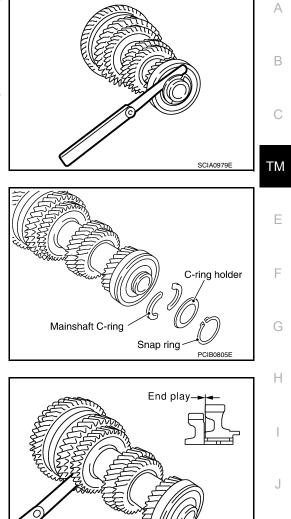
18. Install mainshaft C-rings onto mainshaft and check that end play of mainshaft rear bearing satisfies the standard value.

End play standard value : Refer to <u>TM-145, "Available C-Rings"</u>.

- If measurement is outside the standard range, reselect mainshaft C-rings. Refer to <u>TM-145</u>, "Available C-Rings".
- Install C-ring holder and then install snap ring.
 CAUTION: Do not reuse snap ring.

20. Check end play of 1st and 2nd main gears.

End play standard value : Refer to <u>TM-144, "Gear End Play"</u>.



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< UNIT DISASSEMBLY AND ASSEMBLY >

REVERSE IDLER SHAFT AND GEARS

Disassembly and Assembly

DISASSEMBLY

- 1. Remove reverse idler gear (rear), reverse coupling sleeve, and reverse insert springs simultaneously.
- 2. Remove reverse idler gear needle bearing.
- 3. Remove thrust needle bearing.
- 4. Remove reverse baulk ring.
- 5. Remove reverse idler gear (front).
- 6. Remove reverse idler gear needle bearing.
- 7. Remove thrust needle bearing.
- 8. Remove retaining pin from reverse idler shaft.

INSPECTION AFTER DISASSEMBLY

Reverse Idler Shaft and Gears

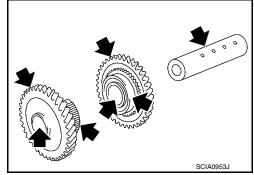
Synchronizer

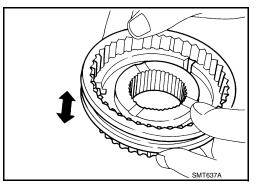
must move smoothly.

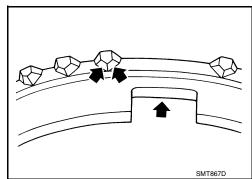
Check items below. If necessary, replace them with new ones.

Check items below. If necessary, replace them with new ones.
Damage and unusual wear on contact surfaces of coupling sleeve, synchronizer hub of reverse idler gear (rear), and insert spring.
Coupling sleeve and synchronizer hub of reverse idler gear (rear)

- Damage, peeling, dent, uneven wear, bending, and other nonstandard conditions of the shaft.
- Excessive wear, damage, peeling, and other non-standard conditions of the gears.







• If any crack, damage, or excessive wear is found on cam face of baulk ring or working face of insert, replace it.

BAULK RING CLEARANCE

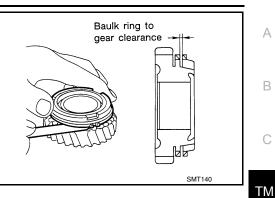
REVERSE IDLER SHAFT AND GEARS

< UNIT DISASSEMBLY AND ASSEMBLY >

• Push baulk ring on the cone and measure the clearance between baulk ring and cone. If the measurement is below limit, replace it with a new one.

Clearance

Standard value: Refer to TM-144, "Baulk Ring
Clearance".Limit value: Refer to TM-144, "Baulk Ring
Clearance".



Bearing

Check items below. If necessary, replace them with new ones.

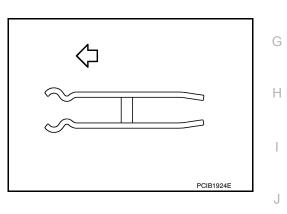
• Damage and rough rotation of bearing.

ASSEMBLY

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

- Do not reuse retaining pin.
- Be careful with orientation of reverse insert spring.

← : Front



[6MT: RS6F52H]

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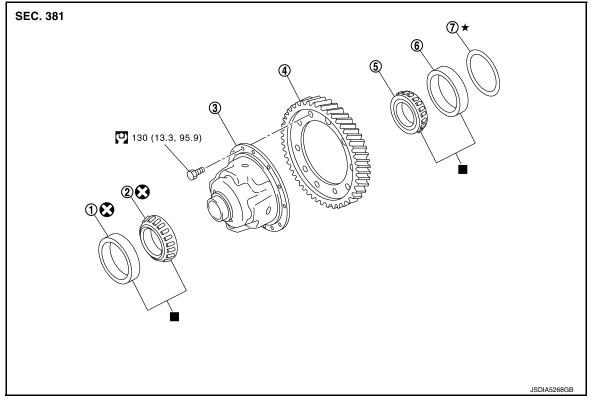
FINAL DRIVE

FINAL DRIVE

Exploded View

FINAL DRIVE

FINAL DRIVE



- 1. Differential side bearing outer race (clutch housing side)
- 4. Final gear
- 7. Differential side bearing adjusting shim

: Replace the parts as a set.

: N·m (kg-m, ft-lb)

Disassembly and Assembly

2. Differential side bearing (clutch 3. housing side)

- 5. Differential side bearing (tran- 6. saxle case side)
- Differential case assembly
- Differential side bearing outer race (transaxle case side)

INFOID:000000012200830

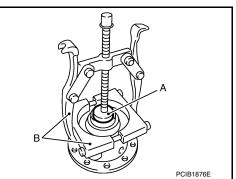
DISASSEMBLY

- 1. Remove final gear bolts and then separate the final gear from differential case.
- 2. Remove differential side bearing (clutch housing side) using Tool and pullers (B).

Tool number A: ST33061000 (J-8107-2)

CAUTION:

Hook a puller on the cage of differential side bearing.



INFOID:000000012200829

FINAL DRIVE

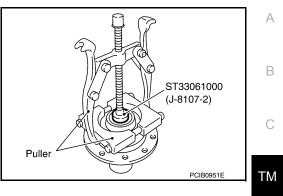
< UNIT DISASSEMBLY AND ASSEMBLY >

3. Remove differential side bearing (transaxle case side) using Tool and puller.

Tool number A: ST33061000 (J-8107-2)

CAUTION:

Hook a puller on the inner race of differential side bearing.



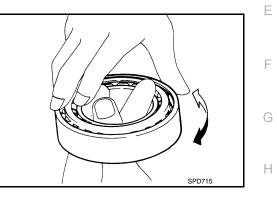
INSPECTION AFTER DISASSEMBLY

Bearing

 Check for bearings damage and rough rotation. If necessary, replace with a new one.

CAUTION:

When replacing tapered roller bearing, replace outer and inner races as a set.



ASSEMBLY

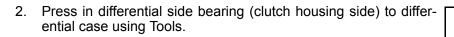
1. Press in differential side bearing (transaxle case side) to differential case using Tools.

Tool number : KV38102510 (—)

: ST30720000 (J-25405)

CAUTION:

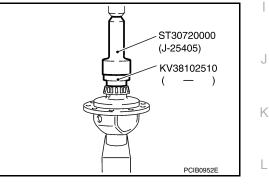
Replace differential side bearing and differential side bearing outer race as a set.

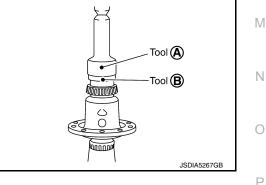


Tool number A: ST30720000 (J-25405) B: KV38102510 (—)

CAUTION:

- Do not reuse differential side bearing and differential side bearing outer race.
- Replace differential side bearing and differential side bearing outer race as a set.



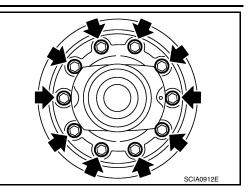


FINAL DRIVE

< UNIT DISASSEMBLY AND ASSEMBLY >

 Install final gear into differential case and tighten final gear bolts to the specified torque. Refer to <u>TM-136</u>, "Exploded View".

[6MT: RS6F52H]



< UNIT DISASSEMBLY AND ASSEMBLY >

SHIFT CONTROL

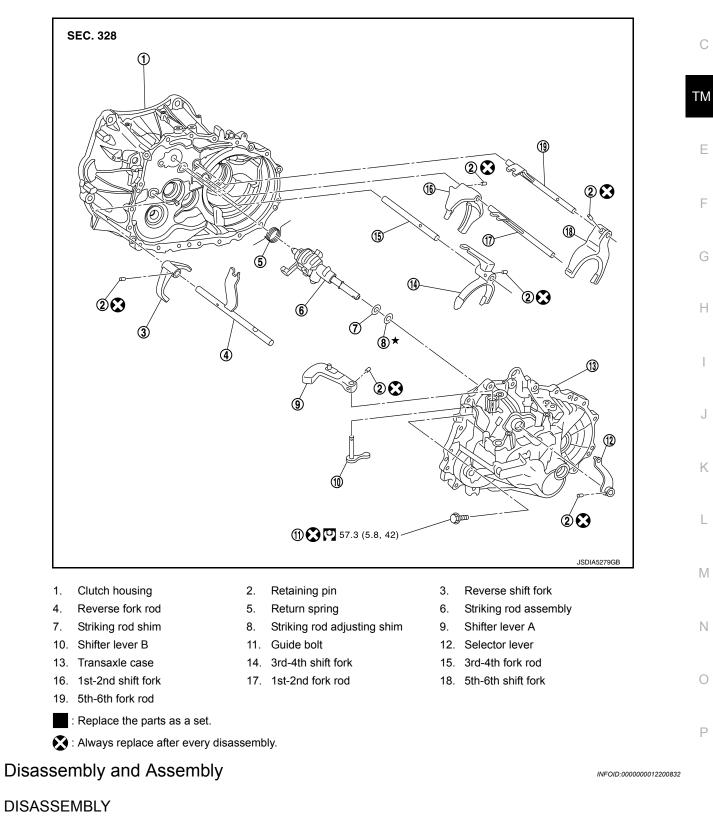
Exploded View

SHIFT CONTROL

INFOID:000000012200831

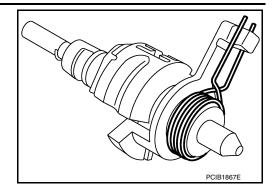
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< UNIT DISASSEMBLY AND ASSEMBLY >

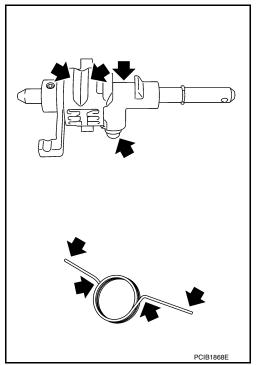
1. Remove return spring to striking rod assembly.



INSPECTION AFTER DISASSEMBLY

Striking Rod Assembly and Return Spring

• Check contact surfaces and sliding area for wear, damage, bending, etc. If necessary, replace parts.



Fork Rod and Shift Fork

< UNIT DISASSEMBLY AND ASSEMBLY >

• Check contact surfaces and sliding area for wear, damage, bending, etc. If necessary, replace parts. [6MT: RS6F52H]

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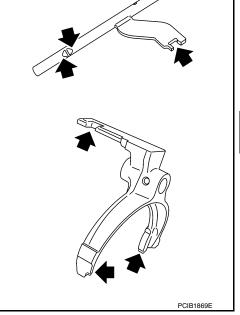
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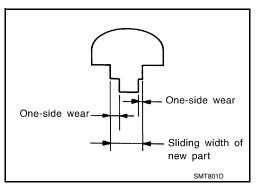
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• Check if the width of shift fork hook (sliding area with coupling sleeve) is within allowable specification below.

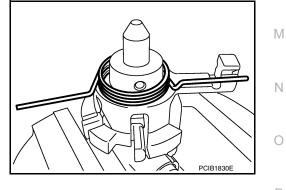
	a	
Item	One-side wear specification	Sliding width of new part
1st-2nd	0.2 mm (0.008 in)	7.80 - 7.93 mm (0.3071 - 0.3122 in)
3rd-4th	0.2 mm (0.008 in)	7.80 - 7.93 mm (0.3071 - 0.3122 in)
5th-6th	0.2 mm (0.008 in)	6.10 - 6.23 mm (0.2402 - 0.2453 in)
Reverse	0.2 mm (0.008 in)	12.80 - 12.93 mm (0.5039 - 0.5091 in)



ASSEMBLY

1. Temporarily install return spring to striking rod assembly. CAUTION:

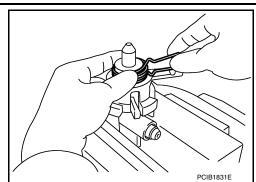
Be careful with the orientation of return spring.



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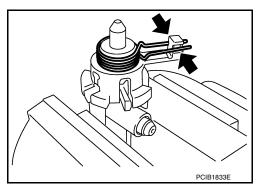
< UNIT DISASSEMBLY AND ASSEMBLY >

2. Attach one end of the return spring to striking interlock of striking rod assembly while holding return spring.



CAUTION:

• When installing, check that return spring is securely seated in the groove of striking interlock of striking rod assembly.



SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

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

General Specification

TRANSAXLE

Engine type			MR16DDT	C
Transaxle model		RS6F52H		
Model code number			3YW0D	ТΜ
Number of speed			6	
Synchromesh type			Warner	F
Shift pattern				E
				F
Gear ratio	1st		3.727	
	2nd		2.043	Н
	3rd		1.392	11
	4th		1.055	
	5th		0.865	
	6th		0.732	
	Reverse		3.641	J
Number of teeth	Input gear	1st	11	J
		2nd	23	
		3rd	28	Κ
		4th	36	
		5th	52	
		6th	56	L
		Reverse	11	
	Main gear	1st	41	\mathbb{M}
		2nd	47	
		3rd	39	NI
		4th	38	Ν
		5th	45	
F		6th	41	0
		Reverse	38	
	Reverse idler gear	Front	37	
		Rear	39	Ρ
Oil level		mm (i	n) 38.5 - 45.5 (1.516 - 1.791)	
Oil capacity (Referen	nce)	ℓ (US pt, Imp p	ot) 1.9 (4, 3-3/8)	
Remarks	Reverse synchronizer		Installed	
	Double-cone synchron	izer	3rd	
Triple-cone synchron		er	1st and 2nd	

[6MT: RS6F52H]

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SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

FINAL GEAR

Engine type		MR16DDT
Transaxle model		RS6F52H
Model code number		3YW0D
Final gear ratio		4.428
Number of teeth	Final gear/Pinion	62/14
	Side gear/Pinion mate gear	_

Gear End Play

INFOID:000000012200834

Unit: mm (in)

Gear	Standard value
1st main gear	0.20 - 0.30 (0.0079 - 0.0118)
2nd main gear	0.06 - 0.16 (0.0024 - 0.0063)
3rd input gear	0.18 - 0.31 (0.0071 - 0.0122)
4th input gear	0.20 - 0.30 (0.0079 - 0.0118)
5th input gear	0.06 - 0.16 (0.0024 - 0.0063)
6th input gear	0.06 - 0.16 (0.0024 - 0.0063)

Baulk Ring Clearance

Unit: mm (in)

М	easurement point	Standard value	Limit value
3rd (Double-cone synchronizer)	Clearance between synchronizer cone and inner baulk ring end face (A)	0.6 - 0.8 (0.024 - 0.031)	0.2 (0.008)
A B	Clearance between outer baulk ring pawl and synchronizer cone (B)	0.6 - 1.1 (0.024 -0.043)	0.2 (0.008)
1st and 2nd (Triple-cone synchronizer)	Clearance between synchronizer cone and clutch gear end face (A)	0.6 - 1.2 (0.024 - 0.047)	0.3 (0.012)
	Clearance between outer baulk ring pawl and synchronizer cone (B)	0.6 - 1.1 (0.024 - 0.043)	0.2 (0.008)
	Clearance between inner baulk ring and clutch gear end face (C)	0.7 - 1.1 (0.028 - 0.043)	0.3 (0.012)
4th		0.9 - 1.45 (0.035 - 0.057)	0.7 (0.028)
5th		0.95 - 1.4 (0.037 - 0.055)	0.7 (0.028)
6th		0.95 - 1.4 (0.037 - 0.055)	0.7 (0.028)
Reverse		0.95 - 1.4 (0.037 - 0.055)	0.7 (0.028)

Available Snap Rings

INFOID:000000012200836

6TH INPUT GEAR BUSHING

< SERVICE DATA AND SPECIFICATIONS (SDS)

nd play standard value		0 - 0.1 mm (0 - 0.004 in)		
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*	
1.76 (0.0693)	32204 8H511	2.01 (0.0791)	32204 8H516	
1.81 (0.0713)	32204 8H512	2.06 (0.0811)	32204 8H517	
1.86 (0.0732)	32204 8H513	2.11 (0.0831)	32204 8H518	
1.91 (0.0752)	32204 8H514	2.16 (0.0850)	32204 8H519	
1.96 (0.0772)	32204 8H515	2.21 (0.0870)	32204 8H520	

*: Always check with the Parts Department for the latest parts information.

Available C-Rings

MAINSHAFT C-RING

nd play standard value		0 - 0.06 mm (0 - 0.0024 in)		
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*	
2.535 (0.0998)	32348 8H800	2.835 (0.1116)	32348 8H810	
2.565 (0.1010)	32348 8H801	2.865 (0.1128)	32348 8H811	
2.595 (0.1022)	32348 8H802	2.895 (0.1140)	32348 8H812	
2.625 (0.1033)	32348 8H803	2.925 (0.1152)	32348 8H813	
2.655 (0.1045)	32348 8H804	2.955 (0.1163)	32348 8H814	
2.685 (0.1057)	32348 8H805	2.985 (0.1175)	32348 8H815	
2.715 (0.1069)	32348 8H806	3.015 (0.1187)	32348 8H816	
2.745 (0.1081)	32348 8H807	3.045 (0.1199)	32348 8H817	
2.775 (0.1093)	32348 8H808	3.075 (0.1211)	32348 8H818	
2.805 (0.1104)	32348 8H809			

*: Always check with the Parts Department for the latest parts information.

Available Thrust Washer

INPUT SHAFT THRUST WASHER

4th input gear Thrust washer Ø Dimension "C2"

		SCIA1008E		
Standard value for dimension "C2"		154.7 - 154.8 mm (6.091 - 6.094 in)		N
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*	
3.84 (0.1512) 3.90 (0.1535) 3.96 (0.1559)	32347 8H500 32347 8H501 32347 8H502	4.02 (0.1583) 4.08 (0.1606) 4.14 (0.1630)	32347 8H503 32347 8H504 32347 8H505	0

*: Always check with the Parts Department for the latest parts information.

DIFFERENTIAL SIDE GEAR THRUST WASHER

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[6MT: RS6F52H]

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Revision: November 2015

< SERVICE DATA AND SPECIFICATIONS (SDS)

 Thickness
 mm (in)
 Part number*

 0.75 (0.0295)
 38424 81X00

 0.80 (0.0315)
 38424 81X01

 0.85 (0.0335)
 38424 81X02

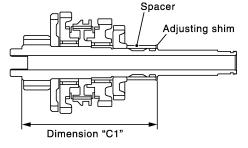
 0.90 (0.0354)
 38424 81X03

 0.95 (0.0374)
 38424 81X04

*: Always check with the Parts Department for the latest parts information.

Available Adjusting Shims

4TH MAIN GEAR ADJUSTING SHIM



SCIA1009E

tandard value for dimension "C1"		173.85 - 173.95 mm (6.844 - 6.848 in)	
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
0.52 (0.0205)	32238 8H500	0.84 (0.0331)	32238 8H504
0.60 (0.0236)	32238 8H501	0.92 (0.0362)	32238 8H505
0.68 (0.0268)	32238 8H502	1.00 (0.0394)	32238 8H506
0.76 (0.0299)	32238 8H503	1.08 (0.0425)	32238 8H507

*: Always check with the Parts Department for the latest parts information.

INPUT SHAFT REAR BEARING ADJUSTING SHIM

End play standard value			0 - 0.06 mm (0 - 0.0024 in)		
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
0.40 (0.0157) 0.44 (0.0173) 0.48 (0.0189) 0.52 (0.0205) 0.56 (0.0220) 0.60 (0.0236) 0.64 (0.0252) 0.68 (0.0268) 0.72 (0.0283) 0.76 (0.0299) 0.80 (0.0315)	32225 8H500 32225 8H501 32225 8H502 32225 8H503 32225 8H504 32225 8H505 32225 8H506 32225 8H506 32225 8H507 32225 8H508 32225 8H509 32225 8H510	0.88 (0.0346) 0.92 (0.0362) 0.96 (0.0378) 1.00 (0.0394) 1.04 (0.0409) 1.08 (0.0425) 1.12 (0.0441) 1.16 (0.0457) 1.20 (0.0472) 1.24 (0.0488) 1.28 (0.0504)	32225 8H512 32225 8H513 32225 8H514 32225 8H515 32225 8H516 32225 8H516 32225 8H517 32225 8H518 32225 8H519 32225 8H520 32225 8H521 32225 8H522	1.36 (0.0535) 1.40 (0.0551) 1.44 (0.0567) 1.48 (0.0583) 1.52 (0.0598) 1.56 (0.0614) 1.60 (0.0630) 1.64 (0.0646)	32225 8H524 32225 8H560 32225 8H561 32225 8H562 32225 8H563 32225 8H564 32225 8H565 32225 8H566

*: Always check with the Parts Department for the latest parts information.

MAINSHAFT REAR BEARING ADJUSTING SHIM

[6MT: RS6F52H]

< SERVICE DATA AND SPECIFICATIONS (SDS)

[6MT: RS6F52H]

End play standard value		0 - 0.06 mm (0	0 - 0.06 mm (0 - 0.0024 in)	
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*	
0.44 (0.0173)	32238 8H510	0.80 (0.0315)	32238 8H519	
0.48 (0.0189)	32238 8H511	0.84 (0.0331)	32238 8H520	В
0.52 (0.0205)	32238 8H512	0.88 (0.0346)	32238 8H521	
0.56 (0.0220)	32238 8H513	0.92 (0.0362)	32238 8H522	
0.60 (0.0236)	32238 8H514	0.96 (0.0378)	32238 8H523	
0.64 (0.0252)	32238 8H515	1.00 (0.0394)	32238 8H524	C
0.68 (0.0268)	32238 8H516	1.04 (0.0409)	32238 8H560	
0.72 (0.0283)	32238 8H517	1.08 (0.0425)	32238 8H561	
0.76 (0.0299)	32238 8H518			ТМ

*: Always check with the Parts Department for the latest parts information.

REVERSE IDLER GEAR ADJUSTING SHIM

nd play standard value		0.04 - 0.10 mm (0.0	0016 - 0.0039 in)	
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*	
1.76 (0.0693)	32237 8H800	2.24 (0.0882)	32237 8H812	
1.80 (0.0709)	32237 8H801	2.28 (0.0898)	32237 8H813	
1.84 (0.0724)	32237 8H802	2.32 (0.0913)	32237 8H814	
1.88 (0.0740)	32237 8H803	2.36 (0.0929)	32237 8H815	
1.92 (0.0756)	32237 8H804	2.40 (0.0945)	32237 8H816	
1.96 (0.0772)	32237 8H805	2.44 (0.0961)	32237 8H817	
2.00 (0.0787)	32237 8H806	2.48 (0.0976)	32237 8H818	
2.04 (0.0803)	32237 8H807	2.52 (0.0992)	32237 8H819	
2.08 (0.0819)	32237 8H808	2.56 (0.1008)	32237 8H820	
2.12 (0.0835)	32237 8H809	2.60 (0.1024)	32237 8H821	
2.16 (0.0850)	32237 8H810	2.64 (0.1039)	32237 8H822	
2.20 (0.0866)	32237 8H811	. ,		

*: Always check with the Parts Department for the latest parts information.

6TH MAIN GEAR ADJUSTING SHIM

End play standard value		0 - 0.1 mm (0 - 0.004 in)		
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*	K
0.88 (0.0346) 0.96 (0.0378)	32237 8H560 32237 8H561	1.20 (0.0472) 1.28 (0.0504)	32237 8H564 32237 8H565	
1.04 (0.0409) 1.12 (0.0441)	32237 8H562 32237 8H563	1.36 (0.0535)	32237 8H566	L

*: Always check with the Parts Department for the latest parts information.

STRIKING ROD ADJUSTING SHIM

End play standard value		0.05 - 0.152 mm (0.0020 - 0.0060 in)		
Thickness mm (in)	Part number*	Thickness mm (in)	Part number*	Ν
1.12 (0.0441)	33761 JA60A	1.52 (0.0598)	33761 JA65A	
1.20 (0.0472)	33761 JA61A	1.60 (0.0630)	33761 JA66A	
1.28 (0.0504)	33761 JA62A	1.68 (0.0661)	33761 JA67A	С
1.36 (0.0535)	33761 JA63A	1.76 (0.0693)	33761 JA68A	
1.44 (0.0567)	33761 JA64A	1.84 (0.0724)	33761 JA69A	

*: Always check with the Parts Department for the latest parts information.

Available Shims

- Differential Side Bearing Preload and Adjusting Shim

BEARING PRELOAD

Differential side bearing preload: L*

0.15 - 0.21 mm (0.0059 - 0.0083 in)

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< SERVICE DATA AND SPECIFICATIONS (SDS)

[6MT: RS6F52H]

*: Install shims which are "deflection of differential case" + "L" in thickness.

DIFFERENTIAL SIDE BEARING ADJUSTING SHIM(S)

Thickness mm (in)	Part number*	Thickness mm (in)	Part number*
0.48 (0.0189)	31438 80X00	0.72 (0.0283)	31438 80X06
0.52 (0.0205)	31438 80X01	0.76 (0.0299)	31438 80X07
0.56 (0.0220)	31438 80X02	0.80 (0.0315)	31438 80X08
0.60 (0.0236)	31438 80X03	0.84 (0.0331)	31438 80X09
0.64 (0.0252)	31438 80X04	0.88 (0.0346)	31438 80X10
0.68 (0.0268)	31438 80X05	0.92 (0.0362)	31438 80X11

*: Always check with the Parts Department for the latest parts information.

< PRECAUTION > PRECAUTION PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT **PRF-TENSIONER**" INFOID:000000012200841

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front ТΜ air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.
- Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see "SRS AIR BAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

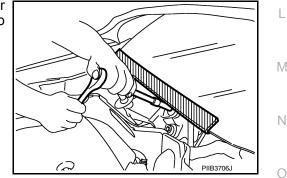
WARNING:

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious iniury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery or batteries, and wait at least 3 minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

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



Precautions for Removing Battery Terminal

When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- · Never disconnect battery terminal while engine is running.

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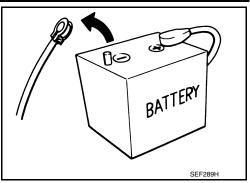
Κ

PRECAUTIONS

< PRECAUTION >

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

D4D engine	: 20 minutes	YS23DDT	: 4 minutes
HRA2DDT	: 12 minutes	YS23DDTT	: 4 minutes
K9K engine	: 4 minutes	ZD30DDTi	: 60 seconds
M9R engine	: 4 minutes	ZD30DDTT	: 60 seconds
R9M engine	: 4 minutes		
V9X engine	: 4 minutes		
YD25DDTi	: 2 minutes		



[CVT: RE0F10B]

NOTE:

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

• After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

NOTE:

- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
- Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
- Driving for 30 minutes or more on a steep slope.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

NOTE:

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

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

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

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

INFOID:000000012200844

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 MI to light up due to a short circuit.
- Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MIL 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-219, "Description"</u>.
- To replace transaxle assembly, refer to <u>TM-221</u>, "Description".

Removal and Installation Procedure for CVT Unit Connector

REMOVAL

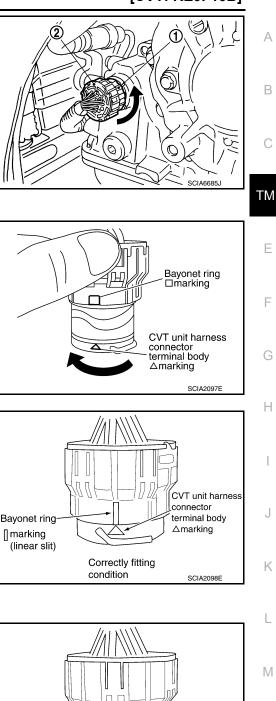
INFOID:000000012200845

PRECAUTIONS

< PRECAUTION >

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

[CVT: RE0F10B]



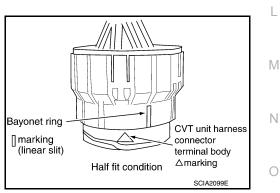
INSTALLATION

 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.



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 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.

< PRECAUTION >

General Precautions

· When connecting or disconnecting pin connectors into or from TCM, take care not to damage pin terminals (bend or break).

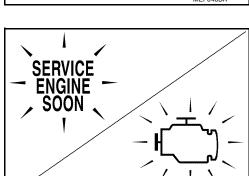
When connecting pin connectors make sure that there are not any bends or breaks on TCM pin terminal.

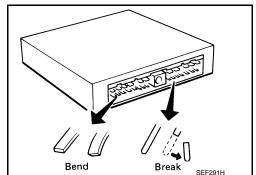
Before replacing TCM, perform TCM input/output signal inspection and make sure whether TCM functions properly or not. Refer to TM-195, "Reference Value".

- 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-11, "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

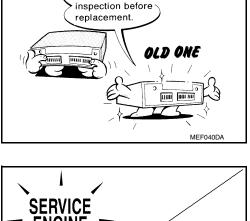
- **OBD-II SELF-DIAGNOSIS**
- CVT self-diagnosis is performed by the TCM in combination with the ECM. The results can be read through the blinking pattern of the malfunction indicator lamp (MIL). Refer to the table on TM-190, "CONSULT Function" for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MI are automatically stored in both the ECM and TCM memories.





Perform TCM in-

put/output signal



(f]0 BATTERY

TM-152

INFOID:000000012200848

JSBIA1315ZZ

SEF289H

[CVT: RE0F10B]

PRECAUTIONS

Always perform the procedure on <u>TM-188, "Diagnosis Description"</u> to complete the repair and avoid unnecessary blinking of the MIL. For details of OBD-II, refer to <u>EC-73, "Diagnosis Description"</u>.

Certain systems and components, especially those related to OBD-II, may use the new style slide-locking type harness connector. For description and how to disconnect, refer to <u>PG-6</u>, "Harness Connector".

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PREPARATION

PREPARATION

Special Service Tool

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The actual shapes of TechMate tools may differ from those of special service tools illustrated here.

Tool number (TechMate No.) Tool name		Description
— (OTC3492) Oil pressure gauge set	SCIA7531E	Measuring line pressure
1. ST25054000 (—) Adapter 2. ST25055000 (—) Adapter	The second secon	Measuring line pressure
KV31103600 (J-45674) Joint pipe adapter (With ST25054000)	ZZA1227D	Measuring line pressure
KV38107900 (—) Protector a: 32 mm (1.26 in) dia.	PDIA1183J	Installing drive shaft

Commercial Service Tool

PREPARATION

< PREPARATION >

[CVT: RE0F10B]

Tool number Tool name		Description	
Power tool		Loosening nuts and bolts	_
Drift a: 53 mm (2.09 in) dia. b: 50 mm (1.97 in) dia.	PBIC0190E	Installing differential side oil seal (transaxle case side)	
	a b NT115		
Drift a: 60 mm (2.36 in) dia.	~	Installing differential side oil seal (converter housing side)	
	a		
	SCIA5338E		
Drift I: 65 mm (2.13 in) dia.		Installing converter housing oil seal	
o: 60 mm (1.97 in) dia.			
	NT115		

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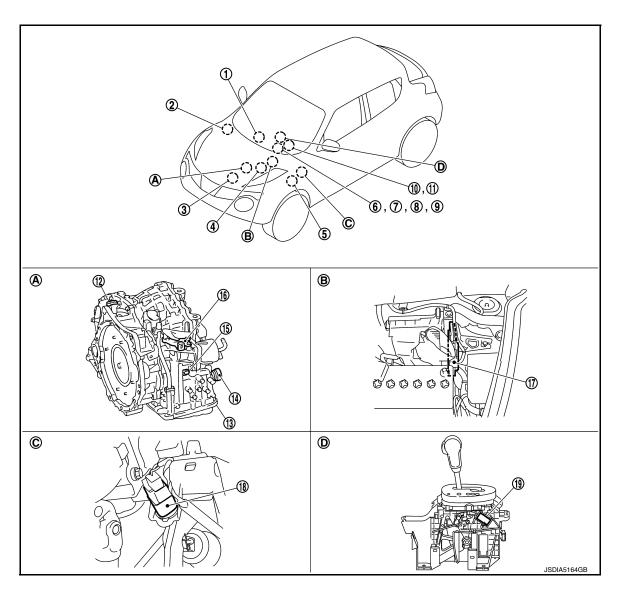
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< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION COMPONENT PARTS CVT CONTROL SYSTEM

CVT CONTROL SYSTEM : Component Parts Location

INFOID:000000012200851



- 1. Multi display unit (MDU) Refer to <u>DMS-4, "Component Parts</u> <u>Location"</u>.
- 4. IPDM E/R Refer to <u>PCS-5, "Component Parts Lo-</u> <u>cation"</u>
- Manual mode indicator (On the combination meter)
- 10. Paddle shifter (shift-down switch)
- 13. Control valve*
- 16. Transmission range switch
- 19. Manual mode switch
- A. Transaxle assembly

- ABS actuator and electric unit (control 3. unit) Refer to <u>BRC-9, "Component Parts Lo-</u> cation".
- 5. BCM Refer to <u>BCS-5, "BODY CONTROL</u> <u>SYSTEM : Component Parts Location"</u>
- 8. Shift position indicator (On the combination meter)
- 11. Paddle shifter (shift-up switch)
- 14. CVT unit connector
- 17. TCM
- B. Engine room

- ECM Refer to <u>EC-27, "ENGINE CONTROL</u> <u>SYSTEM :</u> Component Parts Location".
- 6. Combination meter
- 9. CVT indicator
 - (On the combination meter)
- 12. Secondary speed sensor
- 15. Primary speed sensor
- 18. Stop lamp switch
- C. Brake pedal, upper

Revision: November 2015

TM-156

< SYSTEM DESCRIPTION >

D. CVT shift selector assembly	
*: Control valve is installed in transaxle assembly.	А
NOTE:	
 The following components are included in control valve assembly. 	В
- CVT fluid temperature sensor	D
- Secondary pressure sensor	
- Line pressure solenoid valve	0
- Torque converter clutch solenoid valve	C
- Lock-up select solenoid valve	
- Step motor	TNA
- ROM assembly	ТМ
The following components are included in manual mode switch.	
- Mode select switch	_

- Select position switch

CVT CONTROL SYSTEM : Component Description

INFOID:000000012200852

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Name	Function		
ТСМ	TM-158, "CVT CONTROL SYSTEM : TCM"		
Transmission range switch	TM-158, "CVT CONTROL SYSTEM : Transmission Range Switch"		
Primary speed sensor	TM-158, "CVT CONTROL SYSTEM : Primary Speed Sensor"		
Secondary speed sensor	TM-158, "CVT CONTROL SYSTEM : Secondary Speed Sensor"		
CVT fluid temperature sensor	TM-159, "CVT CONTROL SYSTEM : CVT Fluid Temperature Sensor"		
Secondary pressure sensor	TM-159, "CVT CONTROL SYSTEM : Secondary Pressure Sensor"		
Line pressure solenoid valve	TM-160. "CVT CONTROL SYSTEM : Line Pressure Solenoid Valve"		
Secondary pressure solenoid valve	TM-160, "CVT CONTROL SYSTEM : Secondary Pressure Solenoid Valve"		
Torque converter clutch solenoid valve	TM-160, "CVT CONTROL SYSTEM : Torque Converter Clutch Solenoid Valve"		
Lock-up select solenoid valve	TM-160, "CVT CONTROL SYSTEM : Lock-up Select Solenoid Valve"		
Step motor	TM-161, "CVT CONTROL SYSTEM : Step Motor"		
Manual mode switch	TM-161, "CVT CONTROL SYSTEM : Manual Mode Switch"		
Shift position indicator	TM-161, "CVT CONTROL SYSTEM : Shift Position Indicator"		
Manual mode indicator	TM-161, "CVT CONTROL SYSTEM : Manual Mode Indicator"		
Paddle shifter (shift-down switch)	TM-162, "CVT CONTROL SYSTEM : Paddle Shifter"		
Paddle shifter (shift-up switch)	TM-162, "CVT CONTROL SYSTEM : Paddle Shifter"		
Accelerator pedal position sensor	EC-33. "Accelerator Pedal Position Sensor"		
Stop lamp switch	BRC-13, "Stop Lamp Switch"		
ECM	 For purposes including improving the feeling when shifting speeds and preventing drops in engine speed, control signals are exchanged between the ECM and TCM, and real-time cooperative control is performed according to the vehicle driving conditions. (Engine and CVT integrated control) Engine and CVT integrated control signal NOTE: General term for the communication (torque-down permission, torque-down request, etc.) exchanged between the ECM and TCM. 		
	 The TCM receives the following signal via CAN communications from the ECM for judging the vehicle driving conditions. Engine speed signal Accelerator pedal position signal Closed throttle position signal 		
BCM	The TCM receives the following signal via CAN communications from the BCM for jud ing the vehicle driving conditions. • Stop lamp switch signal		

< SYSTEM DESCRIPTION >

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Name	Function
ABS actuator and electric unit (control unit)	 The TCM receives the following signal via CAN communications from the ABS actuator and electric unit (control unit) for judging the vehicle driving conditions. Vehicle speed signal (ABS) ABS operation signal
Combination meter	 The TCM receives the following signal via CAN communications from the combination meter for judging the driving request from the driver. Manual mode signal Non-manual mode signal Manual mode shift up signal Manual mode shift down signal
IPDM E/R	The TCM receives the following signal via CAN communications from the ABS actuator and electric unit (control unit) for judging the vehicle driving conditions.A/C compressor feedback signal
MDU	 The TCM receives the following signals from MDU via CAN communication to switch driving mode of the Integrated Control System. NORMAL mode signal ECO mode signal SPORT mode signal

CVT CONTROL SYSTEM : TCM

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INFOID:000000012200855

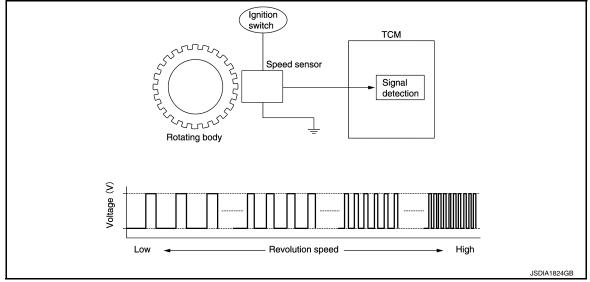
- The vehicle driving status is judged based on the signals from the sensors, switches, and other control units, and the optimal transaxle control is performed.
- For TCM control items, refer to <u>TM-180, "CONTROL SYSTEM : System Description"</u>.

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



CVT CONTROL SYSTEM : Secondary Speed Sensor

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• The secondary speed sensor is installed to upper part of converter housing.

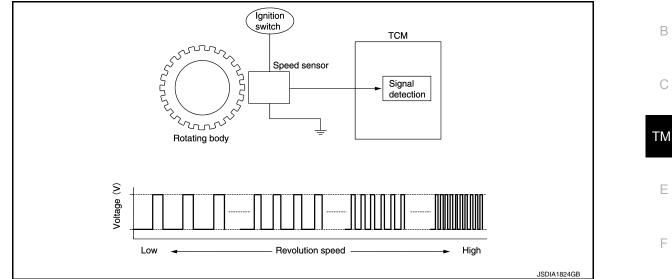
The secondary speed sensor detects secondary pulley speed.

< SYSTEM DESCRIPTION >

[CVT: RE0F10B]

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• 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.

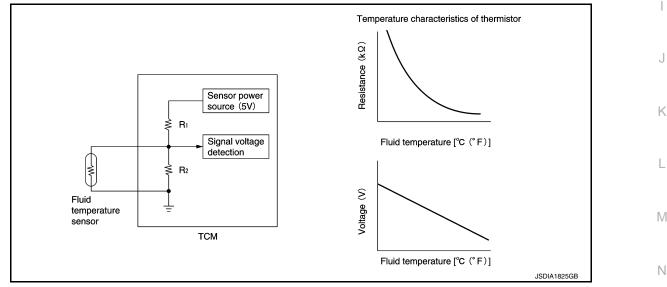


CVT CONTROL SYSTEM : CVT Fluid Temperature Sensor

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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

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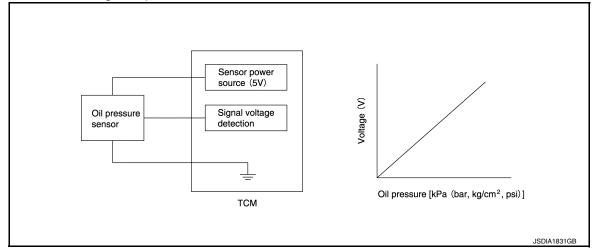
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- The secondary pressure sensor is installed to control valve.
- · The secondary pressure sensor detects the pressure applied to the secondary pulley.

< SYSTEM DESCRIPTION >

[CVT: RE0F10B]

 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

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INFOID:000000012200861

- 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-173</u>, "<u>MECHANICAL SYSTEM</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 : Secondary Pressure Solenoid Valve

- The secondary pressure solenoid valve is installed to control valve.
- The secondary pressure solenoid valve controls the secondary valve. For information about the secondary valve, refer to <u>TM-173</u>, "<u>MECHANICAL SYSTEM</u> : <u>Component Description</u>".
- The secondary 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 : Torque Converter Clutch Solenoid Valve

- The torque converter clutch solenoid valve is installed to control valve.
- The torque converter clutch solenoid valve controls the torque converter clutch control valve. For information about the torque converter clutch control valve, refer to <u>TM-173</u>. "<u>MECHANICAL SYSTEM</u> : <u>Component</u> <u>Description</u>".
- The torque converter clutch solenoid valve utilizes a linear solenoid valve [N/L (normal low) type]. **NOTE:**
 - The principle of the linear solenoid valve utilizes the fact that the force pressing on the valve spool installed inside the coil increases nearly in proportion to the current. This allows it to produce a fluid pressure that is proportional to this pressing force.
 - The N/L (normal low) type does not produce hydraulic control when the coil is not energized.

CVT CONTROL SYSTEM : Lock-up Select Solenoid Valve

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- The lock-up select solenoid valve is installed to control valve.
- The lock-up select solenoid valve controls the select switch valve. For information about the select switch valve, refer to <u>TM-173</u>, "<u>MECHANICAL SYSTEM</u>: <u>Component Description</u>".
- The lock-up select solenoid valve utilizes an ON-OFF solenoid valve.

TM-160

< SYSTEM DESCRIPTION >

[CVT: RE0F10B]

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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 : Manual Mode Switch

- The manual mode switch [mode select switch and position select switch (shift-up/shift-down)] is installed in the CVT shift selector assembly.
- The mode select switch detects the position (the main shift gate side or manual shift gate side) of the selector lever and transmits a manual mode signal or a not manual mode signal to the combination meter. Then, the TCM receives a manual mode signal or non-manual mode signal from the combination meter.
- The position select switch (shift-up) detects that the selector lever is shifted to the shift-up side of the manual shift gate and transmits a manual mode shift up signal to the combination meter. Then, the TCM receives a manual mode shift up signal from the combination meter.
- The position select switch (shift-down) detects that the selector lever is shifted to the shift-down side of the manual shift gate and transmits a manual mode shift down signal to the combination meter. Then, the TCM receives a manual mode shift down signal from the combination meter.

CVT CONTROL SYSTEM : CVT Indicator

- CVT indicator is positioned on the combination meter.
- CVT indicator turns on for a certain period of time when the ignition switch turns ON, and then turns OFF.

Condition (status)	CVT indicator	
Ignition switch OFF.	OFF	J
Ignition switch ON.	ON (Approx. 2sec.)	

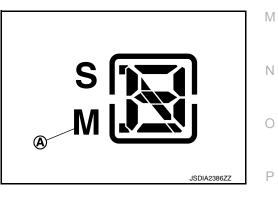
CVT CONTROL SYSTEM : Shift Position Indicator

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

CVT CONTROL SYSTEM : Manual Mode Indicator

- Manual mode indicator (A) is positioned on the combination meter.
- The manual mode indicator illuminates when the selector lever is operated to the manual shift gate side. It also displays the gear position (M1⇔M8) when the selector lever is operated to the + side or – side. (Operates only during driving.)
- The manual mode indicator turns off when the selector lever is operated to the main shift gate side.

Condition (status)	Manual mode indicator
Selector lever is operated to the manual shift gate side.	Display
Selector lever is operated to the + side or – side.	M1⇔M8
Selector lever is operated to the main shift gate side.	Nothing displayed.



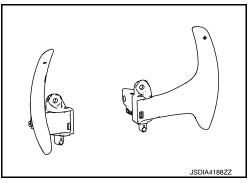
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< SYSTEM DESCRIPTION >

CVT CONTROL SYSTEM : Paddle Shifter

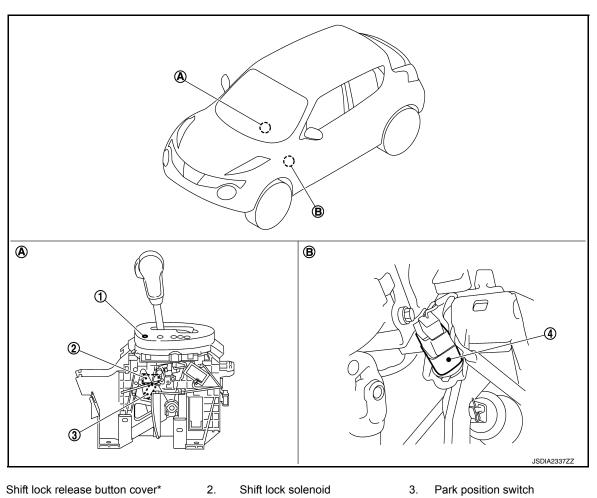
- The paddle shifter is installed to the steering column.
- The paddle shifter transmits shift up and shift down signals to combination meter. Then TCM receives signals from the combination meter via CAN communication.



SHIFT LOCK SYSTEM

SHIFT LOCK SYSTEM : Component Parts Location

INFOID:000000012200869



4. Stop lamp switch

1.

A:

CVT shift selector assembly B: Brake pedal, upper

*: Shift lock release button becomes operative by removing shift lock cover.

SHIFT LOCK SYSTEM : Component Description

INFOID:000000012200870

< SYSTEM DESCRIPTION >

[CVT: RE0F10B]

Component	Function
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
Lock lever	 Rotates according to shift lock solenoid activation and releases the shift lock. If shift lock solenoid does not activate, lock lever can be rotated when shift lock release button is pressed and shift lock is released.
Detent rod	It links with the selector button and restricts the selector lever movement.
Park position switch	It detects that the selector lever is in "P" position.
Shift lock release button Forcibly releases the shift lock when pressed.	
Stop lamp switch	 The stop lamp switch turns ON when the brake pedal is depressed. When the stop lamp switch turns ON, the shift lock solenoid is energized.

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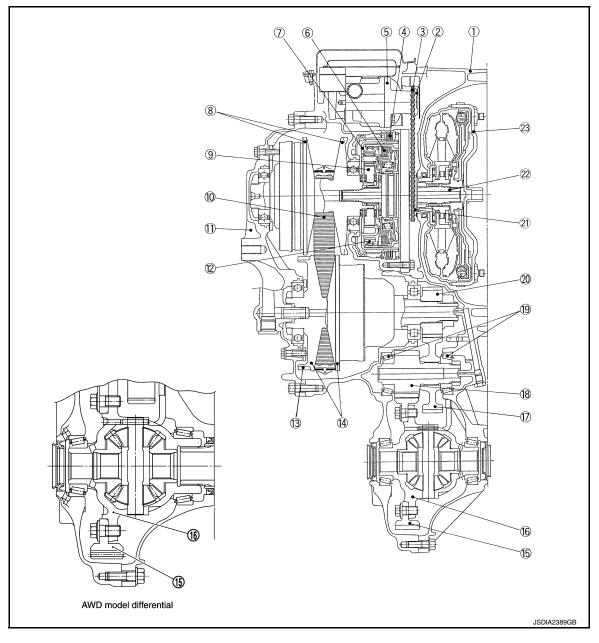
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< SYSTEM DESCRIPTION >

STRUCTURE AND OPERATION TRANSAXLE

TRANSAXLE : Cross-Sectional View



- 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 : Main Component Elements

[CVT: RE0F10B]

INFOID:000000012200872

TORQUE CONVERTER (WITH LOCK-UP FUNCTION)

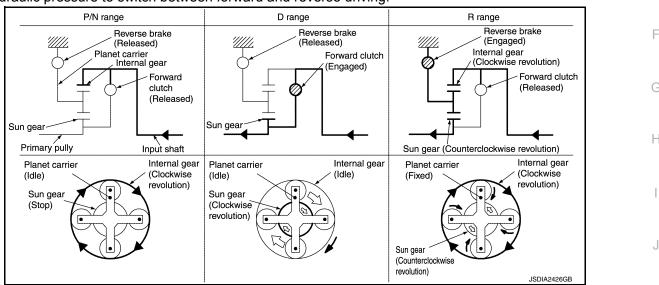
In the same way as a conventional A/T, the torque converter is a system that increases the engine torque and transmits the torque to the transaxle. A symmetrical 3-element, 1-stage, 2-phase type is used here.

OIL PUMP

Utilizes a vane-type oil pump that is driven by the engine through the oil pump drive chain in order to increase efficiency of pump discharge volume in low-speed zone and optimize pump discharge volume in high-speed zone. Discharged oil from oil pump is transmitted to control valve. It is used as the oil of primary and second-ary pulley operation, the oil of clutch operation, and the lubricant for each part.

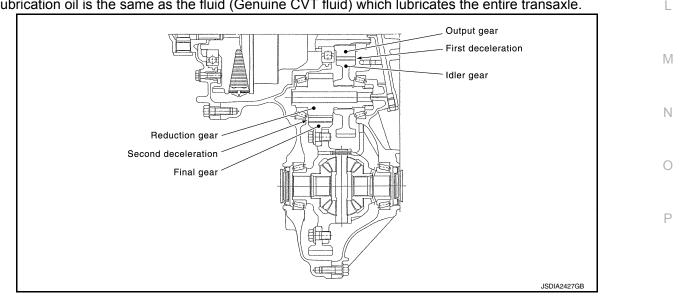
FORWARD/REVERSE SELECTION UNIT

- A planetary gear type of forward/reverse selector mechanism is installed between the torque converter and primary pulley.
- The power from the torque converter is input via the input shaft, operating a wet multi-plate clutch by means
 of hydraulic pressure to switch between forward and reverse driving.



FINAL DRIVE AND DIFFERENTIAL

The deceleration gears are composed of 2 stages: primary deceleration (output gear, idler gear pair) and secondary deceleration (reduction gear, final gear pair). All of these gears are helical gears. The lubrication oil is the same as the fluid (Genuine CVT fluid) which lubricates the entire transaxle.



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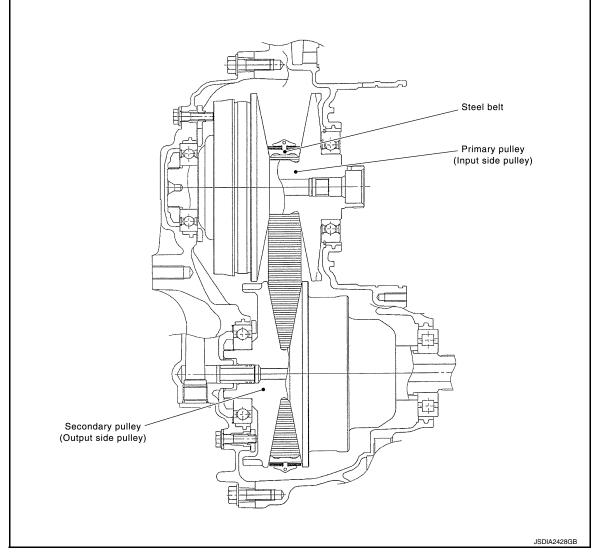
< SYSTEM DESCRIPTION >

TRANSAXLE : Belt & Pulley

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[CVT: RE0F10B]

STRUCTURE



MECHANISM

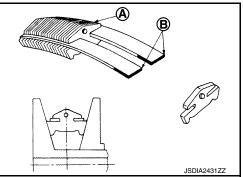
It is composed of a pair of pulleys (the groove width is changed freely in the axial direction) and the steel belt (the steel plates are placed continuously and the belt is guided with the multilayer steel rings on both sides). The groove width changes according to wrapping radius of steel belt and pulley 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. ⇒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

< SYSTEM DESCRIPTION >

[CVT: RE0F10B]

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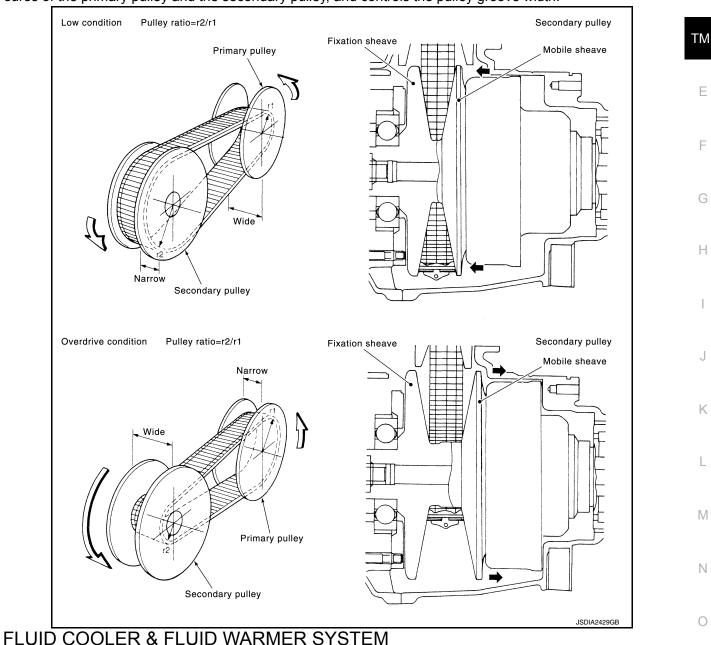
С

tension of the steel ring is distributed on the entire surface and stress variation is limited, resulting in good durability.

PULLEY

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

The movable sheave slides on the shaft to change the groove width of the pulley. Input signals of engine load (accelerator pedal opening), primary pulley speed and secondary pulley speed change the operation pressures of the primary pulley and the secondary pulley, and controls the pulley groove width.

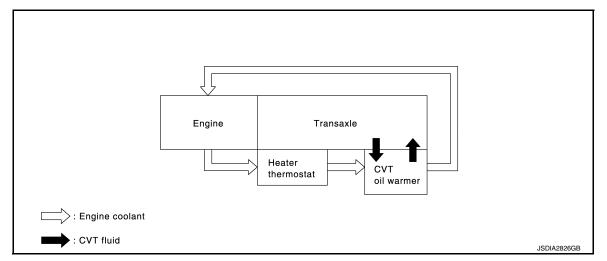


FLUID COOLER & FLUID WARMER SYSTEM : System Description

INFOID:000000012200874

CVT FLUID COOLER SCHEMATIC

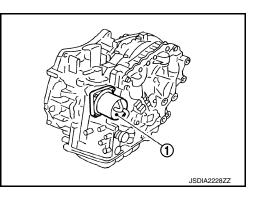
< SYSTEM DESCRIPTION >



COMPONENT DESCRIPTION

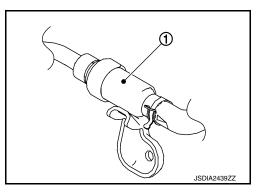
CVT Oil Warmer

- 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.



Heater Thermostat

The heater thermostat (1) is installed on the front part of transaxle assembly.



MECHANICAL SYSTEM

< SYSTEM DESCRIPTION >

MECHANICAL SYSTEM : System Diagram



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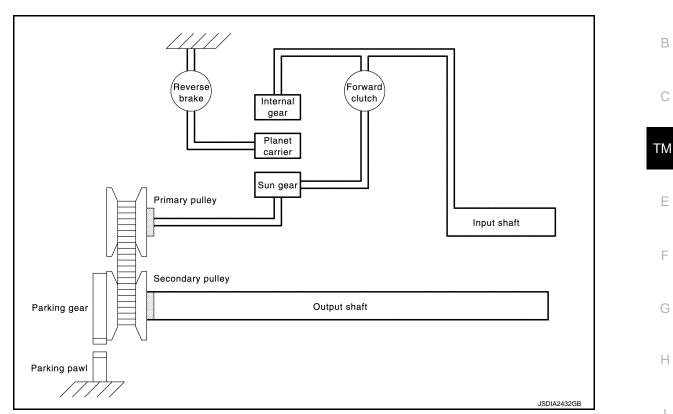
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MECHANICAL SYSTEM : System Description

Traction force of engine is transmitted to wheel via torque converter, planetary gear, belt, pulley, differential gear, and others. Also includes a parking mechanism that mechanically fixes secondary pulley when selector lever is shifted to the "P" position.

ACTIVATION STATE ACCORDING TO EACH SHIFTING

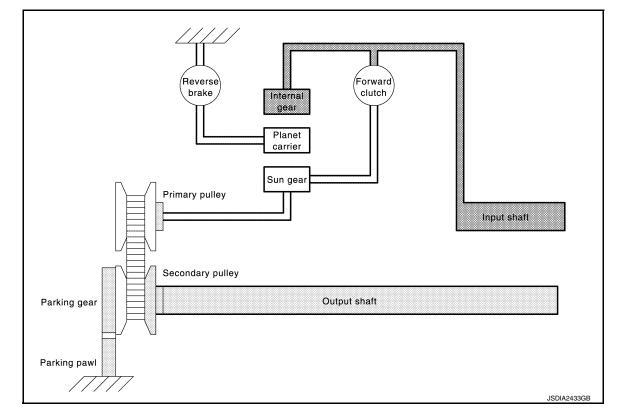
	Secondary					
Selector lever position	Secondary pressure sensor	Line pres- sure sole- noid valve	Secondary pressure sole- noid valve	Torque con- verter solenoid valve	Lock-up select sole- noid valve	Step motor
Р	×	×	×		×	
R	×	×	×		×	×
Ν	×	×	×		×	×
D (Low)	×	×	×	×		×
D (High)	×	×	×	×		×
D (Lock-up)	×	×	×	×		×

POWER TRANSMISSION

"P" position

- Traction force from input shaft is not transmitted to primary pulley because forward clutch and reverse brake are not engaged and run idle.
- Torque from the wheels is not transmitted to secondary pulley because secondary pulley is mechanically fixed when parking pole that is linked with selector lever is engaged with parking gear that is integrated with secondary pulley.

< SYSTEM DESCRIPTION >



Planetary gear

Name	Sun gear	Planet carrier	Internal gear
Condition	Stop	Idled	Input
Direction of rotation	_	—	Clockwise revolution

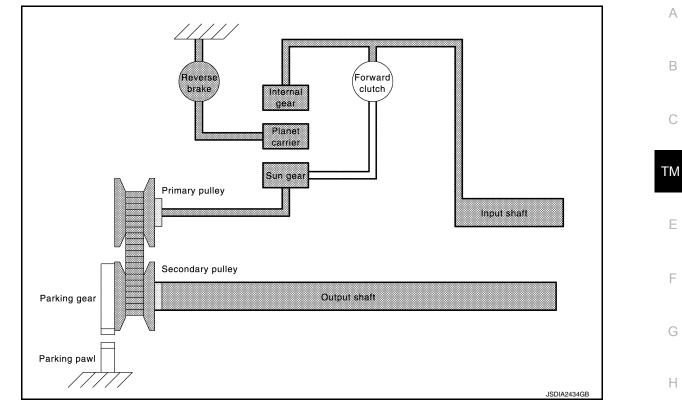
"R" position

• Traction force from input shaft rotates sun gear in opposite direction of input shaft rotation because reverse brake is engaged and planetary gear is fixed.

• Therefore primary pulley rotates in opposite direction of input shaft rotation and traction force output is in opposite direction rotation.

< SYSTEM DESCRIPTION >

[CVT: RE0F10B]



Planetary gear

Name	Sun gear	Planet carrier	Internal gear	
Condition	Output	Fixed	Input	
Direction of rotation	Counterclockwise revolution	—	Clockwise revolution	

"N" position

 Traction force from input shaft is not transmitted to primary pulley because forward clutch and reverse brake are not engaged and run idle.

 Torque from wheel is not transmitted to input shaft because forward clutch and reverse brake are not engaged and planetary carrier runs idle.

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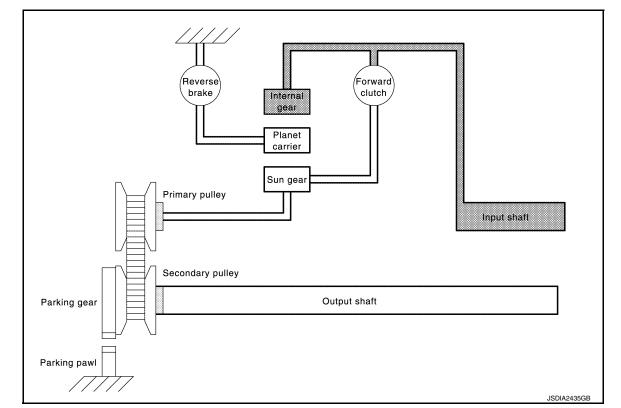
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< SYSTEM DESCRIPTION >



Planetary gear

Name	Sun gear	Planet carrier	Internal gear	
Condition	Stop	Idle	Input	
Direction of rotation	—	_	Clockwise revolution	

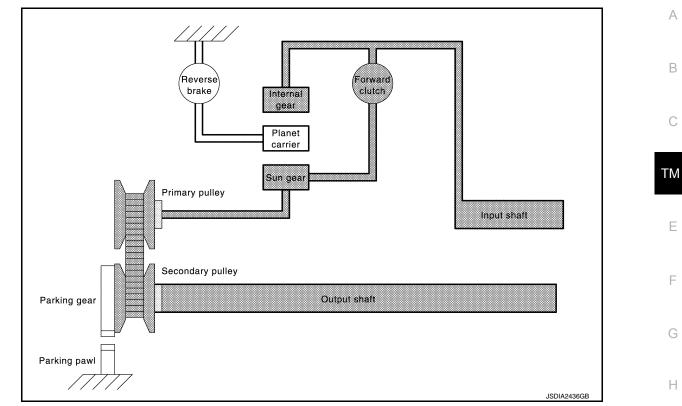
"D" position

• Traction force from input shaft rotates sun gear via forward clutch in the same direction of input shaft because forward clutch is engaged.

• Therefore primary pulley rotates in the same direction of input shaft rotation and traction force output is in the same direction rotation.

< SYSTEM DESCRIPTION >

[CVT: RE0F10B]



Planetary gear

Name	Sun gear	Planet carrier	Internal gear	
Condition	Input/output	Idle	Input	
Direction of rotation	Clockwise revolution	_	Clockwise revolution	

MECHANICAL SYSTEM : Component Description

INFOID:000000012200877

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Part name	Function					
Torque converter	Increases engine torque and transmits it to the transaxle.					
Oil pump	Utilizes a vane-type oil pump that is driven by the engine through the oil pump drive chain in order to increase efficiency of pump discharge volume in low-speed zone and optimize pump discharge volume in high-speed zone. Discharged oil from oil pump is transmitted to control valve. It is used as the oil of primary and secondary pulley operation, the oil of clutch operation, and the lubricant for each part.					
Forward clutch	The forward clutch is wet and multiple plate type clutch that consists of clutch drum, piston, drive plat and driven plate. It is a clutch to move the vehicle forward by activating piston hydraulically, engagin plates, and directly connecting sun gear and input shaft.					
Reverse brake	The reverse brake is a wet multiple-plate type brake that consists of transaxle case, piston, drive pla and driven plate. It is a brake to move the vehicle in reverse by activating piston hydraulically, engag plates, and fixing planetary gear.					
Internal gear	The internal gear is directly connected to forward clutch drum. It is a gear that moves the outer edge pinion planet of planet carrier. It transmits power to move the vehicle in reverse when the planet carries fixed.					
Planet carrier	Composed of a carrier, pinion planet, and pinion shaft. This gear fixes and releases the planet carrier in order to switch between forward and reverse driving.					
Sun gear	Sun gear is a set part with planet carrier and internal gear. It transmits transmitted force to primary fixed sheave. It rotates in forward or reverse direction according to activation of either forward clutch or reverse brake.					
Input shaft	The input shaft is directly connected to forward clutch drum and transmits traction force from torque con- verter. In shaft center, there are holes for hydraulic distribution to primary pulley and hydraulic distribu- tion for lockup ON/OFF.					

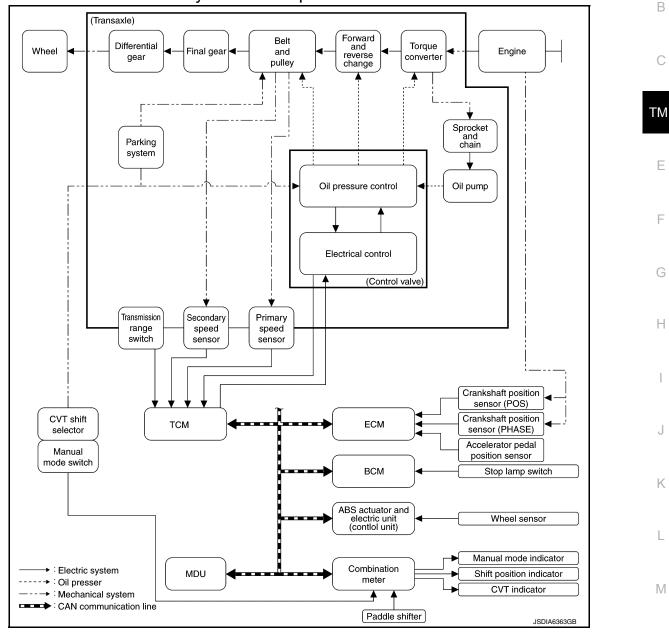
< SYSTEM DESCRIPTION >

[CVT: RE0F10B]

Part name	Function					
Primary pulley	It is composed of a pair of pulleys (the groove width is changed freely in the axial direction) and the steel					
Secondary pulley	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						
Manual shaft						
Parking rod	When the manual shaft is in the P position, the parking rod that is linked to the manual shaft rotates the parking pole. When the parking pole rotates, it engages with the parking gear, fixing the parking gear. As a result, the secondary pulley that is integrated with the parking gear is fixed.					
Parking pawl						
Parking gear						
Output gear						
ldler gear	The deceleration gears are composed of 2 stages: primary deceleration (output gear, idler gear pair) and secondary deceleration (reduction gear, final gear pair). All of these gears are helical gears.					
Reduction gear						
Differential						
Torque converter regulator valve	Adjusts the feed pressure to the torque converter to the optimum pressure corresponding to the driving condition.					
Pressure regulator valve	Adjusts the discharge pressure from the oil pump to the optimum pressure (line pressure) corresponding to the driving condition.					
Torque converter clutch control valve	Adjusts the torque converter engage and disengage pressures.					
Shift control valve	Controls the line pressure that is applied to the primary pulley according to the stroke difference between the step motor and primary pulley.					
Secondary valve	Reduces the line pressure and adjusts the secondary pressure.					
Clutch regulator valve	Adjusts the clutch operating pressure according to the driving conditions.					
Manual valve	Distributes the clutch operation pressure to each circuit according to the selector lever position.					
Select control valve	Engages when selected. Adjusts the forward clutch pressure and reverse brake pressure.					
Select switch valve	Performs switching control of the torque converter clutch solenoid valve control pressure when lock-up is engaged/disengaged, and when the forward/reverse clutches (forward clutch and reverse brake) are engaged/disengaged.					
Step motor	 Step motor changes step by turning 4 coils ON or OFF according to signal from TCM. By changing step, step motor controls outward flow and inward flow of line pressure to primary pulley, determines the primary pulley position, and controls gear ratio. 					

CVT CONTROL SYSTEM

CVT CONTROL SYSTEM : System Description



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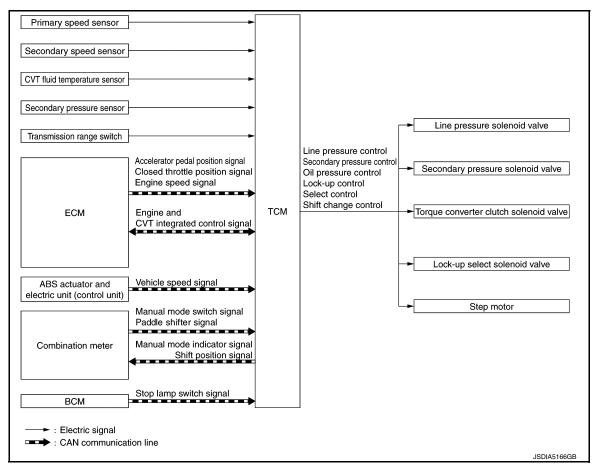
[CVT: RE0F10B]

< SYSTEM DESCRIPTION >

CVT CONTROL SYSTEM : System Diagram

INFOID:000000012200879

[CVT: RE0F10B]



CVT CONTROL SYSTEM : Fail-Safe

INFOID:000000012200880

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

DESCRIPTION

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

DTC	Condition	Vehicle behavior
P0703	_	Start is slowAcceleration is slow
P0705		 Position indicator on combination meter is not displayed Selector shock is large Start is slow Acceleration at high load state is slow Manual mode is not activated Lock-up is not performed
	Engine coolant temperature when engine starts is 10°C (50°F) or more	Start is slow
P0710	Engine coolant temperature when engine starts is 10°C (50°F) or less	Start is slowAcceleration is slowVehicle speed is not increased
	Engine coolant temperature when engine starts is $-35^{\circ}C(-31^{\circ}F)$ or less	Vehicle speed is not increased

< SYSTEM DESCRIPTION >

[CVT: RE0F10B]

DTC	Condition	Vehicle behavior		
P0715		 Acceleration is slow Re-start is slow after vehicle is stop by strong deceleration Manual mode is not activated Lock-up is not performed 		
P0720		 Start is slow Acceleration is slow Re-start is slow after vehicle is stop by strong deceleration Manual mode is not activated Lock-up is not performed 		
P0725	_	Lock-up is not performed		
P0740	_	Selector shock is largeLock-up is not performed		
P0744	_	Lock-up is not performed		
P0746	A malfunction is detected	 Start is slow Acceleration is slow Lock-up is not performed Start is difficult 		
Function is excessively reduced after a malfunction is detected		 Drive is difficult Lock-up is not performed 		
P0778		Vehicle speed is not increased		
P0826		Manual mode is not activated		
P0840		Start is slowAcceleration is slow		
P0841	_	Start is slowAcceleration is slow		
P0845	_	Start is slowAcceleration is slow		
P0868	_	Start is slowAcceleration is slow		
P1701		Start is slowAcceleration is slow		
P1705		Acceleration is slowLock-up is not performed		
P1709		 Start is slow Acceleration is slow Shift position indicator (P, N) is not displayed, or is displayed with delay. 		
P1722		Lock-up is not activated in coast state		
	A malfunction is detected in primary pulley speed sensor side	 Acceleration is slow Re-start is slow after vehicle is stop by strong deceleration Manual mode is not activated Lock-up is not performed 		
P1723	A malfunction is detected in secondary pulley speed sensor	 Start is slow Acceleration is slow Re-start is slow after vehicle is stop by strong deceleration Manual mode is not activated Lock-up is not performed 		
P1726	_	Acceleration is slow		
P1740	_	Selector shock is largeLock-up is not performed		

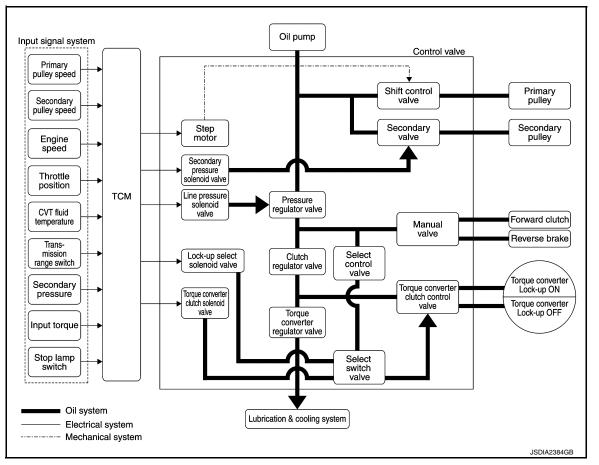
< SYSTEM DESCRIPTION >

DTC	Condition	Vehicle behavior
	A malfunction is detected in low side (when vehicle is stopped)	Vehicle speed is not increasedLock-up is not performed
P1777	A malfunction is detected in high side (during driving)	Start is slowAcceleration is slowLock-up is not performed
U0100		Start is slowAcceleration is slowVehicle speed is not increased
U1000		Start is slowAcceleration is slowVehicle speed is not increased
U1010		Start is slowAcceleration is slowVehicle speed is not increased

OIL PRESSURE CONTROL SYSTEM

OIL PRESSURE CONTROL SYSTEM : System Diagram

INFOID:000000012200881



OIL PRESSURE CONTROL SYSTEM : System Description

INFOID:000000012200882

The hydraulic control mechanism consists of the oil pump directly driven by the engine, the hydraulic control valve that controls line pressure and transmission, and the input signal line.

LINE PRESSURE AND SECONDARY PRESSURE CONTROL

 When an input torque signal equivalent to the engine driving force is transmitted from the ECM to the TCM, the TCM controls the line pressure solenoid valve and secondary pressure solenoid valve.

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[CVT: RE0F10B]

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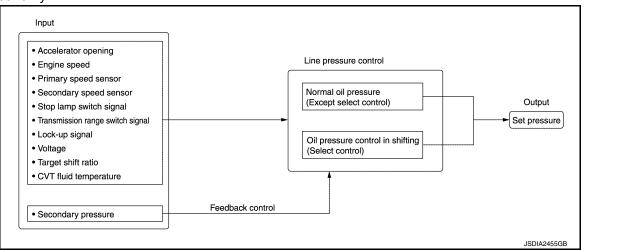
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Highly accurate line pressure control and secondary pressure control reduces friction for improvement of fuel economy.



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, input torque, stop lamp switch signal, transmission range switch signal, lock-up signal, power voltage, target shift ratio, oil temperature and oil pressure.

Secondary Pressure Feedback Control

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

CONTROL SYSTEM : System Diagram

OL SYSTEM	i : System Diagra	m		INFOID:000	0000012200883
Primary speed sensor Secondary speed sensor] ī				
CVT fluid temperature senso					
Secondary pressure sensor				Line pressure solenoid valve	
	Accelerator pedal position signal Closed throttle position signal Engine speed signal		Line pressure control Secondary pressure contro Oil pressure control Lock-up control	Secondary pressure solenoid valve	
ECM	Engine and CVT integrated control signal	ТСМ	Select control Shift change control	Torque converter clutch solenoid valve	
				Lock-up select solenoid valve	
ABS actuator and electric unit (control unit)	Vehicle speed signal			Step motor	
Combination meter	Paddle shifter signal Manual mode indicator signal				
	Shift position signal				
BCM	Stop lamp switch signal				
 Electric signal CAN communic 	ation line			JSDIA5166GB	

CONTROL SYSTEM : System Description

INFOID:000000012200884

[CVT: RE0F10B]

The TCM senses vehicle operating conditions through various sensors or signals. 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 transmitted from various switches and sensors.
- Determine required line pressure, shifting point, lock-up operation, etc.
- Transmit required output signals to the respective solenoids.

Sensor (or signal)	\Rightarrow	TCM function	\Rightarrow	Actuator
Transmission range switch CVT fluid temperature sensor Secondary pressure sensor Primary speed sensor Secondary speed sensor Engine speed signal Accelerator pedal position signal Closed throttle position signal Stop lamp switch signal Manual mode switch signal Vehicle speed signal		Shift control Line pressure control Primary oil pressure control Secondary oil pressure control Lock-up control Engine brake control Vehicle speed control Integrated Control System Fail-safe function Self-diagnosis function Communication function with CON- SULT CAN communication control		Line pressure solenoid valve Secondary pressure solenoid valve Torque converter clutch solenoid valve Lock-up select solenoid valve Step motor Shift position indicator Manual mode indicator

TCM INPUT/OUTPUT SIGNAL

	Control item	Line pres- sure control	Select con- trol	Shift control	Lock-up control	CAN com- munication control	Fail-safe function ^{*2}
	Transmission range switch	×	×	×	×	×	×
	CVT fluid temperature sensor	×	×	×	×		×
	Secondary pressure sensor	×		×			×
	Primary speed sensor	×		×	×	×	×
	Secondary speed sensor	×	×	×	×	×	×
	Engine speed signal ^{*1}	×	×		×	×	×
Input	Accelerator pedal position signal ^{*1}	×	×	×	×	×	×
	Closed throttle position signal ^{*1}	×		×	×	×	
	Stop lamp switch signal ^{*1}	×		×	×	×	
	Manual mode signal ^{*1}	×		×	×	×	×
	Paddle shifter ^{*1}	×		×	×	×	
	TCM power supply	×	×	×	×	×	×
	Line pressure solenoid	×	×	×			×
Output	Secondary pressure solenoid	×		×			×
	Torque converter clutch solenoid		×		×		×
	Lock-up select solenoid valve		×		×		×
	Step motor			×			×

*1: Input by CAN communications.

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

CONTROL SYSTEM : CAN Communication

INFOID:000000012200885

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 abil-

ity. 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

For a list of CAN communication signals, refer to LAN-30, "CAN COMMUNICATION SYSTEM : CAN Com-

CONTROL SYSTEM : Engine and CVT Integrated Control (CAN Communication Con-

with less wiring. Each control unit transmits/receives data but selectively reads required data only.

trol)

< SYSTEM DESCRIPTION >

munication Signal Chart".

- For purposes including improving the feeling when shifting speeds and preventing drops in engine speed, engine output control signals are exchanged between the ECM and TCM, and real-time cooperative control is performed according to the vehicle driving conditions.
- TCM sends the sudden deceleration signal, lock-up engaged signal, torque-down request signal, and other information to ECM, and also receives the torque-down permission/prohibit signals, lock-up permission/prohibit signals, accelerator position, and other information from ECM.

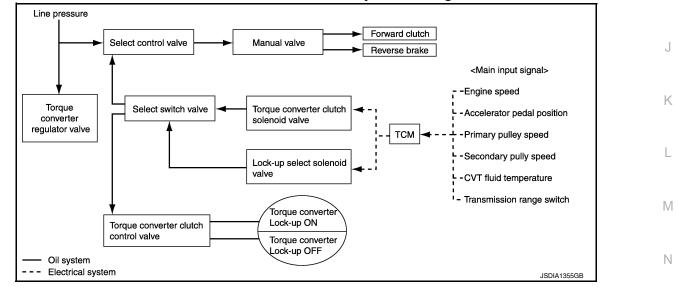
CONTROL SYSTEM : Control between CVT and Combination Meter (CAN Communication Control)

TCM sends the manual mode display request, shift position indicator signal, and other information to the combination meter, and also receives the manual mode signal and other information from the combination meter.

CONTROL SYSTEM : Control between CVT and BCM (CAN Communication Control)

TCM receives signals from the stop lamp switch via BCM. LOCK-UP AND SELECT CONTROL SYSTEM

LOCK-UP AND SELECT CONTROL SYSTEM : System Diagram



LOCK-UP AND SELECT CONTROL SYSTEM : System Description

INFOID:000000012200890

- The torque converter clutch piston in the torque converter is engaged to eliminate torque converter slip to increase power transmission efficiency.
- The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM. The torque converter clutch control valve engages or releases the torque converter clutch piston.
- When shifting between "N" ("P") ⇒ "D" ("R"), torque converter clutch solenoid valve controls engagement power of forward clutch and reverse brake.

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[CVT: RE0F10B]

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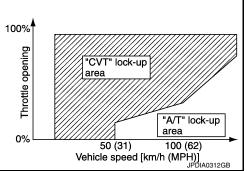
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- The lock-up applied gear range was expanded by locking up the torque converter at a lower vehicle speed than conventional A/T models.
- If the CVT fluid temperature is low or the vehicle is in fail-safe mode due to malfunction, lock-up control is prohibited.



TORQUE CONVERTER CLUTCH AND SELECT CONTROL VALVE CONTROL

Lock-up Released

In the lock-up released state, the torgue converter clutch control valve is set into the unlocked state by the torque converter clutch solenoid valve and the lock-up apply pressure is drained. In this way, the torque converter clutch piston is not coupled.

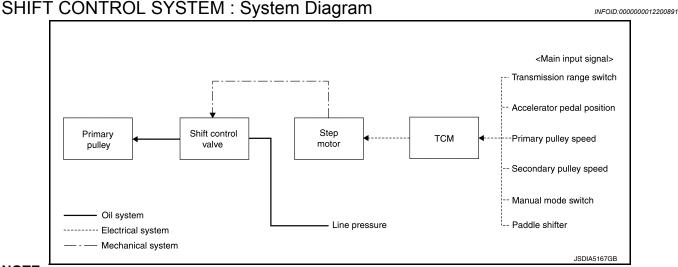
Lock-up Applied

In the lock-up applied state, the torque converter clutch control valve is set into the locked state by the torque converter clutch solenoid valve and lock-up apply pressure is generated.

In this way, the torque converter clutch piston is pressed and coupled.

Select Control

When shifting between "N" ("P") \Rightarrow "D" ("R"), optimize the operating pressure on the basis of the throttle position, the engine speed, and the secondary pulley (output) revolution speed to lessen the shift shock. SHIFT CONTROL SYSTEM



NOTE:

The gear ratio is set for each position separately.

SHIFT CONTROL SYSTEM : System Description

INFOID:000000012200892

 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

< SYSTEM DESCRIPTION >

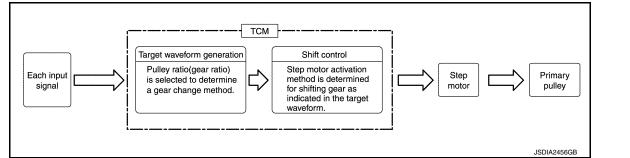
[CVT: RE0F10B]

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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.



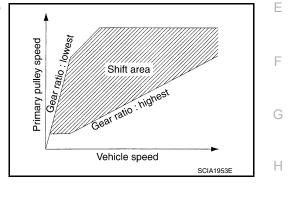
The gear ratio is set for each position separately.

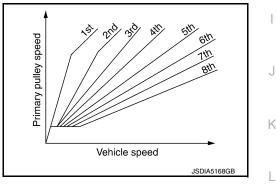
"D" POSITION

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



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





Manual Mode Information

The TCM transmits the manual mode shift refusal signal to the combination meter if the TCM refuses the transaxle from the driving status of vehicle when the selector lever shifts to "UP (+ side)" or "DOWN (- side)" side. Μ The combination meter blinks shift position 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. Ν

- 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 M8.

BLIPPING CONTROL

Using engine torque, the blipping control enables a faster and more responsive gear shifting by compensating inertia torque generated from the rotational change during gear shifting in real time.

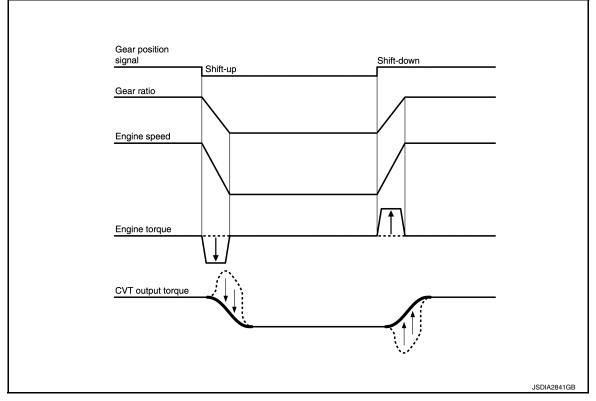
Operation

- Ρ . The blipping control is activated when the driver shifts up/down the transaxle in manual mode or when the transaxle is shifted up/down in "D" position SPORT mode. NOTE:
 - The blipping control is not activated when the vehicle is in the following conditions:
 - When CAN communication is abnormal.
 - During the retard inhibit signal transmission from ECM within the engine-CVT integrated control.
 - Engine coolant temperature is less than 20°C (68°F).
 - CVT fluid temperature is more than 120°C (248°F).

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[CVT: RE0F10B]

- < SYSTEM DESCRIPTION >
 - Vehicle speed is less than 20 km/h (12 MPH).
 - When ABS, TCS or VDC is active.
- During wheel spin.
- ECM selects blipping control or normal shift control according to the gear position, the selector lever position, etc.
- The blipping control is activated when ECM judges it controllable after receiving a control permit signal from TCM.
- ECM controls engine torque, based on generated inertia torque.

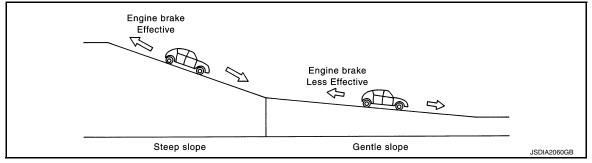


HILL CLIMBING AND DESCENDING CONTROL

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.

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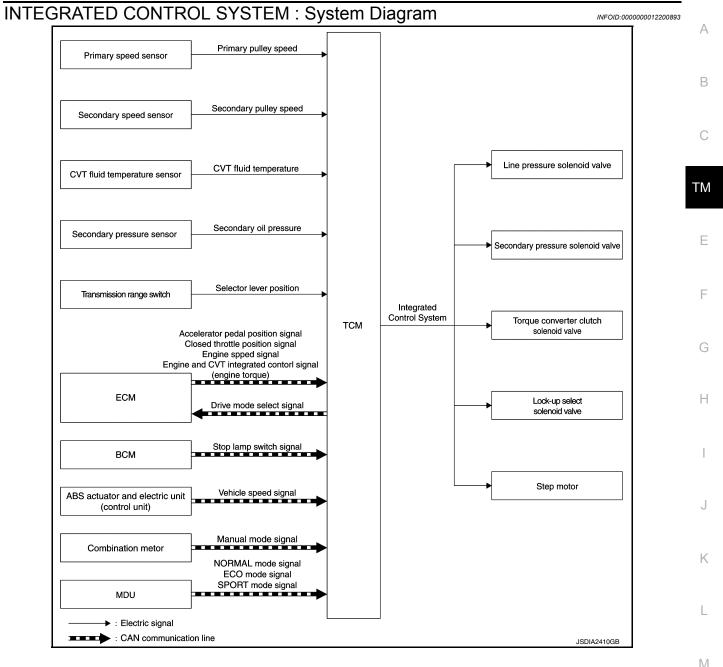
For engine brake control on a downhill, the control can be stopped with CONSULT.



CONTROL IN ACCELERATION

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

[CVT: RE0F10B]



INTEGRATED 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.
- When the selector lever is in any position other than D position, the gear shift line is not changed according to changes in the control mode.

CONTROL DETAILS OF EACH MODE

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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	Keeps high engine speed and provides direct feel and acceleration performance suitable for driving on winding road. This driving mode also provides a rhythmical feel obtained by A/T like shifting, and produces sporty driving.
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.

SHIFT LOCK SYSTEM

SHIFT LOCK SYSTEM : System Description

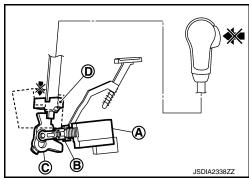
INFOID:000000012200895

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

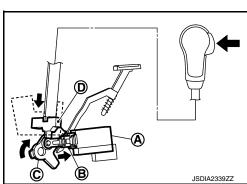
SHIFT LOCK OPERATION AT P POSITION

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 (B) is forcibly rotated and the shift lock is released when the shift lock release button (C) is pressed from above. The selector operation from P position can be performed.

D : Detent rod

CAUTION:

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

KEY LOCK SYSTEM : System Description

KEY LOCK MECHANISM

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

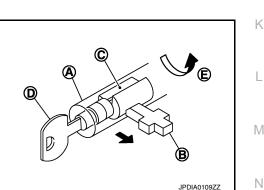
Key lock status

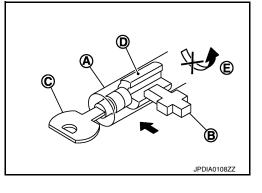
The slider (B) in the key cylinder (A) is moved to the left side of the figure when the selector lever is in any position other than P position. The rotator (D) that rotates together with the key (C) cannot be rotated for this reason. The key cannot be removed from the key cylinder because it cannot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

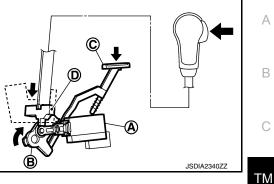


The slider (B) in the key cylinder (A) is moved to the right side of the figure when the selector lever is in P position and the finger is removed from the selector button. The rotator (C) can be rotated for this reason. The key (D) can be removed from the key cylinder because it can be turned to LOCK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









[CVT: RE0F10B]

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Diagnosis Description

INFOID:000000012200897

DESCRIPTION

The CVT system has two self-diagnostic systems.

The first is the emission-related on board diagnostic system (OBD-II) 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-II self-diagnostic items. For detail, refer to <u>TM-190</u>, <u>"CONSULT Function"</u>.

OBD-II FUNCTION

The ECM provides emission-related on board diagnostic (OBD-II) 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-II

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-II 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 or GST) CONSULT or GST (Generic Scan Tool) Examples: P0705, P0720 etc. These DTC are prescribed by SAE J2012.

(CONSULT 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 can identify them as shown below, therefore, CONSULT (if available) is recommended.

- DTC or 1st trip DTC of a malfunction is displayed in SELF-DIAGNOSTIC RESULTS mode for "ENGINE" with CONSULT. 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 or GST. The 1st trip freeze frame data can only be displayed on the CONSULT screen, not on the GST. For details, refer to <u>EC-84</u>, "CONSULT Function".

Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. 1st trip freeze frame data is stored in the ECM memory along with the 1st trip DTC. There is no priority

ON BOARD DIAGNOSTIC (OBD) SYSTEM

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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.

1 Misfire — DTC: P0300 - P0304	
Freeze frame data Fuel Injection System Function — DTC: P0171, P0172	C
2 Except the above items (Includes CVT related items)	0
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, 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 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-II. For details, refer to <u>EC-115, "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

B How to Erase DTC (With CONSULT)

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.

How to Erase DTC (With GST)

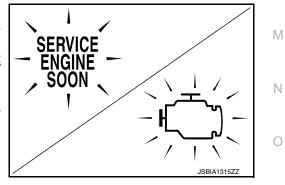
- 1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
- 2. Select Mode 4 with GST (Generic Scan Tool).

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-575, "Component</u> <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 Function

APPLICATION ITEMS

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

SELF DIAGNOSTIC RESULTS Refer to <u>TM-203, "DTC Index"</u>.

DATA MONITOR **NOTE**:

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

		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	Displays the signal voltage of the secondary pressure sensor.
PRI HYDR SEN	(V)	▼	х	 Displays the signal voltage of the primary pressure sensor. It is displayed although not equipped.
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.

X: Application V: Optional selection

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		Monitor ite	m selection	
Monitored item (Unit)	(Unit)	MAIN SIGNALS	ECU IN- PUT SIG- NALS	Remarks
GEAR RATIO		X	▼	Displays the pulley gear ratio calculated from primary pulley speed/secondary pulley speed.
G SPEED	(G)	▼	▼	Displays the acceleration and deceleration speed of the vehicle calculated from vehicle speed change.
ACC PEDAL OPEN	(0.0/8)	X	х	Displays the estimated throttle position received through CAN communication.
SEC PRESS	(MPa)	X	▼	Displays the secondary pressure calculated from the sig- nal voltage of the secondary pressure sensor.
PRI PRESS	(MPa)	x	▼	Displays the primary pressure calculated from the signal voltage of the primary pressure sensor.It is displayed although not equipped.
ATFTEMP COUNT		x	▼	Means CVT fluid temperature. Actual oil temperature (° numeric value is converted. Refer to $\underline{TM-194}$
DSR REV	(rpm)	•	▼	Displays the target primary pulley speed calculated from processing of gear shift control.
DGEAR RATIO		▼	▼	Displays the target gear ratio.
DSTM STEP	(step)	▼	▼	Displays the target number of steps of the step motor, calculated from processing of gear shift control.
STM STEP	(step)	X	▼	Displays the actual number of steps of the step motor, calculated from processing of gear shift control.
LU PRS	(MPa)	•	▼	Displays the target oil pressure of the torque converter clutch solenoid valve calculated from oil pressure 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.
TGT SEC PRESS	(MPa)	•	▼	Displays the target oil pressure of the secondary pres- sure solenoid valve calculated from oil pressure process- ing of gear shift control.
ISOLT1	(A)	X	▼	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.
ISOLT3	(A)	x	▼	Display the command current from TCM to the second- ary pressure solenoid valve.
SOLMON1	(A)	x	х	Monitors the command current from TCM to the torque converter clutch solenoid valve and displays the monitored value.
SOLMON2	(A)	x	x	Monitors the command current from TCM to the line pressure solenoid valve and displays the monitored value.
SOLMON3	(A)	x	х	Monitors the command current from TCM to the second- ary pressure solenoid valve and displays the monitored value.
BRAKE SW	(On/Off)	x	х	Displays the reception status of the stop lamp switch sig- nal received through CAN communication.
FULL SW	(On/Off)	Х	х	 Displays the reception status of the wide open throttle position signal received through CAN communication. It is displayed although not equipped.
IDLE SW	(On/Off)	x	x	Displays the reception status of the closed throttle posi- tion signal received through CAN communication.

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< SYSTEM DESCRIPTION >

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		Monitor ite	m selection	
Monitored item (Unit)	(Unit)	MAIN SIGNALS	ECU IN- PUT SIG- NALS	Remarks
SPORT MODE SW	(On/Off)	х	х	Displays the reception status of the sport mode switch signal received through CAN communication.It is displayed although not equipped.
STRDWNSW	(On/Off)	▼	х	Displays the operation status of the paddle shifter (down switch).
STRUPSW	(On/Off)	▼	х	Displays the operation status of the paddle shifter (up switch).
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	Displays if the selector lever position is at the manual shift gate.
INDLRNG	(On/Off)	•	▼	 Displays the transmission status of the shift position (L position) signal transmitted through CAN communication. It is displayed although not equipped.
INDDRNG	(On/Off)	•	▼	Displays the transmission status of the shift position (D position) signal transmitted through CAN communica- tion.
INDNRNG	(On/Off)	•	▼	Displays the transmission status of the shift position (N position) signal transmitted through CAN communica- tion.
INDRRNG	(On/Off)	•	▼	Displays the transmission status of the shift position (R position) signal transmitted through CAN communica- tion.
INDPRNG	(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 CVT indicator sig- nal transmitted through CAN communication.
SPORT MODE IND	(On/Off)	▼	▼	 Displays the transmission status of the S mode indicator signal transmitted through CAN communication. It is displayed although not equipped.
MMODE IND	(On/Off)	▼	▼	Displays the transmission status of the manual mode sig- nal transmitted through CAN communication.
SMCOIL D	(On/Off)	▼	▼	Displays the energizing status of step motor coil "D".
SMCOIL C	(On/Off)	▼	▼	Displays the energizing status of step motor coil "C".
SMCOIL B	(On/Off)	▼	▼	Displays the energizing status of step motor coil "B".
SMCOIL A	(On/Off)	▼	▼	Displays the energizing status of step motor coil "A".
LUSEL SOL OUT	(On/Off)	▼	▼	Displays the command value from TCM to the lock-up select solenoid valve.
LUSEL SOL MON	(On/Off)	▼	▼	Monitors the command value from TCM to the lock-up select solenoid valve and displays the monitored value.
VDC ON	(On/Off)	▼	х	Displays the reception status of the VDC operation signal received through CAN communication.
TCS ON	(On/Off)	▼	х	Displays the reception status of the TCS operation signal received through CAN communication.

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< SYSTEM DESCRIPTION >

[CVT: RE0F10B]

		Monitor ite	m selection	
Monitored item (Unit)	(Unit)	MAIN SIGNALS	ECU IN- PUT SIG- NALS	Remarks
ABS ON	(On/Off)	▼	х	Displays the reception status of the ABS operation signal received through CAN communication.
ACC ON	(On/Off)	▼	Х	It is displayed although not equipped.
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).
DRIVE MODE STATS	(On/Off)	▼	▼	 Displays the drive mode status recognized by TCM. Only vehicle with Integrated Control System are displayed.
SNOW MODE	(On/Off)	•	•	 Display the drive mode (SNOW switch status) of Integrated Control System received through CAN communication. Only vehicle with Integrated Control System are displayed. It is displayed although not equipped.
ECO MODE	(On/Off)	•	•	 Display the driving mode (ECO switch status) of Integrated Control System received through CAN communication. Only vehicle with Integrated Control System are displayed.
NORMAL MODE	(On/Off)	•	•	 Display the driving mode (AUTO switch status) of Integrated Control System received through CAN communication. Only vehicle with Integrated Control System are displayed.
SPORT MODE	(On/Off)	•	•	 Display the driving mode (SPORT switch status) of Integrated Control System received through CAN communication. Only vehicle with Integrated Control System are displayed.
CVT-A	(On/Off)	_	—	This monitor item does not use.
CVT-B	(On/Off)		_	This monitor item does not use.

WORK SUPPORT

Item name	Description	Р
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"

< SYSTEM DESCRIPTION >

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

OFF: Engine brake level control is deactivated.

CAUTION:

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

Check CVT Fluid Deterioration Date

"CVTF DETERIORATION DATE"

210000 or more:

It is necessary to change CVT fluid.

Less than 210000:

It is not necessary to change CVT fluid.

CAUTION:

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

ATFTEMP COUNT Conversion Table

INFOID:000000012200899

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

Diagnostic Tool Function

INFOID:000000012200900

OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST) Refer to <u>EC-73</u>, "<u>GST (Generic Scan Tool)</u>".

TCM

Reference Value

VALUES ON THE DIAGNOSIS TOOL

NOTE:

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

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	 After engine warm up Selector lever: "N" position At idle 	0.8 V
	CVT fluid: Approx. 20°C (68°F)	2.01 – 2.05 V
ATF TEMP SEN	CVT fluid: Approx. 50°C (122°F)	1.45 – 1.50 V
	CVT fluid: Approx. 80°C (176°F)	0.90 – 0.94 V
VIGN SEN	Ignition switch: ON	10 – 16 V
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	48 X Approximately matches the speed- ometer reading.
ENG SPEED	Engine running	Closely matches the tachometer reading.
SLIP REV	During driving	engine speed – primary speed
GEAR RATIO	During driving	2.349 - 0.394
	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.
ACC PEDAL OPEN	Released accelerator pedal - Fully depressed acceler- ator pedal	0.0/8 - 8.0/8
SEC PRESS	 After engine warm up Selector lever: "N" position At idle 	1.6 MPa
	CVT fluid: Approx. 20°C (68°F)	47
ATFTEMP COUNT [*]	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	0 step – 182 step
STM STEP	During driving	0 step – 182 step

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< ECU DIAGNOSIS INFORMATION >

[CVT: RE0F10B]

Item name	Condition	Display value (Approx.)
	Engine started Vehicle is stopped.	-0.400 MPa
LU PRS	 Selector lever: "D" position Accelerator pedal position: 1/8 or less Vehicle speed: 20 km/h (12 MPH) or more 	0.400 MPa
	 After engine warm up Selector lever: "N" position At idle 	0.750 MPa
LINE PRS	 After engine warm up Selector lever: "N" position Depress the accelerator pedal fully 	4.930 – 5.430 MPa
TGT SEC PRESS	 After engine warm up Selector lever: "N" position At idle 	0.700 MPa
ISOLT1	-	_
ISOLT2	-	_
ISOLT3	_	_
SOLMON1	_	—
SOLMON2	-	
SOLMON3		
	Depressed brake pedal	On
BRAKE SW	Released brake pedal	Off
FULL SW	Always	Off
	Released accelerator pedal	On
IDLE SW	Fully depressed accelerator pedal	Off
SPORT MODE SW	Always	Off
	Paddle shifter (Down) is pulled	On
STRDWNSW	Other than the above	Off
	Paddle shifter (Up) is pulled	On
STRUPSW	Other than the above	Off
	Selector lever: - side	On
DOWNLVR	Other than the above	Off
	Selector lever: + side	On
UPLVR	Other than the above	Off
	Manual shift gate position (neutral, +side, -side)	Off
NONMMODE	Other than the above	On
	Manual shift gate position (neutral)	On
MMODE	Other than the above	Off
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	Off
	Selector lever in "R" position	On
INDRRNG	When setting selector lever to other positions	Off
	Selector lever in "P" position	On
INDPRNG	When setting selector lever to other positions	Off

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ТСМ

< ECU DIAGNOSIS INFORMATION >

[CVT: RE0F10B]

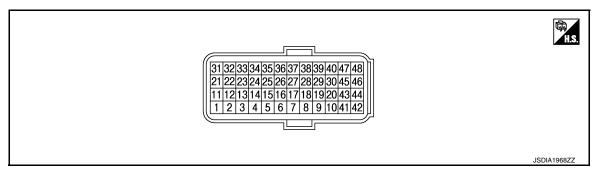
Item name	Condition	Display value (Approx.)	
CVT LAMP	Approx. 2 seconds after ignition switch ON	On	
	Other conditions	Off	
SPORT MODE IND	Always	Off	
	In manual mode	On	
MMODE IND	Other conditions	Off	
SMCOIL D	During driving	Changes On ⇔ Off	
SMCOIL C	During driving	Changes On \Leftrightarrow Off	
SMCOIL B	During driving	Changes On ⇔ Off	
SMCOIL A	During driving	Changes On \Leftrightarrow Off	
	Selector lever: "P", "N" positions	On	
LUSEL SOL OUT	Wait at least for 5 seconds with the selector lever in "R", "D" positions	Off	
	Selector lever: "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	
VDC ON	Other conditions	Off	
	TCS is activated	On	
TCS ON	Other conditions	Off	
	ABS is activated	On	
ABS 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	
	Gear position: M1	1	
	Gear position: M2	2	
	Gear position: M3	3	
	Gear position: M4	4	
M GEAR POS	Gear position: M5	5	
	Gear position: M6	6	
	Gear position: M7	7	
	Gear position: M8	8	
	Selector lever in "D" position	On	
D POSITION SW	Other than the above position	Off	
	Selector lever in "N" position	On	
N POSITION SW	Other than the above position	Off	
L POSITION SW	Always	Off	
	Selector lever in "P" position	On	
P POSITION SW	Other than the above position	Off	
	Selector lever in "R" position	On	
R POSITION SW	Other than the above position	Off	
	Integrated Control System: NORMAL mode	NORMAI	
DRIVE MODE STATS	Integrated Control System: NORMAL mode Integrated Control System: ECO mode	ECO	

Revision: November 2015

Item name	Condition	Display value (Approx.)
PORT MODE	Integrated Control System: SPORT mode	On
SPORT MODE	Other conditions	Off
NORMAL MODE	Integrated Control System: NORMAL mode	On
NORMAL MODE	Other conditions	Off
ECO MODE	Integrated Control System: ECO mode	On
ECOMODE	Integrated Control System: SPORT mode Other conditions Integrated Control System: NORMAL mode Other conditions	Off
SNOW MODE	Always	Off
CVT-A	-	—
CVT-B	-	—

*: Means CVT fluid temperature. Convert numerical values for actual fluid temperature °C (°F). Refer to <u>TM-194, "ATFTEMP COUNT</u> <u>Conversion Table"</u>.

TERMINAL LAYOUT



PHYSICAL VALUES

	nal No. color)	Description		Condition		Value (Approx.)	
+	-	Signal name	Input/Output				
1	Ground	R RANGE SW	Innut		Selector lever in "R" position	10 – 16 V	
(G)	Ground	R RANGE SW	Input		Other than the above position	0 V	
2	Ground	N RANGE SW	Innut	Ignition	Selector lever in "N" position	10 – 16 V	
(Y)	Ground	N RANGE SW	Input	switch ON	Other than the above position	0 V	
3	3 0 1 5 5 1 1 5 6 1 1		Selector lever in "D" positions	10 – 16 V			
(W)	Ground	D RANGE SW	Input		Other than the above position	0 V	
4 ^{*1} (V)	_	_	_	—		_	
5 (B)	Ground	Ground	Output	Always		0 V	
8 (BR)	_	CLOCK (SEL2)		—		_	
9 (G)	_	CHIP SELECT (SEL1)	_	_		_	
10 (W)		DATA I/O (SEL3)	_		_		

[CVT: RE0F10B]

	inal No. e color)	Descrip	tion	Condition		Value (Approx.)	A
+	-	Signal name	Input/Output				
11	Cround	P RANGE SW	loout	Ignition	Selector lever in "P" position	10 – 16 V	В
(L)	Ground	P RANGE SW	Input	switch ON	Other than the above position	0 V	
					When CVT fluid tem- perature is 20°C (68°F)	2.01 – 2.05 V	С
13 (SB)	Ground	CVT fluid temper- ature sensor	Input	Ignition switch ON	When CVT fluid tem- perature is 50°C (122°F)	1.45 – 1.50 V	ΤN
					When CVT fluid tem- perature is 80°C (176°F)	0.90 – 0.94 V	E
15 (P)	Ground	Secondary pres- sure sensor	Input	Selector leveIdle speed	er: "N" position	0.8 V	F
25 (Y)	Ground	Sensor ground	Input		Always	0 V	0
26	Ground	Sensor power	Output	Ignition switch	ON	5.0 V	(-
(LG)	Giouna	supply	Julpul	Ignition switch	OFF	0 V	
27 (GR)	Ground	Step motor D	Output		nds after ignition switch neasurement by using	10.0 msec	ŀ
28 (V)	Ground	Step motor C	Output	the pulse width measurement by dsing the pulse width measurement func- tion (Hi level) of CONSULT. ^{*2} CAUTION: Connect the diagnosis data link ca- ble to the vehicle diagnosis con- nector.		30.0 msec	
29 (BG)	Ground	Step motor B	Output			10.0 msec	
30 (R)	Ground	Step motor A	Output			30.0 msec	J
31 (P)	_	CAN-L	Input/Output	_		_	k
32 (L)	_	CAN-H	Input/Output	_		_	
33 (BG)	Ground	Primary speed sensor	Input		er: "M ¹ " position g at 20 km/h (12 MPH)	720 Hz (V) 64 20 •••2 ms JPDIA0819ZZ	L
34 (R)	Ground	Secondary speed sensor	Input	 Selector lever: "M¹" position While driving at 20 km/h (12 MPH) 		480 Hz (V) 15 10 50 •••2 ms JPDIA0901ZZ	C
					Selector lever in "P" or "N" positions	10 – 16 V	
37 (L)	Ground	Lock-up select solenoid valve	Output	Ignition switch ON	Wait at least for 5 seconds with the se- lector lever in "R" or "D" positions.	0 V	

	nal No. color)	Descrip	tion	Condition		Value (Approx.)
+	-	Signal name	Input/Output			
38	Ground	Torque converter	Output	When vehicle cruises in "D"	When CVT performs lock-up	6.0 V
(G)	Cround	valve	Output	position	When CVT does not perform lock-up	1.5 V
39	Ground	Secondary pres- sure solenoid	Output		Release your foot from the accelerator pedal.	5.0 – 7.0 V
(W)	Cround	valve	Output	"P" or "N" po-	Press the accelera- tor pedal all the way down.	3.0 – 4.0 V
40	Ground	und Line pressure so- lenoid valve		sition idle	Release your foot from the accelerator pedal.	5.0 – 7.0 V
(Y)	Ground			Culput	Press the accelera- tor pedal all the way down.	1.0 V
42 (B)	Ground	Ground	Output		Always	0 V
46	Ground	Ignition power	Input	Ignition switch ON	_	10 – 16 V
(LG)	(LG) Ground	supply	mput	Ignition switch OFF	—	0 V
47 (BG)	Ground	Battery power supply (memory back- up)	Input	Always		10 – 16 V
48	Ground	Ind Ignition power Input	Ignition switch ON		10 – 16 V	
(Y)	Ground		input	Ignition switch OFF	—	0 V

*1: This harness is not used.

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

Fail-Safe

INFOID:000000012200902

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

DESCRIPTION

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

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

ТСМ

< ECU DIAGNOSIS INFORMATION >

[CVT: RE0F10B]

DTC	Condition	Vehicle behavior
	Engine coolant temperature when engine starts is 10°C (50°F) or more	Start is slow
P0710	Engine coolant temperature when engine starts is 10°C (50°F) or less	Start is slowAcceleration is slowVehicle speed is not increased
	Engine coolant temperature when engine starts is $-35^{\circ}C(-31^{\circ}F)$ or less	Vehicle speed is not increased
P0715		 Acceleration is slow Re-start is slow after vehicle is stop by strong deceleration Manual mode is not activated Lock-up is not performed
P0720		 Start is slow Acceleration is slow Re-start is slow after vehicle is stop by strong deceleration Manual mode is not activated Lock-up is not performed
P0725		Lock-up is not performed
P0740	_	Selector shock is largeLock-up is not performed
P0744		Lock-up is not performed
P0746	A malfunction is detected	Start is slowAcceleration is slowLock-up is not performed
P0740	Function is excessively reduced after a malfunction is detected	Start is difficultDrive is difficultLock-up is not performed
P0778		Vehicle speed is not increased
P0826		Manual mode is not activated
P0840	_	Start is slowAcceleration is slow
P0841		Start is slowAcceleration is slow
P0845		Start is slowAcceleration is slow
P0868		Start is slowAcceleration is slow
P1701	_	Start is slowAcceleration is slow
P1705	_	Acceleration is slowLock-up is not performed
P1709		 Start is slow Acceleration is slow Shift position indicator (P, N) is not displayed, or is displayed with delay.
P1722		Lock-up is not activated in coast state

Ρ

DTC	Condition	Vehicle behavior
	A malfunction is detected in primary pulley speed sensor side	 Acceleration is slow Re-start is slow after vehicle is stop by strong deceleration Manual mode is not activated Lock-up is not performed
P1723	A malfunction is detected in secondary pulley speed sensor	 Start is slow Acceleration is slow Re-start is slow after vehicle is stop by strong deceleration Manual mode is not activated Lock-up is not performed
P1726	_	Acceleration is slow
P1740		Selector shock is largeLock-up is not performed
	A malfunction is detected in low side (when vehicle is stopped)	Vehicle speed is not increasedLock-up is not performed
P1777	A malfunction is detected in high side (during driving)	Start is slowAcceleration is slowLock-up is not performed
U0100		Start is slowAcceleration is slowVehicle speed is not increased
U1000	_	Start is slowAcceleration is slowVehicle speed is not increased
U1010		Start is slowAcceleration is slowVehicle speed is not increased

DTC Inspection Priority Chart

INFOID:000000012200903

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

Priority	Detected items (DTC)	Reference
	P1709 INCOMPLETED DATA WRITING	TM-285, "DTC Logic"
1	U0100 LOST COMM (ECM A)	TM-235, "DTC Logic"
I	U1000 CAN COMM CIRCUIT	TM-236, "DTC Logic"
	U1010 CONTROL UNIT (CAN)	TM-237, "DTC Logic"
	P0725 ENGINE SPEED	TM-254, "DTC Logic"
2	P1705 TP SENSOR	TM-284, "DTC Logic"
	P1726 THROTTLE CONTROL SIG	TM-290, "DTC Logic"

[CVT: RE0F10B]

Priority	Detected items (DTC)	Reference	
	P0703 BRAKE SWITCH B	TM-238, "DTC Logic"	A
	P0705 T/M RANGE SENSOR A	TM-241, "DTC Logic"	
	P0710 FLUID TEMP SENSOR A	TM-244, "DTC Logic"	В
	P0715 INPUT SPEED SENSOR A	TM-248, "DTC Logic"	
	P0720 OUTPUT SPEED SENSOR	TM-251, "DTC Logic"	
	P0740 TORQUE CONVERTER	TM-255, "DTC Logic"	С
3	P0745 PC SOLENOID A	TM-260, "DTC Logic"	
5	P0778 PC SOLENOID B	TM-266, "DTC Logic"	ТМ
	P0826 UP/DOWN SHIFT SWITCH	TM-268, "DTC Logic"	
	P0840 FLUID PRESS SEN/SW A	TM-274, "DTC Logic"	
	P1701 TCM	TM-281, "DTC Logic"	E
	P1722 VEHICLE SPEED	TM-287, "DTC Logic"	
	P1740 SLCT SOLENOID	TM-291, "DTC Logic"	F
	P1777 STEP MOTOR	TM-293, "DTC Logic"	I
	P0744 TORQUE CONVERTER	TM-258, "DTC Logic"	
	P0746 PC SOLENOID A	TM-262, "DTC Logic"	G
	P0776 PC SOLENOID B	TM-264, "DTC Logic"	
4	P0841 FLUID PRESS SEN/SW A	TM-277, "DTC Logic"	
	P0868 FLUID PRESS LOW	TM-279, "DTC Logic"	Η
	P1723 SPEED SENSOR	TM-288. "DTC Logic"	
	P1778 STEP MOTOR	TM-296, "DTC Logic"	I

DTC Index

NOTE:

If multiple malfunction codes are detected at the same time, check each code according to the "DTC check priority list". <u>TM-202</u>, "DTC Inspection Priority Chart".

DTC			
"ENGINE" with CONSULT or GST [*]	"TRANSMISSION" with CONSULT	Items (CONSULT screen terms)	Reference
_	P0703	BRAKE SWITCH B	<u>TM-238</u>
P0705	P0705	T/M RANGE SENSOR A	<u>TM-241</u>
P0710	P0710	FLUID TEMP SENSOR A	<u>TM-244</u>
P0715	P0715	INPUT SPEED SENSOR A	<u>TM-248</u>
P0720	P0720	OUTPUT SPEED SENSOR	<u>TM-251</u>
—	P0725	ENGINE SPEED	<u>TM-254</u>
P0740	P0740	TORQUE CONVERTER	<u>TM-255</u>
P0744	P0744	TORQUE CONVERTER	<u>TM-258</u>
P0745	P0745	PC SOLENOID A	<u>TM-260</u>
P0746	P0746	PC SOLENOID A	<u>TM-262</u>
P0776	P0776	PC SOLENOID B	<u>TM-264</u>
P0778	P0778	PC SOLENOID B	<u>TM-266</u>
_	P0826	UP/DOWN SHIFT SWITCH	<u>TM-268</u>
P0840	P0840	FLUID PRESS SEN/SW A	<u>TM-274</u>
	P0841	FLUID PRESS SEN/SW A	<u>TM-277</u>

Revision: November 2015

INFOID:000000012200904

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ТСМ

< ECU DIAGNOSIS INFORMATION >

[CVT: RE0F10B]

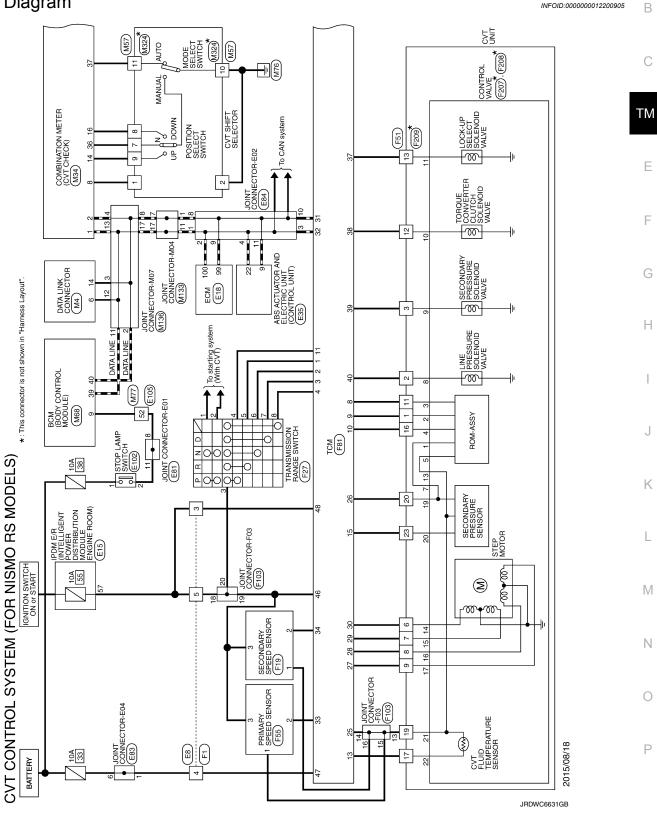
DTC		Items	
"ENGINE" with CONSULT or GST*	"TRANSMISSION" with CONSULT	(CONSULT screen terms)	Reference
_	P0868	FLUID PRESS LOW	<u>TM-279</u>
	P1701	ТСМ	<u>TM-281</u>
_	P1705	TP SENSOR	<u>TM-284</u>
	P1709	INCOMPLETED DATA WRITING	<u>TM-285</u>
_	P1722	VEHICLE SPEED	<u>TM-287</u>
	P1723	SPEED SENSOR	<u>TM-288</u>
_	P1726	THROTTLE CONTROL SIG	<u>TM-290</u>
P1740	P1740	SLCT SOLENOID	<u>TM-291</u>
P1777	P1777	STEP MOTOR	<u>TM-293</u>
P1778	P1778	STEP MOTOR	<u>TM-296</u>
U0100	U0100	LOST COMM (ECM A)	<u>TM-235</u>
_	U1000	CAN COMM CIRCUIT	<u>TM-236</u>
	U1010	CONTROL UNIT (CAN)	<u>TM-237</u>

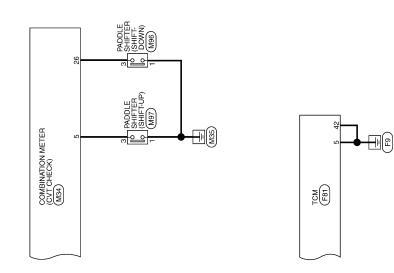
*: These numbers are prescribed by SAE J2012.

INFOID:000000012200905

WIRING DIAGRAM **CVT CONTROL SYSTEM**

Wiring Diagram



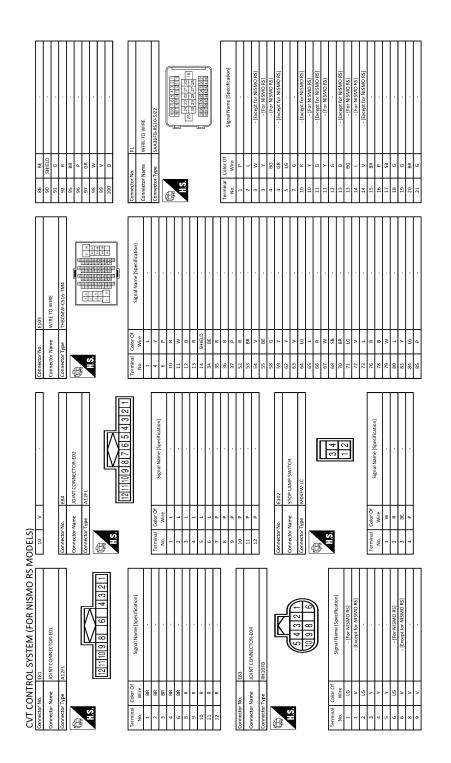


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CVT CONTROL SYSTEM



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	С
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	E
[51 Or UNIT Varaki, _7283+8750-30 Signal Name [Specification] Signal Name [Specification] Signal Name [Specification]	F
Connector ho. F51 Connector ham Connector ham Connector ham Connector ham Terminal Connector ham 1 0 2 0 1 0	G
	Н
13 13 SECONDARY SPEED SENSOR RO31E9 R031E9 Signal Name [Specification] 5gnal Name [Specification] - 5gnal Name [Specification] -	I
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强 H.S.	12345	Connector Name Connector Name Connector Type H.S.	强 S:H	
Terminal Col No. V	Color Of Signal Name [Specification] Wire BP		Terminal Color Of No. Wire	Signal Name [Specification]
3 2 8	W/R	Terminal Color Of Signal Name [Specification] No. Wire	- 8 -	
4 r 0	G/W	1 W/R	~ ~	
'	-		┼┼	,
Connector No.	F208	+	07	
Connector Name	CONTROL VALVE	8 L/Y	Connector No.	M34
Connector Type	IP16F-1	11 R/B	Connector Name	COMBINATION METER
ſ		+	Connector Type	TH40FW-NH
H.S.	7 8 9 7 10 11 12	16 G/W	Ð	
	13 14 15 16 17 18 19 20 21 22	$\left \right $		
		20 G/B		20 19 18 17 16 15 14 13 11 10 9 8 7 6 5 4 2 1 13 17 19 13 14 13 11 10 9 8 7 6 5 4 2 1
		\square		
Terminal Color Of No. Wire	r Of Signal Name [Specification]	25 W -		
++	-		Terminal Color Of	Signal Name [Specification]
			+	CAN-H
10 Y/	Y/R -		2 P	CAN-L
	- ·			VEHICLE SPEED SIGNAL (8-PULSE)
-			+	PADDLE SHIFTER UP SWITCH SIGNAL
14			o 7	FUEL LEVEL SENSUR SIGNAL AIR BAG SIGNAL
15	- 0		а. 	,
16	· · · · · ·		+	SEAT BELT BUCKLE SWITCH SIGNAL (DRIVER SIDE)
_	GR -		10 SB	PARKING BRAKE SWITCH SIGNAL

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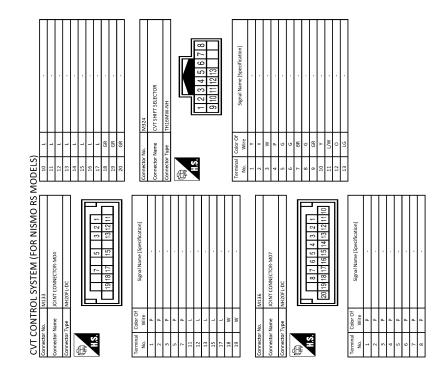
CVT CONTROL SYSTEM

[CVT: RE0F10B]

		A
	INTER (SHIFT DOWN)	В
	M06 ANDLE SHIFTER (SHIFT DOWN) A03FW M97 M97 M97 M97 M04FW Signal Name (Specific Signal Name (Specific	С
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		Н
MA68 BEAM (BODY CONTROL MODULE) TH40FPANH [1] 2 14 5 6 7 7 14 14 14 14 14 14 14 14 14 14 14 14 14	Signal Name (Specification) COMBI SW INPUT 3 COMBI SW INPUT 3 C	I
M68 BCM (800h) H400Fb-M1		J
MODELS) Connector Name Connector Name Connector Name	Terminal Color Of No. Color Of No. 2 V. 2 V. 5 V. 6 V. 7 V. 8 V. 9 V. 13 M. 14 M. 15 M. 16 V. 17 V. 18 M. 13 M. 14 V. 15 V. 16 M. 17 V. 18 M. 19 M. 23 K 33 K 34 K 35 K 36	К
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CVT CONTRO 15 W 13 W	28 CR 29 V 30 V 33 V 33 V 33 V 1 V	Ν

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JRDWC6638GB

CVT SHIFT LOCK SYSTEM



CVT SHIFT LOCK SYSTEM

Wiring Diagram

*: This connector is not shown in "Harness Layout".

INFOID:000000012200906

[CVT: RE0F10B]

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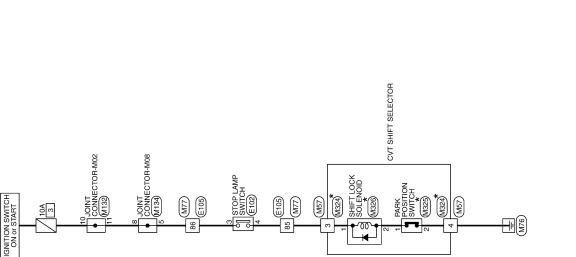
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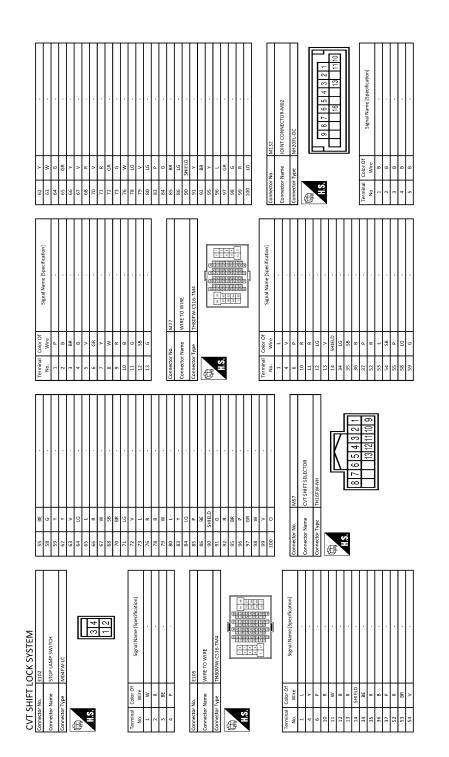


CVT SHIFT LOCK SYSTEM

JRDWC6639GB

2015/08/18

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JRDWC6640GB

	А
	В
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	ТМ
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Ma26 Nami, 1728-18456 Signal Name Especification	F
8-141100 8-1410	G
Connector Name Connector Name	Н
Start Name (Specification)	I
	J
Connector Name Connector Name Connector Type 1 v v 2 v v 3 v v 1 Lour 1 UW 1 UW Connector Name Connector Name 2 v v 3 v v 1 UW Connector Name Connector Name	K
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CVT SHIFT LOCK SYSTEM 7 8 7 8 9 9 10 10 11 10 12 10 13 10 14 10 15 10 16 10 17 10 18 11 19 10 10 10 11 10 12 10 13 10 14 10 15 16 16 11 17 10 18 11 18 11 19 10 10 11 11 10 12 16 13 16 14 16 13 16 13 16 13 16 13 14 13 14 13 16 13 17 13 16 13 17 13 14 14 15 15 16 16 17 <th< td=""><td>Ν</td></th<>	Ν
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Р

< WIRING DIAGRAM >

BASIC INSPECTION DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000012200907

CAUSE

SAT632

INTRODUCTION

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

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

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

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

A visual check only may not find the cause of the errors. A road test with CONSULT (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-217) 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 <u>TM-217</u>, "<u>Diagnostic Work Sheet</u>".

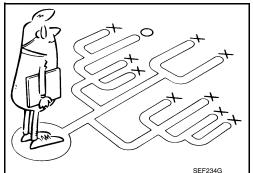
>> GO TO 2.

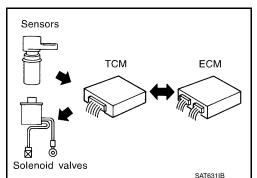
2.CHECK SYMPTOM 1

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

- Fail-safe. Refer to <u>TM-200, "Fail-Safe"</u>.
- CVT fluid inspection. Refer to <u>TM-314</u>, "Inspection".
- Line pressure test. Refer to TM-228, "Inspection and Judgment".







INFO

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >	[CVT: RE0F10B]
 Stall test. Refer to <u>TM-226, "Inspection and Judgment"</u>. 	
	A
>> GO TO 3. 3. CHECK DTC	
1. Check DTC.	Β
 Perform the following procedure if DTC is detected. 	
Record DTC.	C
Erase DTC. Refer to <u>TM-188, "Diagnosis Description"</u> .	
<u>Is any DTC detected?</u> YES >> GO TO 4.	
NO >> GO TO 5.	TM
4.PERFORM DIAGNOSTIC PROCEDURE	
Perform "Diagnostic Procedure" for the displayed DTC.	E
>> GO TO 5.	-
5. PERFORM DTC CONFIRMATION PROCEDURE	F
Perform "DTC CONFIRMATIOM PROCEDURE" for the displayed DTC.	
Is DTC detected?	G
YES >> GO TO 4.	
NO $>>$ GO TO 6.	Н
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	1
Perform "RODE TEST". Refer to TM-230, "Description".	
>> GO TO 8.	K
8. СНЕСК SYMPTOM 3	
Confirm the symptom described by the customer.	
Is any malfunction present?	
YES >> GO TO 2.	
NO >> INSPECTION END	N
Diagnostic Work Sheet	INFOID:000000012200908
INFORMATION FROM CUSTOMER	Ν
KEY POINTS • WHAT Vehicle & CVT model	0
• WHEN Date, Frequencies	0
WHERE Road conditions	
HOW Operating conditions, Symptoms	P
Customer name MR/MS Model & Year VIN	
Trans. Model Engine Mileage	

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CVT: RE0F10B]

Symptoms	□ Vehicle does not move. (□ A	ny position	□ Particular position)
	□ No shift		
	Lock-up malfunction		
	\Box Shift shock or slip (\Box N \rightarrow D	$\Box N \rightarrow R$	□ Lock-up □ Any drive position)
	□ Noise or vibration		
	□ No pattern select		
	□ Others		
	()
Malfunction indicator lamp (MIL)	Continuously lit	□ Not lit	

DIAGNOSTIC WORKSHEET

1	□ Read the	e item on cautions concerning fail-safe and understand	the customer's complaint.	<u>TM-200</u>
	CVT fluid	d inspection, stall test and line pressure test		
		CVT fluid inspection		
		Leak (Repair leak location.) State		<u>TM-314</u>
2				
2		Stall test		
		Torque converter one-way clutch		
		Reverse brake Forward clutch	 Line pressure low Primary pulley 	<u>TM-226,</u> TM-228
		□ Steel belt	□ Secondary pulley	
		Line pressure inspection - Suspected part:		
3	□ Perform	self-diagnosis.		TM-190
		Enter checks for detected items.		
	□ Perform	road test.		<u>TM-230</u>
4	4-1.	Check before engine is started		<u>TM-230</u>
	4-2.	Check at idle		<u>TM-230</u>
	4-3.	Cruise test		<u>TM-231</u>
	□ After cor <u>"Symptom</u>	mpleting all rode test, check malfunction phenomena to Table".	repair or replace malfunctioning part. Refe	r to <u>TM-303,</u>
5	Drive ve	hicle to check that the malfunction phenomenon has be	en resolved.	
6	□ Erase th	e results of the self-diagnosis from the TCM and the EC	:M.	<u>TM-188,</u> <u>TM-190</u>

ADDITIONAL SERVICE WHEN REPLACING TCM

< BASIC INSPECTION >

ADDITIONAL SERVICE WHEN REPLACING TCM

Description

When replacing the TCM, perform the following work. For work procedure, refer to <u>TM-219, "Work Procedure"</u>.

TCM PROGRAMMING

• Since vehicle specifications are not yet written in a new TCM, it is necessary to write them with CONSULT. CAUTION:

When replacing TCM, save TCM data on CONSULT before removing TCM.

LOADING AND STORING 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 calibration data is correctly loaded and stored.

CAUTION:

When replacing TCM and transaxle assembly simultaneously, replace transaxle assembly first and then replace TCM.

Work Procedure

INFOID:000000012200910

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", "P1709" may be displayed. In this case, erase self-diagnosis result using CONSULT. After erasing self-diagnosis result, perform DTC "P1701", "P1709" reproduction procedure and check that malfunction is not detected. Refer to <u>TM-281, "DTC Logic"</u> (P1701), <u>TM-285, "DTC Logic"</u> (P1709).

1.CHECK NEW TCM PART NUMBER

Check new TCM part number to see whether it is blank TCM or not. NOTE:	
Part number of blank TCM is 310F6-XXXXX.	
• Check the part number when ordering TCM or with the one included in the label on the container box.	
Is new TCM a blank TCM?	J
YES >> GO TO 2.	
NO >> GO TO 3.	
2. SAVE TCM DATA (VEHICLE SPECIFICATIONS)	K
NOTE:	
Save necessary data stored in TCM in CONSULT according to the following instructions:	L
With CONSULT Turn ignition switch OFF.	
2. Connect all of disconnected connectors.	
3. Turn ignition switch ON.	M
4. Select "Re/programming, Configuration".	
5. Select "AT/CVT".	
NOTE: If "AT/CVT" is not displayed and TCM data cannot be saved on CONSULT, GO TO 3.	Ν
6. Select "Programming".	
7. Save TCM data on CONSULT according to the CONSULT display.	
	0
>> GO TO 3.	
3. REPLACE THE TCM	Ρ
1. Turn ignition switch OFF and wait for 10 seconds.	

2. Replace the TCM. Refer to TM-328, "Removal and Installation".

>> GO TO 4.

4.LOAD CALIBRATION DATA

[CVT: RE0F10B]

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ADDITIONAL SERVICE WHEN REPLACING TCM

< BASIC INSPECTION >

- 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 1 – 2 seconds after the selector lever is moved to the "P" position.

Does the shift position indicator display "P"?

YES >> GO TO 6. NO >> GO TO 5.

5. DETECT MALFUNCTIONING ITEM

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 4.

NO >> Repair or replace the malfunctioning parts.

6.STORE CALIBRATION DATA

1. Turn ignition switch OFF and wait for 5 seconds.

2. Turn ignition switch ON.

CAUTION:

Never start the engine.

Does the shift position indicator display "P" at the same time when turning ON the ignition switch?

- YES -1 (TCM is blank)>>GO TO 7.
- YES -2 (TCM is not blank)>>WORK END
- NO >> Check harness between battery and TCM harness connector terminal. Refer to <u>TM-281, "Diagno-</u> <u>sis Procedure"</u>.

7.WRITE TCM DATA (VEHICLE SPECIFICATIONS)

NOTE:

Write data saved in CONSULT into a new TCM according to the following instructions:

()With CONSULT

- 1. Select "Programming".
- 2. Perform programming according to the CONSULT display.

>> WORK END

ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE OR TRANSAXLE ASSEMBLY

< BASIC INSPECTION >

[CVT: RE0F10B]

ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE OR TRAN-SAXLE ASSEMBLY

Description

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When replacing the transaxle assembly/control valve, perform the following work. For work procedure, refer to .<u>TM-219, "Work Procedure"</u>.

ERASING, LOADING AND STORING 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. For this reason, after the transaxle assembly/control valve is replaced, it is necessary to erase the calibration data previously stored in TCM, to load new calibration data, and to store them.

ERASING OF 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/control valve is replaced, it is necessary to erase the CVT fluid degradation level data recorded by TCM.

Work Procedure

INFOID:000000012200912

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", "P1709" may be displayed. In this case, erase self-diagnosis result using CONSULT. After erasing self-diagnosis result, perform DTC "P1701", "P1709" reproduction procedure and check that malfunction is not detected. Refer to <u>TM-281, "DTC Logic"</u> (P1701), <u>TM-285, "DTC Logic"</u> (P1709).

1.PREPARATION BEFORE WORK

(I) With CONSULT	
1. Start the engine.	
CAUTION:	
Never drive the vehicle.	J
2. Select "Data Monitor" in "TRANSMISSION".	
3. Select "ATFTEMP COUNT".	
<u>Is "ATFTEMP COUNT" 47 [equivalent to 20°C (68°F)] or more?</u>	K
YES >> GO TO 2.	
NO >> 1. Warm up the transaxle assembly until "ATFTEMP COUNT" reaches "47" [equivalent to 2	20°C
(68°F)] or more.	
2. GO TO 2.	_
2.PERFORM TCM INITIALIZATION	
(P)With CONSULT	M
1. Turn ignition switch OFF.	
2. Turn ignition switch ON.	
CAUTION:	Ν
Never start the engine.	
3. Select "Self Diagnostic Results" in "TRANSMISSION".	
 Shift selector lever to "R" position. Depress slightly the accelerator pedal (Pedal angle: 2.0/8) while depressing the brake pedal. 	\bigcirc
6. Select "Erase" with step 5.	0
7. Release brake pedal and accelerator pedal.	
8. Select "CALIB DATA" in "TRANSMISSION".	P
9. Check that "CALIB DATA" value is as shown as in the following table.	Г
Item name Display value	

Item name	Display value
UNIT CLB ID 1	00
UNIT CLB ID 2	00
UNIT CLB ID 3	00

ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE OR TRANSAXLE ASSEMBLY

< BASIC INSPECTION >

[CVT: RE0F10B]

Item name	Display value
UNIT CLB ID 4	00
UNIT CLB ID 5	00
UNIT CLB ID 6	00

Is "CALIB DATA" value it?

YES >> GO TO 3.

NO >> GO TO 1.

3.LOAD CALIBRATION DATA

- Shift selector lever to "P" position. 1.
- Check that "P" is displayed on shift position indicator on combination meter. 2.
- NOTE:

It indicates approximately 1 - 2 seconds after shifting the selector lever to "P" position.

Does shift position indicator display "P"?

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

4.DETECT MALFUNCTIONING ITEM

Check the following items:

- Harness between the TCM and the ROM assembly inside the transaxle assembly is open or shorted.
- · Disconnected, loose, bent, collapsed, or otherwise abnormal connector housing terminals
- Power supply and ground of TCM. (Refer to TM-281, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 1.

NO >> Repair or replace the malfunctioning parts.

5. STORE CALIBRATION DATA

- 1. Turn ignition switch OFF and wait for 5 seconds.
- Turn ignition switch ON. 2.

Does the shift position indicator display "P" at the same time when turning ON the ignition switch?

- YES >> GO TO 6.
- NO >> Check harness between battery and TCM harness connector terminal. Refer to TM-281, "Diagnosis Procedure".

6.ERASE CVT FLUID DEGRADATION LEVEL DATA

(B) With CONSULT

- 1. Select "WORK SUPPORT" in "TRANSMISSION".
- Select "CONFORM CVTF DETERIORTN". 2.
- 3. Touch "Clear".

>> WORK END

CVT FLUID COOLER SYSTEM

< BASIC INSPECTION >

CVT FLUID COOLER SYSTEM

Cleaning

Whenever an automatic transaxle is repaired, overhauled, or replaced, the CVT fluid cooler mounted in the radiator must be inspected and cleaned.

Metal debris and friction material, if present, can be trapped or be deposited in the CVT fluid cooler. This debris can contaminate the newly serviced CVT or, in severe cases, can block or restrict the flow of CVT fluid. In either case, malfunction of the newly serviced CVT may occur.

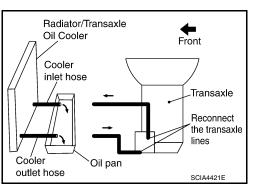
Debris, if present, may deposit as CVT fluid enters the cooler inlet. It will be necessary to back flush the cooler through the cooler outlet in order to flush out any built up debris.

CVT FLUID COOLER CLEANING PROCEDURE

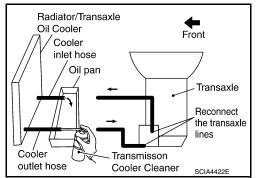
- 1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
- 2. Identify the inlet and outlet fluid cooler hoses.
- Disconnect the fluid cooler inlet and outlet rubber hoses from the steel cooler tubes or bypass valve.
 NOTE:

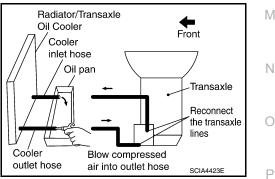
Replace the cooler hoses if rubber material from the hose remains on the tube fitting.

4. Allow any CVT fluid that remains in the cooler hoses to drain into the oil pan.



- Insert the extension adapter hose of a can of Transmission Cooler Cleaner into the cooler outlet hose.
 CAUTION:
 - Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
 - Spray Transmission Cooler Cleaner only with adequate ventilation.
 - Avoid contact with eyes and skin.
 - Never breath vapors or spray mist.
- 6. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
- 7. Insert the tip of an air gun into the end of the cooler outlet hose.
- 8. Wrap a shop rag around the air gun tip and end of the cooler outlet hose.
- Blow compressed air regulated to 5 to 9 kg/cm² (70 to 130 psi) through the cooler outlet hose for 10 seconds to force out any remaining CVT fluid.
- 10. Repeat steps 5 through 9 three additional times.
- 11. Position an oil pan under the banjo bolts that connect the CVT fluid cooler steel lines to the transaxle.
- 12. Remove the banjo bolts.
- 13. Flush each steel line from the cooler side back toward the transaxle by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
- 14. Blow compressed air regulated to 5 to 9 kg/cm² (70 to 130 psi) through each steel line from the cooler side back toward the transaxle for 10 seconds to force out any remaining CVT fluid.
- 15. Ensure all debris is removed from the steel cooler lines.
- 16. Ensure all debris is removed from the banjo bolts and fittings.





Revision: November 2015

TM-223

INFOID:000000012200913

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< BASIC INSPECTION >

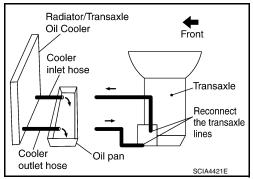
17. Perform "CVT FLUID COOLER DIAGNOSIS PROCEDURE".

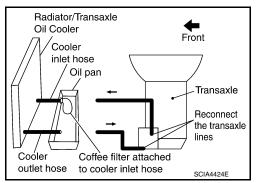
CVT FLUID COOLER DIAGNOSIS PROCEDURE

NOTE:

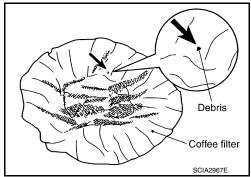
Insufficient cleaning of the cooler inlet hose exterior may lead to inaccurate debris identification.

- 1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
- 2. Clean the exterior and tip of the cooler inlet hose.
- Insert the extension adapter hose of a can of Transmission Cooler Cleaner into the cooler outlet hose.
 CAUTION:
 - Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
 - Spray Transmission Cooler Cleaner only with adequate ventilation.
 - Avoid contact with eyes and skin.
 - Never breath vapors or spray mist.
- Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
- 5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.





Radiator/Transaxle Oil Cooler Front Cooler inlet hose Coffee filter Transaxle Reconnect the transaxle lines Cooler Blow compressed outlet hose Oil pan air into outlet hose SCIA4425E



- 6. Insert the tip of an air gun into the end of the cooler outlet hose.
- 7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
- 8. Blow compressed air regulated to 5 to 9 kg/cm² (70 to 130 psi) through the cooler outlet hose to force any remaining CVT fluid into the coffee filter.
- 9. Remove the coffee filter from the end of the cooler inlet hose.
- 10. Perform "CVT FLUID COOLER INSPECTION PROCEDURE".

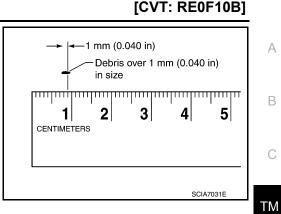
CVT FLUID COOLER INSPECTION PROCEDURE

- 1. Inspect the coffee filter for debris.
- a. If small metal debris less than 1 mm (0.040 in) in size or metal powder is found in the coffee filter, this is normal. If normal debris is found, the CVT fluid cooler/radiator can be reused and the procedure is ended.

CVT FLUID COOLER SYSTEM

< BASIC INSPECTION >

b. If one or more pieces of debris are found that are over 1 mm (0.040 in) in size and/or peeled clutch facing material is found in the coffee filter, the fluid cooler is not serviceable. The radiator/ fluid cooler must be replaced and the inspection procedure is ended.



CVT FLUID COOLER FINAL INSPECTION

After performing all procedures, ensure that all remaining oil is cleaned from all components.

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STALL TEST

Inspection and Judgment

INSPECTION

- 1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
- 2. Drive for about 10 minutes to warm up the vehicle so that the CVT fluid temperature is 50 to 80°C (122 to 176°F). Inspect the amount of CVT fluid. Replenish if necessary.

- 3. Securely engage the parking brake so that the tires do not turn.
- 4. Install a tachometer where it can be seen by driver during test. NOTE:

It is good practice to mark the point of specified engine rpm on indicator.

- Start engine, apply foot brake, and place selector lever in "D" 5. position.
- 6. While holding down the foot brake, gradually press down the accelerator pedal.
- 7. Quickly read off the stall speed, and then guickly 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-353, "Stall Speed".

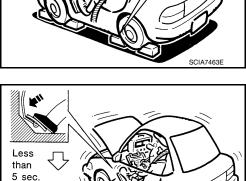
- Move the selector lever to the "N" position. 8.
- Cool down the CVT fluid. 9. **CAUTION:** Run the engine at idle for at least 1 minute.
- 10. Repeat steps 6 through 9 with selector lever in "R" position.

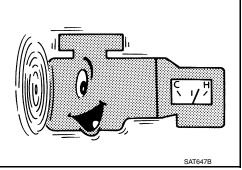
JUDGMENT





SAT514G





Parking brake pedal

[CVT: RE0F10B]

STALL TEST

< BASIC INSPECTION >

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	Selector le	ver position	Expected problem location	Α
	"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	 Line pressure low Primary pulley Secondary pulley Steel belt 	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

A : Line pressure test port

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.

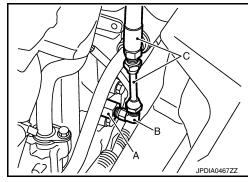
 After warming up CVT, remove the oil pressure detection plug and install the joint pipe adapter (SST: KV31103600) (A), adapter (SST: 25054000) (B), oil pressure gauge set (commercial service tool) (C).
 CAUTION:

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

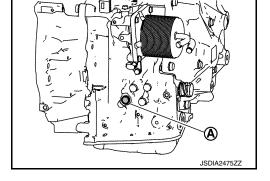
4. Securely engage the parking brake so that the tires do not turn.



SCIA7463E



Parking brake pedal



INFOID:000000012200915

LINE PRESSURE TEST

< BASIC INSPECTION >

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

- Keep the brake pedal pressed all the way down during measurement.
- When measuring the line pressure at the stall speed, refer to <u>TM-226, "Inspection and Judgment"</u>.

Line pressure

sure : Refer to <u>TM-353, "Line Pres-</u> sure".

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.

JUDGMENT

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



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< BASIC INSPECTION >

ROAD TEST

Description

DESCRIPTION

• The purpose of the test is to determine overall performance of CVT **ROAD T** and analyze causes of problems.

Before road test, familiarize yourself with all test procedures and

· Perform tests on all items until specified symptom is found. Trou-

bleshoot items the malfunctioning items after road test.

- The road test consists of the following three parts:
- 1. "Check Before Engine Is Started" <u>TM-230</u>.
- 2. "Check at Idle" TM-230.
- 3. "Cruise Test" <u>TM-231</u>.

items to check.

ROAD TEST PROCEDURE	
1. Check before engine is started.	
$\overline{\nabla}$	
2. Check at idle.	
$\overline{\Box}$	
3. Cruise test.	
SAT786A	

SAT496G

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.
 - 2. Perform self-diagnosis and note NG items. Refer to <u>TM-190, "CONSULT Function"</u>.
 - 3. Go to <u>TM-230, "Check at Idle"</u>.
- NO >> Stop "Road Test". Refer to <u>TM-303</u>, "Symptom Table".

Check at Idle

1.CHECK STARTING THE ENGINE

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

Is engine started?

YES >> GO TO 2.

NO >> Stop "Road Test". Refer to <u>TM-303</u>, "Symptom Table".

2. CHECK STARTING THE ENGINE

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

INFOID:000000012200918

INFOID:000000012200917

INFOID:000000012200916

< BASIC INSPECTION >	
Is engine started?	
YES >> Stop "Road Test". Refer to <u>TM-303, "Symptom Table"</u> . NO >> GO TO 3.	
3. CHECK "P" POSITION FUNCTION	
1. Move selector lever to "P" position.	
2. Turn ignition switch OFF.	
3. Release parking brake.	
 Push vehicle forward or backward. Apply parking brake. 	
Does vehicle move forward or backward?	
YES >> Refer to <u>TM-303, "Symptom Table"</u> . Continue "Road Test".	T
NO >> GO TO 4.	
4.CHECK "N" POSITION FUNCTION	
1. Start engine.	
 Move selector lever to "N" position. Release parking brake. 	
Does vehicle move forward or backward?	
YES >> Refer to <u>TM-303, "Symptom Table"</u> . Continue "Road Test".	
NO >> GO TO 5.	
5.CHECK SHIFT SHOCK	
1. Apply foot brake.	
2. Move selector lever to "R" position.	
<u>Is there large shock when changing from "N" to "R" position?</u> YES >> Refer to <u>TM-303, "Symptom Table"</u> . Continue "Road Test".	
NO $>>$ GO TO 6.	
6. CHECK "R" POSITION FUNCTION	
Release foot brake for several seconds.	
Does vehicle creep backward when foot brake is released?	
YES >> GO TO 7.	
NO >> Refer to <u>TM-303, "Symptom Table"</u> . Continue "Road Test".	
CHECK "D" POSITION FUNCTION	
Move selector lever to "D" position and check if vehicle creeps forward.	
Does vehicle creep forward in all positions?	
YES >> Go to <u>TM-231, "Cruise Test"</u> . NO >> Stop "Road Test". Refer to <u>TM-303, "Symptom Table"</u> .	
Cruise Test	INFOID:000000012200919
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 ope	erating temperature.
CVT fluid operating temperature: 50 – 80°C (122 – 176°F)	
 Park vehicle on flat surface. Move selector lever to "P" position. 	
4. Start engine.	
5. Move selector lever to "D" position.	

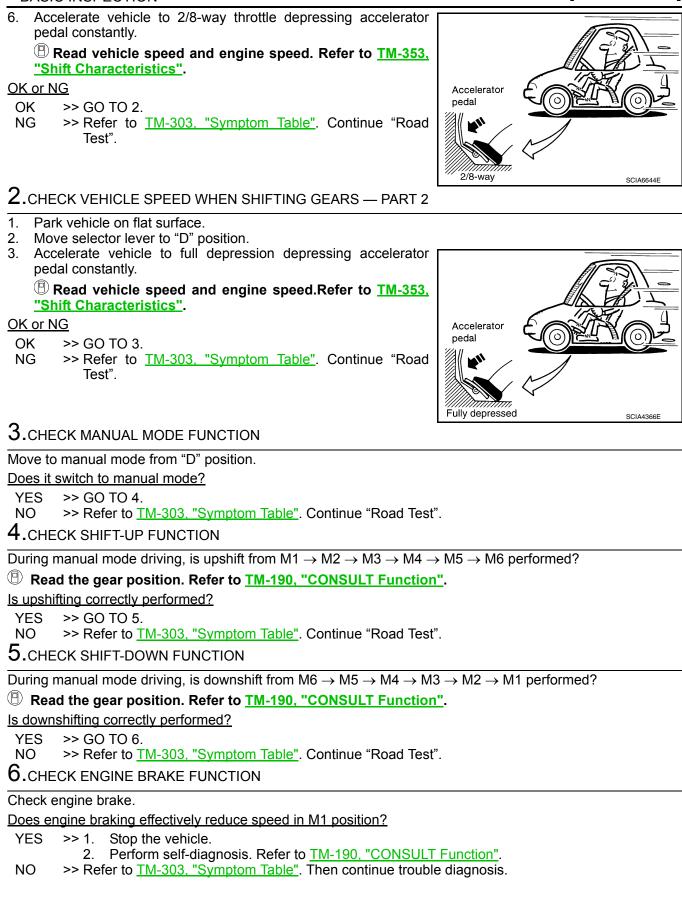
5. Move selector lever to "D" position.

< BASIC INSPECTION >

ROAD TEST

< BASIC INSPECTION >

[CVT: RE0F10B]



< BASIC INSPECTION >

CVT POSITION

Inspection and Adjustment

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 ТΜ the positions. Check that the actual position of the selector lever matches the position shown by the shift position indicator and the manual lever on the transaxle.
- 5. The method of operating the selector lever to individual positions correctly should be as shown.
- 6. When selector button is pressed in "P", "R" or "N" position without applying forward/backward force to selector lever, check button operation for sticking.
- 7. Confirm the back-up lamps illuminate only when selector lever is placed in the "R" position. Confirm the back-up lamps do not illuminate when the selector lever is pushed toward the "R" position when in the "P" or "N" position.
- 8. Confirm the engine can only be started with the selector lever in the "P" and "N" positions.
- 9. Make sure transaxle is locked completely in "P" position.
- 10. When selector lever is set to manual shift gate, make sure that manual mode is displayed on combination meter.

Shift selector lever to "+" and "-" sides, and check that set shift position changes.

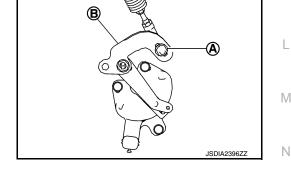
ADJUSTMENT

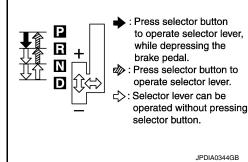
- 1. Place selector lever in "P" position. CAUTION: Turn wheels more than 1/4 rotations and apply the park lock.
- 2. Loosen nut (A) and place manual lever (B) in "P" position. CAUTION:

Never apply any force to the manual lever.

3. Tighten nut. Refer to TM-319, "Removal and Installation". **CAUTION:**

Fix the manual lever when tightening.





INFOID:000000012200920

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< BASIC INSPECTION >

CVT FLUID

Changing

CAUTION:

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

- 1. Remove drain plug from oil pan.
- 2. Remove drain plug gasket from drain plug.
- Install drain plug gasket to drain plug.
 CAUTION:

Never reuse drain plug gasket.

4. Install drain plug to oil pan.

Drain plug – tightening torque : Refer to <u>TM-330, "Exploded View"</u>.

5. Fill CVT fluid from CVT fluid charging pipe to the specified level.

Recommended fluid and fluid capacity : Refer to MA-11, "Fluids and Lubricants".

CAUTION:

- Use only recommended CVT fluid. Never mix with other fluid.
- Using CVT fluid other than recommended CVT fluid 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 after changing CVT fluid.
- 6. With the engine warmed up, drive the vehicle in an urban area. **NOTE:**

When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to 80°C (122 to 176°F).

- 7. Check CVT fluid level and condition.
- 8. Repeat steps 1 to 5 if CVT fluid has been contaminated.
- 9. Select "Data Monitor" in "TRANSMISSION" using CONSULT.
- 10. Select "CONFORM CVTF DETERIORTN".
- 11. Select "Erase".

[CVT: RE0F10B]

DTC/CIRCUIT DIAGNOSIS U0100 LOST COMMUNICATION (ECM A)

DTC Logic

DTC DETECTION LOGIC

U0100 Lost Communication With ECM/PCM A When the ignition switch is ON, TCM is unable to receive the CAN communications signal from ECM continuously for 2 seconds or more. • ECM DTC CONFIRMATION PROCEDURE 1. PREPARATION BEFORE WORK • CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and walleast 10 seconds, then perform the next test. >> GO TO 2. 2. PERFORM DTC CONFIRMATION PROCEDURE 1. Start the engine and wait for at least 5 seconds.	or
 PREPARATION BEFORE WORK f another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wa east 10 seconds, then perform the next test. > GO TO 2. PERFORM DTC CONFIRMATION PROCEDURE 1. Start the engine and wait for at least 5 seconds. 	
f another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wa east 10 seconds, then perform the next test. >> GO TO 2. 2.PERFORM DTC CONFIRMATION PROCEDURE . Start the engine and wait for at least 5 seconds.	
east 10 seconds, then perform the next test. >> GO TO 2. 2.PERFORM DTC CONFIRMATION PROCEDURE 1. Start the engine and wait for at least 5 seconds.	
 >> GO TO 2. 2.PERFORM DTC CONFIRMATION PROCEDURE 1. Start the engine and wait for at least 5 seconds. 	t for at
2.PERFORM DTC CONFIRMATION PROCEDURE 1. Start the engine and wait for at least 5 seconds.	
1. Start the engine and wait for at least 5 seconds.	
/ ('hock the first trin [)]('	
 Check the first trip DTC. <u>s "U0100" detected?</u> 	
YES >> Go to TM-235, "Diagnosis Procedure".	
NO >> INSPECTION END	
Diagnosis Procedure	
For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".	00012200923

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[CVT: RE0F10B]

INFOID:000000012200922

U1000 CAN COMM CIRCUIT

Description

INFOID:000000012200924

[CVT: RE0F10B]

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:000000012200925

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

- 1. Start the engine and wait for at least 5 seconds.
- 2. Run engine for at least 2 consecutive seconds at idle speed.
- 3. Select "Self Diagnostic Results" in "TRANSMISSION".

Is "U1000" detected?

- YES >> Go to TM-236, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000012200926

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

< DTC/CIRCUIT DIAGNOSIS >

U1010 CONTROL UNIT (CAN)

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

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
U1010	TCM Communication Mal- function	When detecting error during the initial diagnosis of CAN controller to TCM.	ТСМ
отс со	NFIRMATION PROCED	DURE	
1.PREP.	ARATION BEFORE WOR	K	
		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		
 Start Run Select <	ct "Self Diagnostic Results ST e procedure "With CONSL <u>)" detected?</u> >> Go to <u>TM-237, "Diagno</u> >> INSPECTION END	ILT".	
	sis Procedure		INFOID:000000012200929
	K INTERMITTENT INCID		
	GI-45, "Intermittent Incider	<u>t"</u> .	
YES	<u>pection result normal?</u> >> Replace the TCM. Refe >> Repair or replace dama	er to <u>TM-328, "Removal and Installation</u> aged parts.	<u>.</u>

INFOID:000000012200927

INFOID:000000012200928

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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 communication by converting the data to a signal.

DTC Logic

INFOID:000000012200931

INFOID:000000012200930

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0703	Brake Switch B Circuit	 TCM detects malfunction in CAN communication between BCM. TCM detects a state that ON/OFF of stop lamp switch signal is not switched. 	 Harness or connectors (Stop lamp switch, and BCM circuit are open or shorted.) (CAN communication line is open or shorted.) Stop lamp switch BCM

DTC CONFIRMATION PROCEDURE CAUTION:

Always drive vehicle at a safe 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. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following condition for 10 seconds or more.

VEHICLE SPEED : 30 km/h (19 MPH)

- 6. Stop the vehicle.
- 7. Select "Self Diagnostic Results" in "TRANSMISSION".

Is "P0703" detected?

- YES >> Go to TM-238, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000012200932

1.CHECK STOP LAMP SWITCH CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch connector.
- 3. Check voltage between stop lamp switch harness connector terminal and ground.

	+			
Stop lan	np switch	_	Voltage	
Connector	Terminal			
E102	1	Ground	Battery voltage	

Is the inspection result normal?

P0703 BRAKE SWITCH B

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

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YES	>> GO 10 2.
NO	>> GO TO 6.

 $2. {\sf CHECK} \ {\sf CIRCUIT} \ {\sf BETWEEN} \ {\sf STOP} \ {\sf LAMP} \ {\sf SWITCH} \ {\sf AND} \ {\sf BCM} \ ({\sf PART} \ 1)$

1. Disconnect BCM connector.

Check continuity between stop lamp switch harness connector terminal and BCM harness connector terminal.

YES >> G NO >> R	Terminal 2 on result norn	Connector M68	Terminal	Continuity	
s the inspecti YES >> G NO >> R		M68			
YES >> G NO >> R	on result norn		9	Existed	
NO >> R		nal?			
	O TO 3.				
		ce damaged p			
				H AND BCM (F	
Check short c lector termina		ss between sto	op lamp switc	h harness con	nector terminal 2 and BCM harness con-
	on result norn	nal?			
	0 TO 4.				
	epair or repla	ce damaged p	arts.		
CHECK IN	STALLATION	POSITION O	STOP LAM	P SWITCH	
Check stop la	mp switch mo	unting positior	. Refer to <u>BF</u>	R-9, "Inspection	and Adjustment".
s the inspecti	<u>on result norn</u>	nal?			
	O TO 5.				
-	ojust stop lam FOP LAMP SV	p switch mour	iting position.		
-	-		<u>"Componen</u>	t Inspection (S	op Lamp Switch)".
	<u>on result norn</u> beck intermitt		ofor to CL15	<u>, "Intermittent I</u>	ocident"
		ce stop lamp s			<u>icident</u> .
b .detect N	IALFUNCTIO	NING ITEM			
Check the foll					
					np switch connector terminal 1. Refer to
Battery	ing Diagram -	BATTERY PC	WER SUPP	<u>_T -</u> .	
10A fuse [N	o.38, located i	n fuse block (I/B)]. Refer to	9 <u>PG-80, "Fuse</u>	Connector and Terminal Arrangement".
	<u>on result norn</u>				
		ent incident. R ce damaged p		, "Intermittent I	ncident".
	• •	• •			
Jomponen	tinspectio	n (Stop Lar	np Switch		INFOID:000000012200933
.CHECK ST	OP LAMP SV	VITCH			
Check continu	uity between s	top lamp switc	h connector	terminals.	
	-	· •			

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

Is the inspection result normal?

YES >> INSPECTION END

P0703 BRAKE SWITCH B

< DTC/CIRCUIT DIAGNOSIS >

NO >> Replace the stop lamp switch. Refer to <u>BR-20, "Exploded View"</u>.

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

P0705 TRANSMISSION RANGE SENSOR A

DTC Logic

[CVT: RE0F10B]

INFOID:000000012200934

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DTC	Trouble diagnosis nar	me	DTC detection condition	Possible causes
P0705	Transmission Range Ser A Circuit (PRNDL Input)		ange signal is not input to TCM. or more position signals are input	 Harness or connectors (Transmission range switches circuit is open or shorted.) Transmission range switch
ссо	NFIRMATION PRO	CEDURE		
UTIO		o opood		
-	Irive vehicle at a saf ARATION BEFORE W	-		
	econds, then perform			e, turn ignition switch OFF and wait for a
	······			
:	>> GO TO 2.			
PREP	ARATION BEFORE W	VORK (PA	RT 2)	
form f	unction check of com	bination m	neter. Refer to <u>MWI-21, "Or</u>	Board Diagnosis Function".
	>> GO TO 3.			
	ORM FUNCTION CH			
PERF		ECK		
TE:				
TE: C can	not be identified throug		pection.	
TE: C can Turn Chec	not be identified throug ignition switch ON. k that the shift positio	gh this ins	or on the combination meter	er is displayed correctly when the selecto
TE: C cani Turn Chec lever	not be identified throu ignition switch ON. k that the shift position is shifted to each pos	gh this ins	or on the combination meter	er is displayed correctly when the selecto
TE: C can Turn Chec lever	not be identified throug ignition switch ON. k that the shift positic is shifted to each pos eck result normal?	gh this ins on indicato sition ("P",	or on the combination mete "R", "N", "D").	er is displayed correctly when the selecto
TE: C can Turn Chec lever <u>he che</u> ES	not be identified throu ignition switch ON. k that the shift position is shifted to each pos	gh this ins on indicato sition ("P", agnosis Pi	or on the combination mete "R", "N", "D").	er is displayed correctly when the selecto
TE: C can Turn Chec lever <u>ne che</u> S	not be identified throug ignition switch ON. Ik that the shift position is shifted to each pos eck result normal? >> Go to <u>TM-241, "Dia</u> >> INSPECTION END	gh this ins on indicato sition ("P", agnosis Pi	or on the combination mete "R", "N", "D").	er is displayed correctly when the selecto
TE: C can Turn Chec lever <u>he che</u> S S S S	not be identified throug ignition switch ON. It that the shift position is shifted to each post eck result normal? >> Go to <u>TM-241, "Dia</u> >> INSPECTION END sis Procedure	gh this ins on indicato sition ("P", agnosis Pr D	or on the combination mete "R", "N", "D"). rocedure".	
TE: C can Turn Chec lever <u>he che</u> ES S agno CHEC	not be identified throug ignition switch ON. It that the shift position is shifted to each postect eck result normal? >> Go to <u>TM-241, "Dia</u> >> INSPECTION END sis Procedure K TRANSMISSION R	gh this ins on indicato sition ("P", agnosis Pr D	or on the combination mete "R", "N", "D").	
TE: C can Turn Chec lever <u>he che</u> ES S agno CHEC Turn	not be identified throug ignition switch ON. It that the shift position is shifted to each post eck result normal? >> Go to <u>TM-241, "Dia</u> >> INSPECTION END sis Procedure K TRANSMISSION R ignition switch OFF.	gh this ins on indicato sition ("P", agnosis Pr D RANGE SV	or on the combination mete "R", "N", "D"). rocedure". VITCH POWER CIRCUIT	
TE: C can Turn Chec lever <u>ne che</u> S S S S S CHEC Turn Disco	not be identified throug ignition switch ON. It that the shift position is shifted to each postect eck result normal? >> Go to <u>TM-241, "Dia</u> >> INSPECTION END sis Procedure K TRANSMISSION R	gh this ins on indicato sition ("P", agnosis Pr D RANGE SV	or on the combination mete "R", "N", "D"). rocedure". VITCH POWER CIRCUIT	
TE: C can Turn Chec lever <u>he che</u> S S agno CHEC Turn Disco Turn	not be identified throug ignition switch ON. ik that the shift position is shifted to each position is shifted to each position eck result normal? >> Go to <u>TM-241, "Dia</u> >> INSPECTION END sis Procedure K TRANSMISSION R ignition switch OFF. onnect transmission ra- ignition switch ON.	gh this ins on indicato sition ("P", agnosis Pr D RANGE SV ange switc	or on the combination mete "R", "N", "D"). rocedure". VITCH POWER CIRCUIT	
TE: C can Turn Chec lever <u>ne che</u> S S S S S CHEC Turn Disco Turn	not be identified throug ignition switch ON. k that the shift position is shifted to each position is shifted to each position ck result normal? >> Go to <u>TM-241, "Dia</u> >> INSPECTION END sis Procedure K TRANSMISSION R ignition switch OFF. connect transmission ra- ignition switch ON. k voltage between tra	gh this ins on indicato sition ("P", agnosis Pr D RANGE SV ange switc	or on the combination mete "R", "N", "D"). rocedure". VITCH POWER CIRCUIT	INFOID:0000000122005
TE: C can Turn Chec lever <u>ne che</u> S S S Agno CHEC Turn Disco Turn Chec	not be identified throug ignition switch ON. k that the shift position is shifted to each position is shifted to each position eck result normal? >> Go to <u>TM-241, "Dia</u> >> INSPECTION END sis Procedure K TRANSMISSION R ignition switch OFF. onnect transmission ration ignition switch ON. k voltage between tra	gh this ins on indicato sition ("P", agnosis Pr D RANGE SV ange switc	or on the combination mete "R", "N", "D"). rocedure". VITCH POWER CIRCUIT ch connector. n range switch harness con	INFOID:0000000122005
TE: C can Turn Chec lever <u>ne che</u> S S agno CHEC Turn Disco Turn Chec	not be identified throug ignition switch ON. k that the shift positic is shifted to each pos eck result normal? >> Go to <u>TM-241, "Dia</u> >> INSPECTION END sis Procedure K TRANSMISSION R ignition switch OFF. onnect transmission ra ignition switch ON. k voltage between tra	gh this ins on indicato sition ("P", agnosis Pr D RANGE SV ange switc	or on the combination mete "R", "N", "D"). rocedure". VITCH POWER CIRCUIT ch connector. n range switch harness con	INFOID:0000000122005
TE: C can Turn Chec lever <u>he che</u> S S CHEC Turn CHEC Turn Chec	not be identified throug ignition switch ON. k that the shift positic is shifted to each pos eck result normal? >> Go to <u>TM-241, "Dia</u> >> INSPECTION END sis Procedure K TRANSMISSION R ignition switch OFF. onnect transmission ra ignition switch ON. k voltage between tra	gh this ins on indicato sition ("P", agnosis Pr D RANGE SV ange switc	or on the combination mete "R", "N", "D"). rocedure". VITCH POWER CIRCUIT th connector. n range switch harness con Condition Vo	INFOID:0000000122005

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

2. CHECK HARNESS BETWEEN TCM AND TRANSMISSION RANGE SWITCH (PART 1)

1. Turn ignition switch OFF.

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

3. Check continuity between TCM harness connector terminals and transmission range switch harness connector terminals.

TCM Transmis		Transmissior	n range switch	Continuity
Connector	Terminal	Connector	Terminal	Continuity
	1	F27	5	Existed
F81	2		6	
FOI	3		7	Existed
	11	•	4	

Is the check result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3. CHECK HARNESS BETWEEN TCM AND TRANSMISSION RANGE SWITCH (PART 2)

Check continuity between TCM harness connector terminals and ground.

T	ТСМ		Continuity	
Connector	Terminal		Continuity	
	1			
F81	2	Ground	Not existed	
FOI	3	Ground		
	11	•		

Is the check result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4.CHECK TRANSMISSION RANGE SWITCH MOUNTING POSITION

1. Remove control cable from manual lever. Refer to TM-319, "Exploded View".

Check transmission range switch mounting position. Refer to <u>TM-326</u>, "Inspection and Adjustment".

Is the check result normal?

YES >> GO TO 5.

NO >> Adjust transmission range switch mounting position.

5.CHECK TRANSMISSION RANGE SWITCH

- 1. Install control cable to manual lever. Refer to <u>TM-319</u>, "Exploded View".
- Check transmission range switch. Refer to <u>TM-243</u>. Component Inspection (Transmission Range <u>Switch)</u>".

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace transmission range switch.

 $\mathbf{6}$. CHECK HARNESS BETWEEN TRANSMISSION RANGE SWITCH AND IPDM E/R

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R connector.
- 3. Check continuity between transmission range switch harness connector terminal and IPDM E/R harness connector terminal.

IPDM E/R		Transmissior	Continuity	
Connector	Connector Terminal		Terminal	Continuity
E15	57	F27	3	Existed

Is the check result normal?

YES >> GO TO 7.

[CVT: RE0F10B]

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS > [CVT: RE0F10)B]
NO >> Repair or replace damaged parts.	
7.DETECT MALFUNCTIONING ITEM	A
 Check the following items: Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to <u>PG-43</u>, "Wiring E gram - IGNITION POWER SUPPLY -". Short circuit in harness between IPDM E/R harness connector terminal 57 and transmission range switch harness connector terminal 5. 10A fuse (No.55, IPDM E/R). Refer to <u>PG-82</u>, "Fuse, Connector and Terminal Arrangement". IPDM E/R 	В
<u>Is the check result normal?</u> YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u> . NO >> Repair or replace damaged parts.	ТМ
Component Inspection (Transmission Range Switch)	200936

1.CHECK TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch connector terminals.

Transmission range switch	Condition	Continuity
Terminal	Condition	Continuity
1-2	Manual lever: "P" and "N" position	Existed
1-2	Other than the above	Not existed
3 – 4	Manual lever: "P" position	Existed
5-4	Other than the above	Not existed
3 – 5	Manual lever: "R" position	Existed
5-5	Other than the above	Not existed
3 – 6	Manual lever: "N" position	Existed
5-0	Other than the above	Not existed
3-7	Manual lever: "D" position	Existed
5 - 7	Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace transmission range switch. Refer to <u>TM-326, "Removal and Installation"</u>.

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< DTC/CIRCUIT DIAGNOSIS >

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

INFOID:000000012200937

[CVT: RE0F10B]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
	 Detected value from CVT fluid temperature sensor received by TCM is less than 20°C (68°F) for a certain length of time. CVT Fluid temperature sensor value that TCM receives is more than 180°C (356°F). 	 Harness or connectors (Sensor circuit is open or shorted.) CVT fluid temperature sensor 	
P0710	Transmission Fluid Tempera- ture Sensor A Circuit	A/T fluid temperature does not rise to the specified temperature after driving for a certain period of time with the TCM-received fluid temperature sensor value between -40° C (- 40° F) and 9° C (48.2° F).	 Harness or connectors (Sensor circuit is stuck.) A/T fluid temperature sensor
		 The following conditions are maintained for 5 minutes after the completion of engine diagnosis P0111, P0116, and P0196: A/T fluid temperature – Engine coolant temperature > 53°C (127°F) A/T fluid temperature – Engine coolant temperature < -27°C (-16.6°F) 	A/T fluid temperature sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe 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 (PART 1)

With CONSULT

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

Vehicle speed : 10 km/h (7 MPH) or more

- 3. Stop the vehicle.
- 4. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT".

Is "P0710" detected?

YES >> Go to TM-245, "Diagnosis Procedure".

- 3. CHECK CVT FLUID TEMPERATURE SENSOR
- 1. Turn ignition switch OFF.
- 2. Disconnect CVT unit connector.
- 3. Check resistance between CVT unit connector terminals.

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

CVT	unit				А
Connector	Terminal	Condition	Resistance		
		CVT fluid temperature: 20°C (68°F)	Approx. 6.83 – 6.29 kΩ		_
F209	17 – 19	CVT fluid temperature: 50°C (122°F)	Approx. 2.25 – 2.10 kΩ		В
		CVT fluid temperature: 80°C (176°F)	Approx. 0.90 – 0.85 kΩ		
Is the inspection	n result normal	,			С
	NSULT)>>GO				
	5T)>>GÓ TO 5.				
		ction of the CVT fluid temperature at and Installation".	are sensor. Replace the con	trol valve. Refer to	ТМ
4.CONFIRM C					
		WPERATORE			Е
With CONSU		and each the engine			
	n switch OFF a	and cool the engine.			
CAUTION:					F
	t the engine.	FRANSMISSION".			
	TEMP COUN				C
Is the value of "	ATFTEMP CO	UNT" 32 or more?			G
	SPECTION EN				
_) TO 5.				Н
5.CHECK DTO	C DETECTION	(PART 2)			
	JLT				
1. Start the er	ngine and wait	for at least 4 minutes.			
2. Drive the v	ehicle and mai	ntain the following conditions for	at least 10 minutes or more.		
Selector le	ever	: "D" position			J
Accelerate	or pedal position	: 1.0/8 or more			
Vehicle sp	beed	: 10 km/h (7 MPH) or more			
3. Stop the ve					K
_	f Diagnostic Re	esults" in "TRANSMISSION".			
With GST 1. Turn ignitio	n switch OFF a	and cool the engine.			L
		for at least 4 minutes.			
3. Drive the v	ehicle and mai	ntain the following conditions for	at least 10 minutes or more.		
Selector l	ever	: "D" position			\mathbb{N}
	or pedal position	: 1.0/8 or more			
Vehicle sp		: 10 km/h (7 MPH) or more			Ν
4. Stop the ve	hicle.				IN
5. Check the					
<u>ls "P0710" dete</u>	cted?				0
		iagnosis Procedure".			
	SPECTION EN	D			_
Diagnosis P	rocedure			INFOID:000000012200938	Ρ
1 .CHECK CV	T FLUID TEMP	ERATURE SENSOR			

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

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

CV	Γunit	Condition	Resistance	
Connector	Terminal	Condition	Resistance	
		CVT fluid temperature: 20°C (68°F)	Approx. 6.83 – 6.29 kΩ	
F209	17 – 19	CVT fluid temperature: 50°C (122°F)	Approx. 2.25 – 2.10 kΩ	
		CVT fluid temperature: 80°C (176°F)	Approx. 0.90 – 0.85 kΩ	

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

2. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (CVT FLUID TEMPERATURE SENSOR) (PART 1)

1. Disconnect the TCM connector.

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

Т	СМ	CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F81	13	F51	17	Existed
	25	151	19	LAISIEU

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (CVT FLUID TEMPERATURE SENSOR) (PART 2)

Check continuity between TCM harness connector terminals and ground.

ТСМ		Ground	Continuity	
Connector	Terminal	Crodina	Continuity	
F81	13	Ground	Not existed	
101	25	Ground	NOT EXISTED	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace damaged parts.

4.CHECK TERMINAL CORD ASSEMBLY (PART 1)

- 1. Remove terminal cord assembly. Refer to TM-330, "Exploded View".
- 2. Check continuity between CVT unit harness connector terminals and control valve harness connector terminals.

CV	Γ unit	Control valve		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F209	17	F208	22	Existed
F209	19	F200	21	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

5.CHECK TERMINAL CORD ASSEMBLY (PART 2)

Check terminal cord assembly harness cladding for damage.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

< DTC/CIRCUIT DIAGNOSIS >

6. CHECK DTC (TCM)

With CONSULT

- 1. Perform "DTC CONFIRMATION PROCEDURE". Refer to TM-244, "DTC Logic".
- 2. Select "Self Diagnostic Results" in "TRANSMISSION".

Is "P0710" detected?

- YES-1 ("P0710" only)>>There is a malfunction of the CVT fluid temperature sensor. Replace the control valve. Refer to <u>TM-330</u>, "<u>Removal and Installation</u>".
- YES-2 ("P0710" and other DTC)>>Replace the transaxle assembly. Refer to <u>TM-347, "Removal and Installa-</u> tion".
- NO >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

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< DTC/CIRCUIT DIAGNOSIS >

P0715 INPUT SPEED SENSOR A

DTC Logic

INFOID:000000012200939

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0715	Input/Turbine Speed Sensor A Circuit	 Primary speed signal is not input to TCM Primary pulley speed sensor value is less than 150 rpm while secondary pulley speed is 500 rpm or more 	 Harness or connectors (Sensor circuit is open or shorted.) Primary speed sensor

DTC CONFIRMATION PROCEDURE

Always drive vehicle at a safe speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "SEC SPEED" and "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following conditions for 5 seconds or more.

SEC SPEED: 500 rpm or moreVEHICLE SPEED: 10 km/h (7 MPH) or more

- 6. Stop the vehicle.
- 7. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT".

Is "P0715" detected?

- YES >> Go to TM-248, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000012200940

1. CHECK PRIMARY SPEED SENSOR POWER SUPPLY CIRCUIT

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

	+			
Primary sp	Primary speed sensor		Voltage	
Connector	Terminal			
F55	3	Ground	10 V – 16 V	

Is the inspection result normal?

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

P0715 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

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2. CHECK TCM INPUT SIGNAL

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

	TCM				C
Connector	+	-	Condition	Frequency (Approx.)	
Connector	Terr	minal			ТМ
				720 Hz	
F81	33	25	 Selector lever: "M¹" position Vehicle speed: 20 km/h (12 MPH) 		E
			venicle speed. 20 km/n (12 MPH)	→ +2 ms	F

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to <u>GI-45</u>, "Intermittent Incident".
- NO >> GO TO 3.

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

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

T	TCM		Primary speed sensor		
Connector	Terminal	Connector	Terminal	Continuity	
F81	25	F55	1	Existed	
FOI	33	F33	2	Existed	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

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

Check continuity between TCM harness connector terminals and ground.

T	TCM		Continuity
Connector	Terminal		Continuity
F81	25	Ground	Not existed
FOI	33	Giouna	Not existed

Is the inspection result normal?

YES >> Replace primary speed sensor. Refer to <u>TM-337</u>, "Removal and Installation".

NO >> Repair or replace damaged parts.

5. CHECK CIRCUIT BETWEEN PRIMARY SPEED SENSOR AND IPDM E/R

1. Turn ignition switch OFF.

2. Disconnect IPDM E/R connector.

 Check continuity between primary speed sensor harness connector terminal and IPDM E/R harness connector terminal.

P0715 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

Primary speed sensor		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F55	3	E15	57	Existed

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

6.DETECT MALFUNCTIONING ITEM

Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to <u>PG-43</u>, "Wiring Diagram - IGNITION POWER SUPPLY -".
- Short circuit in harness between IPDM E/R harness connector terminal 57 and primary speed sensor harness connector terminal 3.

• 10A fuse (No.55, located in IPDM E/R). Refer to PG-82, "Fuse, Connector and Terminal Arrangement".

IPDM E/R

Is the check result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace damaged parts.

< DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

P0720 OUTPUT SPEED SENSOR

DTC Logic

INFOID:000000012200941

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В

DTC	Trouble diagnosis nar	ne	DTC detection condition	Possible causes
P0720	Output Speed Sensor Ci	rcuit • Secor less ti	ndary speed sensor signal is not input M. ndary pulley speed sensor value is han 150 rpm while primary pulley d is 1,000 rpm or more.	 Harness or connectors (Sensor circuit is open or shorted.) Output speed sensor
DTC CO	NFIRMATION PRO	CEDURE		
CAUTION				
	I rive vehicle at a saf ARATION BEFORE W	-		
			NIPE" occurs just before turn	ignition switch OFF and wait for at
	econds, then perform			
\sim	>> GO TO 2.			
_	K DTC DETECTION			
With C	ONSULT the engine.			
2. Selec	t "Data Monitor" in "T			
	t "PRI SPEED" and " the vehicle.	VEHICLE SF	PEED".	
	tain the following cond	ditions for 5 s	seconds or more.	
PR		: 1.000) rpm or more	
	HICLE SPEED		m/h (7 MPH) or more	
	the vehicle.			
7. Selec	t "Self Diagnostic Re ∣ ST	suits" in "TRA	ANSMISSION".	
9	e procedure "With CO	NSULT".		
	" detected?			
YES >	>> Go to <u>TM-251, "Dia</u> >> INSPECTION ENE	agnosis Proc)	<u>edure"</u> .	
Diagnos	sis Procedure			INFOID:000000012200942
				IN 012.00000012200342
		EED SENSO	R POWER SUPPLY CIRCUIT	
	ignition switch OFF. Innect secondary spe	ed sensor co	nnector	
3. Turn	ignition switch ON.			
4. Chec	k voltage between se	condary spe	ed sensor harness connector te	erminal and ground.
	+			
Secor	idary speed sensor	_	Voltage	
Connec				

Is the inspection result normal?

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

< DTC/CIRCUIT DIAGNOSIS >

2. CHECK TCM INPUT SIGNAL

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

ТСМ					
Connector	+	_	Condition	Frequency (Approx.)	
Connector	Terminal				
F81	34	25	 Selector lever: "M¹" position Vehicle speed: 20 km/h (12 MPH) 	480 Hz (V) 15 10 5 0 ++2 ms JPDIA0901ZZ	

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".
- NO >> GO TO 3.

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

- 1. Turn ignition switch OFF.
- 2. Disconnect TCM connector and secondary speed sensor connector.
- 3. Check continuity between TCM harness connector terminals and secondary speed sensor harness connector terminals.

ТСМ		Secondary speed sensor		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F81	25	F19	1	Existed
	34	119	2	LAISIEU

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

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

Check continuity between TCM harness connector terminals and ground.

т	СМ		Continuity	
Connector	Terminal			
F81	25	Ground	Not existed	
FOI	34	Ground	NOL EXISTED	

Is the inspection result normal?

YES >> Replace secondary speed sensor. Refer to <u>TM-337, "Removal and Installation"</u>.

NO >> Repair or replace damaged parts.

5. CHECK CIRCUIT BETWEEN SECONDARY SPEED SENSOR AND IPDM E/R

1. Turn ignition switch OFF.

- 2. Disconnect IPDM E/R connector.
- 3. Check continuity between secondary speed sensor harness connector terminal and IPDM E/R harness connector terminal.

TM-252

P0720 OUTPUT SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

Secondary s	peed sensor	IPDM	I F/R		-	А
Connector	Terminal	Connector	Terminal	Continuity		
F19	3	E15	57	Existed	_	
Is the inspection	on result norma	al?		1	-	В
		e damaged par ING ITEM	ts.			С
			ween ignition	switch and IP	PDM E/R. Refer to <u>PG-43, "Wiring Dia-</u>	ТМ
 Short circuit i ness connect 	n harness betv tor terminal 3.	ween IPDM E/F			al 57 and secondary speed sensor har- ector and Terminal Arrangement".	E
	eck intermitte	nt incident. Ref e damaged par		ntermittent Inc	<u>sident"</u> .	F
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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:000000012200944

INFOID:000000012200943

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0725	Engine Speed Input Circuit	 TCM detects a malfunction of CAN communication between ECM. A DTC is set if the engine speed (CAN communication) is less than 450 rpm when the primary pulley speed is 1,000 rpm or more. 	Harness or connectors (The ECM to the TCM circuit is open or

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "PRI SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following condition for 10 seconds or more.

PRI SPEED

: 1,000 rpm or more

6. Stop the vehicle.

7. Select "Self Diagnostic Results in "TRANSMISSION".

Is "P0725" detected?

YES >> Go to <u>TM-254, "Diagnosis Procedure"</u>. NO >> INSPECTION END

Diagnosis Procedure

1. CHECK DTC (ECM)

With CONSULT

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

Is any DTC detected?

- YES >> Check DTC detected item. Refer to EC-115, "DTC Index".
- NO >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

INFOID:000000012200945

[CVT: RE0F10B]

P0740 TORQUE CONVERTER

DTC Logic

INFOID:000000012200946

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DTC	Trouble diagnosis name	DTC detection condition	Possible causes		
P0740	P0740Torque Converter Clutch Circuit/Open• TCM monitor voltage value for torque converter clutch solenoid valve is less than 70% of target voltage value for torque converter clutch solenoid valve.• Harness or connectors (Solenoid circuit is open)• Torque Converter Clutch Circuit/Open• There is a large difference between TCM monitor current command value for torque converter clutch solenoid valve and current monitor value for torque converter clutch solenoid valve.• Harness or connectors (Solenoid circuit is open)				
TC CO	VERMATION PROCED	URE			
AUTION		d			
-	rive vehicle at a safe spe ARATION BEFORE WORK				
		PROCEDURE" occurs just before, turn	ignition switch OEE and wait for at		
	econds, then perform the		ISTITION SWITCH OFF AND WAIL IOF AL		
	> GO TO 2.				
	ARATION BEFORE WORK	((PART 2)			
,	ONSULT the engine.				
Selec	t "Data Monitor" in "TRAN	SMISSION".			
	t "ATF TEMP SEN". Je of "ATF TEMP SEN" 2.1	17 V or less?			
	>> GO TO 3.				
10 >	 > 1. Warm the transaxle 2. GO TO 3. 	e.			
CHEC	K DTC DETECTION				
	ONSULT				
Start	the engine.				
	t "Data Monitor" in "TRAN t "VEHICLE SPEED".	SMISSION".			
Drive	the vehicle.	(
Maint	ain the following condition	tor 5 seconds or more.			
	HICLE SPEED	: 40 km/h (25 MPH) or more			
	the vehicle. t "Self Diagnostic Results'	' in "TRANSMISSION"			
With G	ST				
	e procedure "With CONSU	LT".			
	<u>" detected?</u> >> Go to <u>TM-255, "Diagno</u> :	sis Procedure"			
	> INSPECTION END				
iagnos	sis Procedure		INFOID:000000012200947		
		CLUTCH SOLENOID VALVE			

P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

2. Disconnect CVT unit connector.

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

CVT unit		Ground	Condition	Resistance	
Connector	Terminal	Ground	Condition	Resistance	
	12	12		CVT fluid temperature: 20°C (68°F)	Approx. 5.60 – 6.60 Ω
F209			Ground	CVT fluid temperature: 50°C (122°F)	Approx. 6.76 – 6.87 Ω
			CVT fluid temperature: 80°C (176°F)	Approx. 7.47 – 7.59 Ω	

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

2. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (TORQUE CONVERTER CLUTCH SOLENOID VALVE) (PART 1)

1. Disconnect TCM harness connector.

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

T	СМ	CV1	Continuity		
Connector	Terminal	Connector	Terminal	Continuity	
F81	38	F51	12	Existed	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (TORQUE CONVERTER CLUTCH SOLENOID VALVE) (PART 2)

Check continuity between TCM harness connector terminal and ground.

T	CM	Ground	Continuity	
Connector	Terminal	Ground		
F81	38	Ground	Not existed	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Repair or replace damaged parts.

4.CHECK TERMINAL CORD ASSEMBLY (PART 1)

1. Remove terminal cord assembly. Refer to TM-330, "Exploded View".

 Check continuity between CVT unit harness connector terminals and control valve harness connector terminals.

CV	Γunit	Contro	Continuity	
Connector Termina		Connector Terminal		Continuity
F209	12	F208	10	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

5.CHECK TERMINAL CORD ASSEMBLY (PART 2)

Check terminal cord assembly harness cladding for damage.

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

Revision: November 2015

6. CHECK DTC (TCM)

With CONSULT

- 1. Perform "DTC CONFIRMATION PROCEDURE". Refer to TM-255, "DTC Logic".
- 2. Select "Self Diagnostic Results" in "TRANSMISSION".

Is "P0740" detected?

- YES-1 (Only "P0740" is detected)>>There is a malfunction of the torque converter clutch solenoid valve. Replace the control valve. Refer to <u>TM-330</u>, "<u>Removal and Installation</u>".
- YES-2 ("P0740" and other than "P0740" are detected)>>Replace the transaxle assembly. Refer to <u>TM-347</u>. <u>"Removal and Installation"</u>.
- NO >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

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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:000000012200949

INFOID:000000012200948

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes	
P0744	Torque Converter Clutch Cir- cuit Intermittent	Torque converter slip speed is more than a certain value (40 rpm + Vehicle speed \times 0.8) while TCM is in lock-up command state	 Hydraulic control circuit Torque converter clutch solenoid valve Lock-up select solenoid valve 	

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe 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. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "RANGE", "ATF TEMP SEN", "ACC PEDAL OPEN" and "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following condition for 30 seconds or more.

RANGE	: D position
ATF TEMP SEN	: 2.03 V or less
ACC PEDAL OPEN	: 0.0/8 – 1.0/8
VEHICLE SPEED	: 40 km/h (25 MPH)

6. Stop the vehicle.

7. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT".

Is "P0744" detected?

YES >> Go to TM-258. "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-228, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts. Refer to <u>TM-228</u>, "Inspection and Judgment".

2.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to TM-255, "DTC Logic".

INFOID:000000012200950

P0744 TORQUE CONVERTER

P0744 TORQUE CONVERTER
< DTC/CIRCUIT DIAGNOSIS > [CVT: RE0F10B]
Is the inspection result normal?
YES >> GO TO 3.
NO >> GO TO 6.
3. CHECK LOCK-UP SELECT SOLENOID VALVE
Check lock-up select solenoid valve. Refer to TM-291, "DTC Logic".
Is the inspection result normal?
YES >> GO TO 4.
NO >> Repair or replace damaged parts.
4. CHECK PRIMARY SPEED SENSOR SYSTEM
Check primary speed sensor system. Refer to TM-248, "DTC Logic".
Is the inspection result normal?
YES >> GO TO 5.
NO >> Repair or replace damaged parts.
5. CHECK SECONDARY SPEED SENSOR SYSTEM
Check secondary speed sensor system. Refer to TM-251. "DTC Logic".
Is the inspection result normal?
YES >> GO TO 6.
NO >> Repair or replace damaged parts.
6. CHECK DTC (TCM)
(P)With CONSULT
1. Perform "DTC CONFIRMATION PROCEDURE". Refer to TM-258, "DTC Logic".
2. Select "Self Diagnostic Results" in "TRANSMISSION".
Is "P0744" detected?
YES-1 (Only "P0744" is detected)>>There is a malfunction of the torque converter clutch solenoid valve. Replace the control valve. Refer to TM-330, "Removal and Installation".
YES-2 ("P0744" and other than "P0744" are detected)>>Replace the transaxle assembly. Refer to <u>TM-347</u> .
"Removal and Installation".
NO >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u> .

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P0745 PRESSURE CONTROL SOLENOID A

DTC Logic

INFOID:000000012200951

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0745	Pressure Control Solenoid A	 TCM monitor voltage value for torque converter clutch solenoid valve is less than 70% of target voltage value for torque converter clutch solenoid valve. There is a large difference between TCM current monitor command value for line pressure solenoid valve and current monitor value for line pressure solenoid valve. 	 Harness or connectors (Solenoid circuit is open or shorted.) Line pressure solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe 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

(P)With CONSULT

- 1. Start the engine.
- 2. Drive the vehicle for 10 seconds or more.
- 3. Stop the vehicle.
- 4. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT".

Is "P0745" detected?

- YES >> Go to TM-260, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1. CHECK LINE PRESSURE SOLENOID VALVE

- Turn ignition switch OFF. 1.
- Disconnect CVT unit connector. 2.
- 3. Check resistance between CVT unit connector terminal and ground.

CVT unit		Ground	Condition	Resistance		
Connector	Terminal	Ground	Condition	Resistance		
	2		CVT fluid temperature: 20°C (68°F)	Approx. 5.60 – 6.60 Ω		
F209		2	2	Ground	CVT fluid temperature: 50°C (122°F)	Approx. $6.76 - 6.87 \Omega$
			CVT fluid temperature: 80°C (176°F)	Approx. 7.47 – 7.59 Ω		

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

2. CHECK CIRCUIT BETWEEN TCM AND LINE PRESSURE SOLENOID VALVE (PART 1)

Disconnect TCM connector. 1.

Check continuity between TCM harness connector terminal and CVT unit harness connector terminal. 2.

Revision: November 2015

TM-260

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INFOID:000000012200952

[CVT: RE0F10B]

P0745 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

T	CM		Γunit		
				Continuity	
Connector	Terminal	Connector	Terminal		
F81	40	F51	2	Existed	
	<u>ion result nor</u> 30 TO 3.	<u>mal?</u>			
		ace damageo	•		
\mathbf{B} . CHECKC	IRCUIT BET	NEEN TCM /	AND LINE PR	ESSURE SOL	OID VALVE (PART 2)
Check contin	uity between	TCM harness	s connector te	erminal and gro	 I.
TC	CM	Ground	Continuity		
Connector	Terminal	Ground	Continuity		
F81	40	Ground	Not existed		
s the inspect	ion result nor	mal?	•		
				15, "Intermittent	<u>sident"</u> .
4	• •	ace damageo	•		
LCHECK TI	ERMINAL CO	ORD ASSEMI	BLY (PART 1)		
				0, "Exploded V	
	ontinuity betw	een CVT uni	t harness con	nector termina	d control valve harness connector ter
minal.					
0.7					
	unit		ntrol valve	Continuity	
Connector	Terminal	Connector	Termina		
F209	2	F208	8	Existed	
	ion result nor	mal?			
	GO TO 5.	ace damagec	narte		
	• •	-	BLY (PART 2)		
		•	cladding for c	lamage.	
	ion result nor				
		ansaxle asse ace damageo		D <u>1M-347, "Ren</u>	al and Installation".
			parto.		

P0746 PRESSURE CONTROL SOLENOID A

Description

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

DTC Logic

INFOID:000000012200954

INFOID:000000012200953

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0746	Pressure Control Solenoid A Performance/Stuck Off	TCM detects a state that gear ratio is more than 2.7	 Line pressure solenoid fluid circuit Line pressure solenoid valve Primary speed sensor Secondary speed sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "ENG SPEED SIG", "PRI SPEED" and "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following condition for 1 second or more.

ENG SPEED SIG	: 600 rpm or more
PRI SPEED	: 500 rpm or more
VEHICLE SPEED	: 10 km/h (7 MPH) or more

6. Stop the vehicle.

7. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT".

Is "P0746" detected?

YES >> Go to <u>TM-262</u>, "Diagnosis Procedure". NO >> INSPECTION END

Diagnosis Procedure

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-228, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts. Refer to <u>TM-228</u>, "Inspection and Judgment".

2.CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to <u>TM-260, "DTC Logic"</u>. Is the inspection result normal?

Revision: November 2015

INFOID:000000012200955

P0746 PRESSURE CONTROL SOLENOID A				
< DTC/CIRCUIT DIAGNOSIS >	[CVT: RE0F10B]			
YES >> GO TO 3.				
NO >> Repair or replace damaged parts.		А		
3. CHECK PRIMARY SPEED SENSOR SYSTEM				
Check primary speed sensor system. Refer to TM-248, "DTC Logic".		В		
Is the inspection result normal?		D		
YES >> GO TO 4.				
NO >> Repair or replace damaged parts.		С		
4.CHECK SECONDARY SPEED SENSOR SYSTEM				
Check secondary speed sensor system. Refer to TM-251. "DTC Logic".				
Is the inspection result normal?		Μ		
YES >> GO TO 5.		_		
NO >> Repair or replace damaged parts.		Е		
5. CHECK INTERMITTENT INCIDENT				
Refer to GI-45, "Intermittent Incident".				
Is the inspection result normal?		F		
YES >> Replace transaxle assembly. Refer to <u>TM-347, "Removal and Installation"</u> .				
NO >> Repair or replace damaged parts.				
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P0776 PRESSURE CONTROL SOLENOID B

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:000000012200957

INFOID:000000012200956

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0776	Pressure Control Solenoid B Performance/Stuck Off	Difference of secondary pressure target value of TCM and secondary pressure actual value is more than 1.2 MPa	 Secondary pressure solenoid valve Secondary pressure sensor Secondary pressure solenoid valve oil circuit Line pressure solenoid valve oil circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "RANGE", "VIGN SEN", "ATF TEMP SEN", "ACC PEDAL OPEN" and "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following condition for 5 seconds or more.

RANGE	: "D" position
VING SEN	: 10 V or more
ATF TEMP SEN	: 2.03 – 0.16 V
ACC PEDAL OPEN	: 1.0/8 or more
VEHICLE SPEED	: 10 km/h (7 MPH) or more

- 6. Stop the vehicle.
- 7. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT".

Is "P0776" detected?

- YES >> Go to TM-264, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-228. "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts. Refer to <u>TM-228</u>, "Inspection and Judgment".

2.CHECK SECONDARY PRESSURE SOLENOID VALVE

INFOID:000000012200958

P0776 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >	[CVT: RE0F10B]	
Check secondary pressure solenoid valve. Refer to TM-266, "DTC Logic".		
Is the inspection result normal?		A
YES >> GO TO 3.		
NO >> Repair or replace damaged parts.		E
3.CHECK SECONDARY PRESSURE SENSOR SYSTEM		
Check secondary pressure sensor system. Refer to <u>TM-274, "DTC Logic"</u> .		
Is the inspection result normal?		C
YES >> GO TO 4. NO >> Repair or replace damaged parts.		
4. CHECK INTERMITTENT INCIDENTE		ΤN
Refer to <u>GI-45</u> , "Intermittent Incident".		
Is the inspection result normal?		
YES >> Replace transaxle assembly. Refer to <u>TM-347</u> , "Removal and Installation"		E
NO >> Repair or replace damaged parts.		
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P0778 PRESSURE CONTROL SOLENOID B

DTC Logic

INFOID:000000012200959

[CVT: RE0F10B]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0778	Pressure Control Solenoid B Electrical	 TCM monitor voltage value for torque secondary pressure solenoid valve is less than 70% of target voltage value for secondary pressure solenoid valve. There is a large difference between TCM current monitor command value for secondary pressure solenoid valve and current monitor value for secondary pressure solenoid valve and current monitor value for secondary pressure solenoid valve. 	 Harness or connectors (Sensor circuit is open or shorted.) Secondary pressure solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT

- 1. Start the engine.
- 2. Drive the vehicle for 10 seconds or more.
- 3. Stop the vehicle.
- 4. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT".

Is "P0778" detected?

YES >> Go to TM-266, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000012200960

1.CHECK SECONDARY PRESSURE SOLENOID VALVE

- 1. Turn ignition switch OFF.
- 2. Disconnect CVT unit connector.
- 3. Check resistance between CVT unit connector terminal and ground.

CVT unit		Ground	Condition	Resistance
Connector	Terminal	Giouna	Condition	Resistance
			CVT fluid temperature: 20°C (68°F)	Approx. 5.60 – 6.60 Ω
F209	3	Ground	CVT fluid temperature: 50°C (122°F)	Approx. 6.76 – 6.87 Ω
			CVT fluid temperature: 80°C (176°F)	Approx. 7.47 – 7.59 Ω

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

2. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (SECONDARY PRESSURE SOLENOID VALVE) (PART 1)

P0778 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

1. Disconnect TCM connector.

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

T	СМ	CV1	Continuity	
Connector Terminal		Connector	Terminal	Continuity
F81	39	F51	3	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (SECONDARY PRESSURE SOLENOID VALVE) (PART	ΤМ
2)	

Check continuity between TCM harness connector terminal and ground.

T	CM	Ground	Continuity	
Connector	Terminal		Continuity	
F81	39	Ground	Not existed	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Repair or replace damaged parts.

4.CHECK TERMINAL CORD ASSEMBLY (PART 1)

- 1. Remove terminal cord assembly. Refer to TM-330, "Exploded View".
- Check continuity between CVT unit harness connector terminal and control valve harness connector terminal.

-	CVT	CVT unit		ol valve	Continuity
-	Connector	Terminal	Connector	Terminal	Continuity
-	F209	3	F208	9	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

5. CHECK TERMINAL CORD ASSEMBLY (PART 2)

Check t	erminal cord assembly harness cladding for damage.
<u>Is the in</u>	spection result normal?
YES NO	>> Replace the transaxle assembly. Refer to <u>TM-347, "Removal and Installation"</u> . >> Repair or replace damaged parts.

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[CVT: RE0F10B]

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P0826 UP AND DOWN SHIFT SW

DTC Logic

INFOID:000000012200961

[CVT: RE0F10B]

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0826	Up and Down Shift Switch Cir- cuit	 When an impossible pattern of switch signals is detected, a malfunction is detected. When shift up/down signal of paddle shifter continuously remains ON for 60 seconds. 	 Manual mode select switch Manual mode position select switch Combination meter Harness or connectors (Manual mode switch circuit are open or shorted.) (Paddle shifter switch circuit are open or shorted.) (CAN communication line is open or shorted.) Paddle shifter

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 (PART 1)

With CONSULT

- 1. Start the engine.
- 2. Shift the selector lever to "D" position and wait for 60 seconds or more.
- 3. Select "Self Diagnostic Results" in "TRANSMISSION".

Is "P0826" detected?

YES >> Go to TM-269. "Diagnosis Procedure".

NO >> GO TO 3.

3.CHECK DTC DETECTION (PART 2)

With CONSULT

1. Shift the selector lever to manual shift gate and wait for 1 second or more.

Select "Self Diagnostic Results" in "TRANSMISSION".

Is "P0826" detected?

YES >> Go to <u>TM-269</u>, "Diagnosis Procedure".

NO >> GO TO 4.

4.CHECK DTC DETECTION (PART 3)

With CONSULT

- 1. Shift the selector lever to "UP side (+ side)" and wait for 1 second or more.
- 2. Select "Self Diagnostic Results" in "TRANSMISSION".

Is "P0826" detected?

YES >> Go to <u>TM-269</u>, "Diagnosis Procedure".

- NO >> GO TO 5.
- **5.**CHECK DTC DETECTION (PART 4)

With CONSULT

- 1. Shift the selector lever to "DOWN side (– side)" and wait for 1 second or more.
- Select "Self Diagnostic Results" in "TRANSMISSION".
- Is "P0826" detected?
- YES >> Go to TM-269, "Diagnosis Procedure".

< DTC/CIRCUIT DIAGNOSIS >	[CVT: RE0F10B]
NO >> INSPECTION END	
Diagnosis Procedure	INFOID:000000012200962
1.CHECK DTC (COMBINATION METER)	
 With CONSULT Turn ignition switch ON. Select "Self Diagnostic Results" in "METER/M&A". <u>Is any DTC detected?</u> YES >> Check DTC detected item. Refer to <u>MWI-33, "DTC Index"</u>. NO >> GO TO 2. CHECK MANUAL MODE SWITCH SIGNALS 	
With CONSULT I. Turn ignition switch ON.	

Select "Data Monitor" in "TRANSMISSION". 2.

3. Check the On/Off operations of each monitor item.

Item name	Monitor item	Condition	Status
		Manual shift gate position	On
Manual mode switch	MMODE	Other than the above	Off
	NONMMODE	Manual shift gate position	Off
	NONWIWIODE	Other than the above	On
	UPLVR	Selector lever: UP (+ side)	On
	UPLVR	Other than the above	Off
	DOWNLVR	Selector lever: DOWN (- side)	On
	DOWNLVR	Other than the above	Off
		Pressed paddle shifter (shift-down)	On
Daddla abiftar	STRDWNSW	Released paddle shifter	Off
Paddle shifter		Pressed paddle shifter (shift-up)	On
	STRUPSW	Released paddle shifter	Off

Without CONSULT

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 and paddle shifter* are shifted to the "+ (up)" or "- (down)" side [1st \Leftrightarrow 8th gear].

Is the inspection result normal?

	NЛ
YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u> .	1 V I
NO-1 (Manual mode switch is abnormal)>>GO TO 3.	
NO-2 (Paddle shifter is abnormal)>>GO TO 8.	
	NI
3.CHECK MANUAL MODE SWITCH POWER SUPPLY CIRCUIT	IN
1. Turn ignition switch OFF.	
2. Disconnect CVT shift selector connector.	
3. Turn ignition switch ON.	0
4. Check voltage between CVT shift selector harness connector terminal and ground.	
4. Check voltage between OVT shift selector namess connector terminal and ground.	

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P0826 UP AND DOWN SHIFT SW

< DTC/CIRCUIT DIAGNOSIS >

+ CVT shift selector		_	Condition	Voltage (Approx.)
Connector	Connector Terminal			
	7	Ground	Ignition switch: ON	12 V
	1		Ignition switch: OFF	0 V
	8		Ignition switch: ON	12 V
M57			Ignition switch: OFF	0 V
10137	9		Ignition switch: ON	12 V
			Ignition switch: OFF	0 V
	11		Ignition switch: ON	12 V
	11		Ignition switch: OFF	0 V

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 5.

4.CHECK MANUAL MODE SWITCH

1. Turn ignition switch OFF.

2. Check manual mode switch. Refer to TM-272, "Component Inspection (Manual Mode Switch)".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace damaged parts.

5. CHECK CIRCUIT BETWEEN CVT SHIFT SELECTOR AND COMBINATION METER (PART 1)

- 1. Turn ignition switch OFF.
- 2. Disconnect combination meter connector.
- Check continuity between CVT shift selector harness connector terminals and combination meter harness connector terminals.

CVT shift selector		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	7	M34	36	Existed
M57	8		16	
MO7	9		14	Existed
	11		37	

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

6. CHECK CIRCUIT BETWEEN CVT SHIFT SELECTOR AND COMBINATION METER (PART 2)

Check continuity between CVT shift selector harness connector terminals and ground.

CVT shift selector Connector Terminal			Continuity	
	7		Not existed	
M57	8	Ground		
10137	9	Ground		
	11			

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> Rep	pair or repla	ice damaged	parts.		
CHECK GRO		CUIT			
Check continuit	y between (CVT shift sel	ector harr	less connector terminal and ground.	
CVT shift se	elector	_	Continu	itv	
Connector	Terminal				
M57	10	Ground	Existed	1	
Is the inspection			_		
		tent incident. Ice damaged		GI-45, "Intermittent Incident".	
8.CHECK PAD	•	-	i parts.		
 Turn ignition Disconnect 		FF. fter connecto	r		
3. Turn ignition			.		
•			ter side h	arness connector terminals.	
	Paddle s			Voltage (Approx.)	
Connector		Terminal			
M96	3		1	Battery voltage	
M97	3		1		
is the inspection		<u>mal?</u>			
YES >> GO					
^	TO 11.				
9.CHECK PAD					
-			"Compon	ent Inspection (Paddle Shifter)".	
Is the inspection		<u>mal?</u>			
	TO 10.	ice damaged	Inarte		
10.снеск б			i parts.		
	y between p	paddle shifte	r vehicle s	ide harness connector terminal and ground.	
المراجع	la chiffor				
	le shifter			Continuity	
Connector	Termin	iai (Ground		
M96	1			Existed	
M97	1				
Is the inspection		mal?			
	TO 11.	ice damaged	Inarte		
	•	-	•		
11. CHECK PC					
Check voltage b	petween pa	ddle shifter v	ehicle sid	e harness connector terminal and ground.	
		1			
	lle shifter			Voltage (Approx.)	
Connector	Termi	nal	Ground		
M96	3	1			

3

3

YES >> GO TO 12.

M96

M97

0 V

P0826 UP AND DOWN SHIFT SW

< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace damaged parts.

12. CHECK HARNESS BETWEEN PADDLE SHIFTER AND COMBINATION METER (PART 1)

- 1. Disconnect combination meter connector.
- 2. Check continuity between paddle shifter vehicle side harness connector terminals and combination meter vehicle side harness connector terminals.

Paddle shifter		Combination meter		Continuity
Connector	Terminal	Connector Term		Continuity
M96	3	M34	26	Existed
M97	3		5	LAISIEU

Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or replace damaged parts.

13. CHECK HARNESS BETWEEN PADDLE SHIFTER AND COMBINATION METER (PART 2)

Check continuity between paddle shifter vehicle side harness connector terminals and ground.

Paddle	e shifter		Continuity
Connector	Terminal	Ground	
M96	3		Not existed
M97	3		Not existed

Is the inspection result normal?

YES >> GO TO 14.

NO >> Repair or replace damaged parts.

14.DETECT MALFUNCTIONING ITEMS

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

Is the inspection result normal?

YES >> Replace TCM. Refer to <u>TM-328</u>, "Exploded View".

NO >> Repair or replace damaged parts.

Component Inspection (Manual Mode Switch)

MANUAL MODE SWITCH

1.MANUAL MODE SWITCH

Check continuity between CVT shift selector connector terminals.

CVT shift selector	Condition	Continuity
Terminal	Condition	Continuity
7 – 10	Manual shift gate position (neutral)	Existed
7 – 10	Other than the above	Not existed
8 – 10	Selector lever: DOWN (- side)	Existed
0 - 10	Other than the above	Not existed
9 – 10	Selector lever: UP (+ side)	Existed
3 - 10	Other than the above	Not existed
11 – 10	Manual shift gate position	Not existed
11 - 10	Other than the above	Existed

Is the inspection result normal?

YES >> INSPECTION END

INFOID:000000012200963

P0826 UP AND DOWN SHIFT SW

< DTC/CIRCUIT DIAGNOSIS >

NO >> There is a malfunction of the manual mode switch. Replace the CVT shift selector assembly. Refer to <u>TM-316</u>, "<u>Removal and Installation</u>".

Component Inspection (Paddle Shifter)

1.CHECK PADDLE SHIFTER

Check continuity between paddle shifter connector terminals.

Paddle	e shifter	Condition	Continuity
Terr	ninal	Condition	Continuity
1	3	Pressed paddle shifter (shift-up)	Existed
		Released paddle shifter	Not existed
1	3	Pressed paddle shifter (shift-down)	Existed
I	5	Released paddle shifter	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace damaged parts.

[CVT: RE0F10B]

INFOID:000000012200964

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P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

< DTC/CIRCUIT DIAGNOSIS >

P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

DTC Logic

INFOID:000000012200965

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0840	Transmission Fluid Pressure Sensor/Switch A Circuit	 Secondary pressure sensor voltage that TCM receives is more than 4.7 V Secondary pressure sensor voltage that TCM receives is less than 0.9 V 	 Harness or connectors (Secondary pressure sensor circuit is open or shorted.) Secondary pressure 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. CHECK DTC DETECTION

(B) With CONSULT

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "ATF TEMP SEN".
- 4. Maintain the following condition for 5 seconds or more.

ATF TEMP SEN

: 2.41 V or less

5. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT".

Is "P0840" detected?

- YES >> Go to TM-274, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK TCM INPUT SIGNAL

1. Start the engine.

2. Check voltage between TCM connector terminals.

	ТСМ			Valtaga	
Connector	+	_	Condition	Voltage (Approx.)	
	Terminal			(11)	
F81	15	25	Selector lever : "N" positionAt idle	1.0 V	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> GO TO 2.

$$2$$
.CHECK SENSOR POWER AND SENSOR GROUND

Check voltage between TCM connector terminals.

INFOID:000000012200966

[CVT: RE0F10B]

P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

	TCM	I		Voltage	
Connector	+	-	Condition	(Approx.)	
Connocion	Terr	ninal			
F81	26	25	Ignition switch: C	0N 5.0 V	
101	20	20	Ignition switch: C	OFF 0 V	
<u>s the inspec</u>	tion result nor	mal?			
	GO TO 3.		Dec. e. e. e. e. e		
	Go to <u>TM-281</u>				
				(SECONDARY	PRESSURE SENSOR) (PART 1)
	tion switch Ol		T unit connect	or	
					VT unit harness connector terminals.
	, ,				
Т	СМ	CV	Гunit	<u> </u>	
Connector	Terminal	Connector	Terminal	Continuity	
	15		23		
F81	25	F51	19	Existed	
			20		
	26				
the inspec	-	mal?	I		
	tion result nor	mal?			
YES >> (tion result nor GO TO 4.		narts		
YES >> (NO >>	t <u>ion result nor</u> GO TO 4. Repair or repla	ace damaged	•		
YES >> (NO >> I	tion result nor GO TO 4. Repair or repla IRCUIT BET\	ace damaged WEEN TCM /	AND CVT UNIT		PRESSURE SENSOR) (PART 2)
YES >> (NO >> I I.CHECK (tion result nor GO TO 4. Repair or repla IRCUIT BET\	ace damaged WEEN TCM /	AND CVT UNIT	(SECONDARY	
YES >> 0 NO >> I 1.CHECK 0 Check contin	tion result nor GO TO 4. Repair or repla IRCUIT BET uuity between	ace damaged WEEN TCM /	AND CVT UNIT		
YES >> 0 NO >> I I.CHECK C Check contir	tion result nor GO TO 4. Repair or repla RCUIT BET nuity between	ace damaged WEEN TCM /	AND CVT UNIT		
YES >> 0 NO >> I CHECK 0	tion result nor GO TO 4. Repair or repla IRCUIT BET uity between CM	ace damaged WEEN TCM /	AND CVT UNIT		
YES >> 0 NO >> 1 CHECK 0 Check contin T Connector	tion result nor GO TO 4. Repair or repla IRCUIT BET nuity between CM Terminal 15	ace damaged WEEN TCM / TCM harness —	Continuity		
YES >> 0 NO >> I I.CHECK 0 Check contir	tion result nor GO TO 4. Repair or repla IRCUIT BET uity between CM Terminal 15 25	ace damaged WEEN TCM /	AND CVT UNIT		
YES >> 0 NO >> I CHECK C Check contin T Connector F81	tion result nor GO TO 4. Repair or repla IRCUIT BETV nuity between CM Terminal 15 25 26	ace damaged WEEN TCM / TCM harness — Ground	Continuity		
YES >> 0 NO >> F CHECK C Check contin T Connector F81	tion result nor GO TO 4. Repair or repla CIRCUIT BETV nuity between CM Terminal 15 25 26 tion result nor	ace damaged WEEN TCM / TCM harness — Ground	Continuity		
YES >> (NO >> I I.CHECK (C Check contin T Connector F81 s the inspec YES >> (tion result nor GO TO 4. Repair or repla IRCUIT BET uity between CM Terminal 15 25 26 tion result nor GO TO 5.	ace damaged WEEN TCM / TCM harness Ground	AND CVT UNIT s connector terr Continuity Not existed		
YES >> 0 NO >> 1 CHECK C Check contin T Connector F81 Sthe inspec YES >> 0 NO >> 1	tion result nor GO TO 4. Repair or repla IRCUIT BETV Nuity between CM Terminal 15 25 26 tion result nor GO TO 5. Repair or repla	ace damaged WEEN TCM / TCM harness Ground mal? ace damaged	AND CVT UNIT s connector terr Continuity Not existed		
YES >> 0 NO >> 1 1.CHECK 0 Check contin T Connector F81 S the inspec YES >> 0 NO >> 1	tion result nor GO TO 4. Repair or repla IRCUIT BETV Nuity between CM Terminal 15 25 26 tion result nor GO TO 5. Repair or repla	ace damaged WEEN TCM / TCM harness Ground mal? ace damaged	AND CVT UNIT s connector terr Continuity Not existed		
YES >> 0 NO >> 1 1.CHECK 0 Check contin T Connector F81 S the inspec YES >> 0 NO >> 1 5.CHECK T	tion result nor GO TO 4. Repair or repla IRCUIT BETV Nuity between CM Terminal 15 25 26 tion result nor GO TO 5. Repair or repla	ace damaged WEEN TCM / TCM harness 	AND CVT UNIT s connector terr Continuity Not existed parts. BLY (PART 1)		d.
YES $>>0$ NO $>>1$ CHECK C Check contin T Connector F81 S the inspec YES $>>0$ NO $>>1$ D.CHECK T I. Remove 2. Check contin	tion result nor GO TO 4. Repair or repla IRCUIT BETV wity between CM Terminal 15 25 26 tion result nor GO TO 5. Repair or repla ERMINAL CO terminal cord	ace damaged WEEN TCM / TCM harness Ground mal? ace damaged DRD ASSEMI assembly. R	AND CVT UNIT s connector terr Continuity Not existed parts. 3LY (PART 1) efer to <u>TM-330</u>	minals and groun	d.
YES $>>0$ NO $>>1$ CHECK C Check contin T Connector F81 S the inspec YES $>>0$ NO $>>1$ D.CHECK T I. Remove	tion result nor GO TO 4. Repair or repla IRCUIT BETV wity between CM Terminal 15 25 26 tion result nor GO TO 5. Repair or repla ERMINAL CO terminal cord	ace damaged WEEN TCM / TCM harness Ground mal? ace damaged DRD ASSEMI assembly. R	AND CVT UNIT s connector terr Continuity Not existed parts. 3LY (PART 1) efer to <u>TM-330</u>	minals and groun	d.
YES >> 0 NO >> 1 CHECK C Check contin T Connector F81 S the inspec YES >> 0 NO >> 1 D.CHECK T Remove 2. Check contin	tion result nor GO TO 4. Repair or repla IRCUIT BETV wity between CM Terminal 15 25 26 tion result nor GO TO 5. Repair or repla ERMINAL CO terminal cord	ace damaged WEEN TCM / TCM harness Ground mal? ace damaged DRD ASSEMI assembly. R	AND CVT UNIT s connector terr Continuity Not existed parts. 3LY (PART 1) efer to <u>TM-330</u>	minals and groun	d.
YES >> 0 NO >> 1 CHECK C Check contin T Connector F81 Sthe inspect YES >> 0 NO >> 1 D.CHECK T Remove Check cominals.	tion result nor GO TO 4. Repair or repla IRCUIT BETV wity between CM Terminal 15 25 26 tion result nor GO TO 5. Repair or repla ERMINAL CO terminal cord	ace damaged WEEN TCM / TCM harness — Ground mal? ace damaged DRD ASSEMI assembly. R een CVT unit	AND CVT UNIT s connector terr Continuity Not existed parts. 3LY (PART 1) efer to <u>TM-330</u>	minals and groun	d.
YES >> 0 NO >> 1 CHECK C Check contin T Connector F81 Sthe inspect YES >> 0 NO >> 1 O.CHECK T CHECK T Remove Check cominals.	tion result nor GO TO 4. Repair or repla IRCUIT BETV wity between CM Terminal 15 25 26 tion result nor GO TO 5. Repair or repla ERMINAL CO terminal cord ontinuity betw	ace damaged WEEN TCM / TCM harness — Ground mal? ace damaged DRD ASSEMI assembly. R een CVT unit	AND CVT UNIT s connector terr Continuity Not existed parts. BLY (PART 1) efer to <u>TM-330</u> harness conne	minals and groun	d.
YES >> 0 NO >> 1 CHECK C Check contin T Connector F81 S the inspec YES >> 0 NO >> 1 D.CHECK T . Remove . Check cominals.	tion result nor GO TO 4. Repair or repla IRCUIT BETV nuity between CM Terminal 15 25 26 tion result nor GO TO 5. Repair or repla ERMINAL CC terminal cord ontinuity betw	ace damaged VEEN TCM / TCM harness Ground mal? ace damaged DRD ASSEMI assembly. R een CVT unit	AND CVT UNIT s connector terr Continuity Not existed parts. 3LY (PART 1) efer to <u>TM-330</u> harness conne	minals and groun	d.
YES >> (NO >> F 1.CHECK C Check contin T Connector F81 S the inspec YES >> (NO >> F 5.CHECK T 1. Remove 2. Check contin inals.	tion result nor GO TO 4. Repair or repla IRCUIT BETV wity between CM Terminal 15 25 26 tion result nor GO TO 5. Repair or repla ERMINAL CO terminal cord ontinuity betw T unit Terminal	ace damaged VEEN TCM / TCM harness Ground mal? ace damaged DRD ASSEMI assembly. R een CVT unit	AND CVT UNIT s connector terr Continuity Not existed l parts. BLY (PART 1) efer to <u>TM-330</u> harness conne	minals and groun	d.

NO >> Repair or replace damaged parts.

 $6. {\sf CHECK TERMINAL CORD ASSEMBLY (PART 2)}$

P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

Check terminal cord assembly harness cladding for damage.

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace damaged parts.

7. CHECK DTC (TCM)

With CONSULT

- 1. Perform "DTC CONFIRMATION PROCEDURE". Refer to TM-274, "DTC Logic".
- 2. Select "Self Diagnostic Results" in "TRANSMISSION".

Is "P0840" detected?

YES-1 (Only "P0840" is detected)>>There is a malfunction of the secondary pressure sensor. Replace the control valve. Refer to <u>TM-330</u>, "Removal and Installation".

- YES-2 ("P0840" and other than "P0840" are detected)>>Replace the transaxle assembly. Refer to <u>TM-347</u>. <u>"Removal and Installation"</u>.
- NO >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

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

INFOID:000000012200968

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DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0841	Transmission Fluid Pressure Sensor/Switch A Circuit Range/Performance	Secondary pressure sensor value exceeds line pressure value	 Harness or connectors (Sensor circuit is open or shorted.) Secondary pressure sensor
CAUTIO			
-	drive vehicle at a safe sp o ARATION BEFORE WORI		
If anothe		PROCEDURE" occurs just before, turn	ignition switch OFF and wait for at
:	>> GO TO 2.		
2. CHEC	K DTC DETECTION		
 Start Select Select Select Drive 	CONSULT the engine. ct "Data Monitor" in "TRAN ct "VEHICLE SPEED". e the vehicle. tain the following condition		
VE	EHICLE SPEED	: 30 km/h (19 MPH) or more	
7. Select Is "P0841 YES	the vehicle. ct "Self Diagnostic Results" <u>I" detected?</u> >> Go to <u>TM-277, "Diagno</u> >> INSPECTION END		
	sis Procedure		INFOID:000000012200969
	K LINE PRESSURE		
		TM-228, "Inspection and Judgment".	
	pection result normal?		
	>> GO TO 2.	aged parts. Refer to <u>TM-228, "Inspection</u>	n and Judgmont"
-	K SECONDARY PRESSU	• •	
		system. Refer to <u>TM-274, "DTC Logic"</u> .	
	pection result normal?	system. Refer to <u>m-274. Dro Logic</u> .	
	>> GO TO 3.		
•	> Repair or replace dama		
3. CHEC	K LINE PRESSURE SOLE	ENOID VALVE	
Check lin	e pressure solenoid valve.	Refer to TM-260, "DTC Logic".	

INFOID:000000012200967

P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4.CHECK SECONDARY PRESSURE SOLENOID VALVE

Check secondary pressure solenoid valve. Refer to TM-266, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

5.CHECK STEP MOTOR SYSTEM

Check step motor system. Refer to TM-293, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

6.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to <u>TM-347, "Removal and Installation"</u>.

NO >> Repair or replace damaged parts.

P0868 TRANSMISSION FLUID PRESSURE

< DTC/CIRCUIT DIAGNOSIS >

P0868 TRANSMISSION FLUID PRESSURE

Description

The secondary pressure solenoid valve regulates the secondary pressure to suit the driving condition in _B response to a signal sent from the TCM.

DTC Logic

INFOID:000000012200971

INFOID:000000012200970

DTC DETECTION LOGIC

DTC ТΜ Trouble diagnosis name DTC detection condition Possible causes Harness or connectors (Sensor circuit is open or shorted.) Secondary pressure is abnormally low com-**Transmission Fluid Pressure** Line pressure control system Ε P0868 pared with the target secondary pressure dur-Low Secondary pressure solenoid valve ing ordinary driving. system · Secondary pressure sensor DTC CONFIRMATION PROCEDURE CAUTION: Always drive vehicle at a safe 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. Н >> GO TO 2. 2 . CHECK DTC DETECTION (P)With CONSULT 1. Start the engine. 2. Select "Data Monitor" in "TRANSMISSION". 3. Select "RANGE", "ATF TEMP SEN", "ACC PEDAL OPEN", "BRAKE SW" and "VEHICLE SPEED". 4. Drive the vehicle. Κ 5. Maintain the following condition for 30 seconds or more. RANGE : "D" position ATF TEMP SEN : 2.41 V or less ACC PEDAL OPEN : 0.5/8 - 1.0/8 BRAKE SW : Off VEHICLE SPEED M : 40 km/h (25 MPH) or more 6. Stop the vehicle. Select "Self Diagnostic Results" in "TRANSMISSION". 7 Ν Is "P0868" detected? YES >> Go to TM-279, "Diagnosis Procedure". NO >> INSPECTION END **Diagnosis** Procedure INFOID:000000012200972 **1.**CHECK LINE PRESSURE P Perform line pressure test. Refer to TM-228, "Inspection and Judgment". Is the inspection result normal? YES >> GO TO 2. NO >> Repair or replace damaged parts. Refer to TM-228, "Inspection and Judgment". 2.CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to <u>TM-260</u>, "DTC Logic".

[CVT: RE0F10B]

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P0868 TRANSMISSION FLUID PRESSURE

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

 $\mathbf{3}$.check secondary pressure solenoid valve

Check secondary pressure solenoid valve. Refer to TM-266, "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-274, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

5.CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to <u>TM-347, "Removal and Installation"</u>.

NO >> Repair or replace damaged parts.

P1701 TCM

Description

When the power supply to the TCM is cut OFF, for example because the battery is removed, and the self-diagnosis memory function stops, malfunction is detected. ${}^{\rm B}$

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. After erasing self-diagnosis result, perform DTC P1701 reproduction procedure and check that malfunction is not detected.

DTC Logic

INFOID:000000012200974

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DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P1701	Power Supply Circuit	Power supply (backup) of TCM is not supplied and learning function stops	 Harness or connectors (TCM power supply circuit is open or shorted.)
отс со	NFIRMATION PROCED	URE	
CAUTIOI	<mark>N:</mark> drive vehicle at a safe sp	bed	
	ARATION BEFORE WOR		
		PROCEDURE" occurs just before, turn	ignition switch OFF and wait for at
	seconds, then perform the		
_	>> GO TO 2. K DTC DETECTION		
9	CONSULT the engine.		
2. Run	engine for 10 seconds or		
	e the vehicle for 10 second ct "Data Monitor" in "TRAN		
5. Stop	the vehicle.		
	ignition switch OFF and w the engine.	ait for 2 seconds or more.	
3. Seleo	ct "Self Diagnostic Results"	in "TRANSMISSION".	
	<u>" detected?</u>		
	>> Go to <u>TM-281, "Diagno</u> >> INSPECTION END	sis Procedure".	
-	sis Procedure		INFO/D:000000012200975
			1141 OID.00000012200975
I.CHEC	K TCM POWER SUPPLY	CIRCUIT (PART 1)	
	ignition switch OFF.		
	ignition switch ON.		
4. Chec	k valtaga batwaan TCM b	arness connector terminals and ground	

INFOID:000000012200973

	+			
T	ТСМ		Condition	Voltage
Connector	Terminal	Terminal		
	46		Ignition switch: ON	10 V – 16 V
F81	40	Ground	Ignition switch: OFF	Approx. 0 V
FOI	48	Ground	Ignition switch: ON	10 V – 16 V
	40		Ignition switch: OFF	Approx. 0 V

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

2. CHECK TCM POWER SUPPLY CIRCUIT (PART 2)

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

	+			
	TCM		Voltage	
Connector	Terminal			
F81	47	Ground	10 V – 16 V	

Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

3.CHECK CIRCUIT BETWEEN TCM AND IPDM E/R

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R connector.
- 3. Check continuity between TCM harness connector terminals and IPDM E/R harness connector terminal.

T	CM	IPD	II E/R	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F81	46	E15	57	Existed
101	48		57	LAISteu

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4.DETECT MALFUNCTIONING ITEM

Check the following:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to <u>PG-43</u>, "Wiring Diagram - IGNITION POWER SUPPLY -".
- Short circuit in harness between IPDM E/R harness connector terminal 57 and TCM harness connector terminal 46, and 48.
- 10A fuse (No. 55, located in IPDM E/R). Refer to PG-82, "Fuse, Connector and Terminal Arrangement".

• IPDM E/R

Ignition switch

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.
- NO >> Repair or replace damaged parts.

5.DETECT MALFUNCTIONING ITEM

Check the following:

P1701 TCM

< DTC/CIRC	< DTC/CIRCUIT DIAGNOSIS > [CVT: RE0F10B]				
Open circui PG-12, "Wi	it or short circu ring Diagram -	uit in harness BATTERY PO	OWER SUPPLY -	and TCM harness connector terminal 47. Refer to	А
 10A fuse (N ment". 	No. 33, located	I in fuse and f	iusible link block)	. Refer to PG-81, "Fuse and Fusible Link Arrange-	
	ion result norn	nal?			В
				termittent Incident".	
•	Repair or replace	• •			
	IRCUIT BETW				С
Check contin	uity between I	CM namess of	connector termina	ais and ground.	
T	СМ				ТΜ
Connector	Terminal	_	Continuity	•	
F81	5 42	Ground	Existed		Е
Is the inspect	ion result norn	nal?			
	Check intermitte Repair or replace			termittent Incident".	F
		te uamayeu p	Jan 15.		
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					M
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P1705 TP SENSOR

Description

INFOID:000000012200976

INFOID:000000012200977

[CVT: RE0F10B]

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

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P1705	Accelerator Pedal Position Sensor Signal Circuit	TCM detects that difference between the 2 ac- celerator pedal position signals (CAN commu- nication) from ECM is 1/8 or more	 Harness or connectors (CAN communication line is open or shorted.) (Accelerator pedal position sensor cir- cuit is open or shorted.) ECM

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT

1. Start the engine.

2. Apply the parking brake.

- 3. Depress the accelerator pedal gradually.
- 4. Release your foot from the accelerator pedal.
- 5. Select "Self Diagnostic Results" in "TRANSMISSION".

Is "P1705" detected?

- YES >> Go to TM-284, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK DTC (ECM)

With CONSULT

- 1. Turn ignition switch ON.
- 2. Select "Self Diagnostic results" in "ENGINE".

Is any DTC detected?

- YES >> Check DTC detected item. Refer to <u>EC-115, "DTC Index"</u>.
- NO >> Check intermittent incident. Refer to <u>GI-45. "Intermittent Incident"</u>.

INFOID:000000012200978

P1709 INCOMPLETED DATA WRITING

< DTC/CIRCUIT DIAGNOSIS >

P1709 INCOMPLETED DATA WRITING

Description

When TCM does not store calibration data (individual characteristic value) of each solenoid valve that is В stored in the ROM assembly (in the control valve), a malfunction is detected. **CAUTION:**

Immediately after TCM is replaced or after control valve or transaxle assembly is replaced (after TCM initialization is complete), self-diagnosis result of "P1709" may be displayed. In this case, erase selfdiagnosis result using CONSULT. After erasing self-diagnosis result, perform DTC P1701 reproduction procedure and check that malfunction is not detected.

DTC Logic

ТΜ INFOID:000000012200980

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1709	Incompleted Data Writing	When TCM does not store calibration data (individual characteristic value) of each sole- noid valve that is stored in the ROM assem- bly (in the control valve).	 Harness or connectors (ROM assembly circuit is open or short- ed.) TCM ROM assembly (in the control valve)
	NFIRMATION PROCEI	DURE	
Then wait	t at least 10 seconds befo	"DTC CONFIRMATION PROCEDUF pre performing the next test.	RE", always turn ignition switch OFF.
	K DTC DETECTION		
	ONSULT ignition switch OFF.		
2. Wait	for at least 10 consecutiv	e seconds.	
 Turn ignition switch ON. Perform "Self Diagnostic Results" in "TRANSMISSION". 			
	" detected?		
	>> Go to <u>TM-285, "Diagno</u> >> INSPECTION END	osis Procedure".	
	sis Procedure		

1. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (ROM ASSEMBLY) (PART

1)

1. Turn ignition switch OFF.

- 2. Disconnect TCM connector and CVT unit connector.
- 3. Check continuity between TCM vehicle side harness connector terminals and CVT unit vehicle side har-Ν ness connector terminals.

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	8	F51	11	
	9		1	
F81	10		16	Existed
	25		19	
	26		20	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

Revision: November 2015

[CVT: RE0F10B]

INFOID:000000012200979

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P1709 INCOMPLETED DATA WRITING

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10B]

2. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (ROM ASSEMBLY) (PART 2)

Check continuity between TCM vehicle side harness connector terminals and ground.

ТСМ			Continuity	
Connector	Terminal		Continuity	
	8	Ground	Not existed	
	9			
F81	10			
	25			
	26			

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK TERMINAL CORD ASSEMBLY

1. Remove terminal cord assembly. Refer to <u>TM-330</u>, "Exploded View".

2. Check continuity between CVT unit harness terminals and control valve harness connector terminals.

CVT unit		Control valve		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	1	F207	2	
	11		3	*
F209	16		4	Existed
	19		5	•
	20		1	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4.CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to <u>TM-281, "Diagnosis Procedure"</u>. <u>Is the inspection result normal?</u>

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

5.REPLACE TCM

1. Replace TCM. Refer to TM-328, "Removal and Installation".

2. Perform "DTC CONFIRMATION PROCEDURE". Refer to TM-285. "DTC Logic".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace transaxle assembly. Refer to TM-347. "Removal and Installation".

P1722 VEHICLE SPEED

Description

The vehicle speed signal is transmitted from ABS actuator and electric unit (control unit) to TCM by CAN communication line. $\,^{\rm B}$

DTC Logic

INFOID:000000012200983

INFOID:000000012200982

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes	ТΜ
P1722	Vehicle Speed Signal Circuit	 TCM detects malfunction in CAN communication with ABS actuator and electric unit (control unit). When vehicle speed that TCM detects is 10 km/h (7 MPH) or more, vehicle speed signal (CAN communication) that is received from ABS actuator and electric unit (control unit) is 2 km/h (2 MPH) or less. Change of vehicle speed signal (CAN communication) that TCM receives is large 	 Harness or connectors (CAN communication line is open or shorted.) (Vehicle speed signal circuit is open or shorted.) ABS actuator and electric unit (control unit) 	E F
DTC CO	NFIRMATION PROCED	URE		G
CAUTIO		and		
	drive vehicle at a safe sp o ARATION BEFORE WORI			Η
		NOCEDURE" occurs just before, turn	ignition switch OFF and wait for at	
	seconds, then perform the			I
-	>> GO TO 2. K DTC DETECTION			J
-				
 Start Select Select Select Drive 	CONSULT the engine. ct "Data Monitor" in "TRAN ct "VSP SENSOR". e the vehicle. tain the following condition			K
VS	SP SENSOR	: 10 km/h (7 MPH) or more		
 6. Stop the vehicle. 7. Select "Self Diagnostic Results" in "TRANSMISSION". <u>Is "P1722" detected?</u> YES >> Go to <u>TM-287, "Diagnosis Procedure"</u>. NO >> INSPECTION END 				
Diagno	sis Procedure		INFOID:000000012200984	0
-		AND ELECTRIC UNIT (CONTROL UN	וודו	-
With CONSULT				Ρ
1. Turn 2. Selec	ignition switch ON. ct "Self Diagnostic Results" <u>C detected?</u>	" in "ABS".		-

NO >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

С

P1723 SPEED SENSOR

Description

INFOID:000000012200985

[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 primary speed sensor detects the primary pulley revolution speed and sends a signal to the TCM.

DTC Logic

INFOID:000000012200986

DTC DETECTION LOGIC

One of the "P0715", or the "P0720" is displayed with the DTC at the same time.

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P1723	Speed Sensor Circuit	TCM detects that high frequency components that are extracted from primary pulley speed and secondary pulley speed exceed a certain value	 Harness or connectors (Primary speed sensor circuit is open or shorted.) (Secondary speed sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE CAUTION:

Always drive vehicle at a safe speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "RANGE" and "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following condition for 1 second or more.

RANGE	: "D" position
VEHICLE SPEED	: 20 km/h (13 MPH) or more

- 6. Stop the vehicle.
- 7. Select "Self Diagnostic Results" in "TRANSMISSION".

Is "P1723" detected?

YES >> Go to <u>TM-288</u>, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000012200987

1.CHECK SECONDARY SPEED SENSOR SYSTEM

Check secondary speed sensor system. Refer to TM-251, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2.CHECK PRIMARY SPEED SENSOR SYSTEM

Check primary speed sensor system. Refer to TM-248, "DTC Logic".

Is the inspection result normal?

Revision: November 2015

P1723 SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >	[CVT: RE0F10B]
YES >> Check intermittent incident. Refer to <u>GI-45</u> , "Intermittent Incident". NO >> Repair or replace damaged parts.	

< DTC/CIRCUIT DIAGNOSIS >

P1726 THROTTLE CONTROL SIGNAL

Description

INFOID:000000012200988

[CVT: RE0F10B]

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:000000012200989

INFOID:000000012200990

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P1726	Throttle Control Signal Circuit	TCM receives a malfunction signal of engine system from ECM	Harness or connectors (Electronically controlled throttle sensor signal 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

With CONSULT

- 1. Start the engine.
- 2. Run engine for at least 10 consecutive seconds at idle speed.
- 3. Select "Self Diagnostic Results" in "TRANSMISSION".

Is "P1726" detected?

- YES >> Go to TM-290, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK DTC (ECM)

With CONSULT

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

Is any DTC detected?

- YES >> Check DTC detected item. Refer to EC-115. "DTC Index".
- NO >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

< DTC/CIRCUIT DIAGNOSIS >

P1740 SELECT SOLENOID

DTC Logic

INFOID:000000012200991

А

	Trouble diagnosis name	DTC detection condition	Possible causes
P1740	Lock-up Select Solenoid Valve Circuit	 Monitor value for lock-up select solenoid valve is OFF when TCM command value for lock-up select solenoid valve is ON. Monitor value for lock-up select solenoid valve is ON when TCM command value for lock-up select solenoid valve is OFF. 	 Harness or connectors (Lock-up select solenoid circuit is open or shorted.) Lock-up select solenoid valve
тс со	NFIRMATION PROCED	URE	
AUTIO	<mark>N:</mark> Irive vehicle at a safe sp	bed	
-	ARATION BEFORE WOR		
anothe	r "DTC CONFIRMATION F	PROCEDURE" occurs just before, turn	ignition switch OFF and wait for at
ast 10 s	seconds, then perform the	next test.	-
	>> GO TO 2.		
	K DTC DETECTION (PAR	RT 1)	
	ONSULT		
	the engine. ct "Data Monitor" in "TRAN	SMISSION"	
Sele	ct "RANGE".		
Main	tain the following conditior	for 1 second or more.	
R	ANGE	: "P" or "N" position	
	ct "Self Diagnostic Results	in "TRANSMISSION".	
With Gollow th	e procedure "With CONSL	ILT".	
	<u>)" detected?</u>		
	>> Go to <u>TM-291, "Diagno</u> >> GO TO 3.	<u>sis Procedure"</u> .	
-	K DTC DETECTION (PAR	RT 2)	
.CHEC			
With C	CONSULT ct "Data Monitor" in "TRAN	SMISSION".	
With C Sele Sele	ONSULT		
With C Sele Sele Main	CONSULT ct "Data Monitor" in "TRAN ct "RANGE".		
With C Sele Sele Main R Sele	CONSULT ct "Data Monitor" in "TRAN ct "RANGE". tain the following conditior ANGE ct "Self Diagnostic Results	for 1 second or more. : "R" or "D" position	
With C Sele Sele Main R Sele	CONSULT ct "Data Monitor" in "TRAN ct "RANGE". tain the following condition ANGE ct "Self Diagnostic Results	for 1 second or more. : "R" or "D" position " in "TRANSMISSION".	
With C Sele Sele Main R Sele With C	CONSULT ct "Data Monitor" in "TRAN ct "RANGE". tain the following conditior ANGE ct "Self Diagnostic Results	for 1 second or more. : "R" or "D" position " in "TRANSMISSION".	
With C Sele Sele Main R Sele With C blow th <u>"P174(</u> (ES	CONSULT ct "Data Monitor" in "TRAN ct "RANGE". tain the following conditior ANGE ct "Self Diagnostic Results ST e procedure "With CONSU	n for 1 second or more. : "R" or "D" position " in "TRANSMISSION". ILT".	
With C Sele Sele Main R Sele With C blow th <u>"P174(</u> ZES	CONSULT ct "Data Monitor" in "TRAN ct "RANGE". tain the following condition ANGE ct "Self Diagnostic Results ST e procedure "With CONSU <u>of detected?</u> >> Go to <u>TM-291. "Diagno</u>	n for 1 second or more. : "R" or "D" position " in "TRANSMISSION". ILT".	INFOID:000000012200992

P1740 SELECT SOLENOID

< DTC/CIRCUIT DIAGNOSIS >

2. Disconnect CVT unit connector.

3. Check resistance between CVT unit connector terminal and ground.

	CVT unit		Condition	Resistance
Connecte	or Terminal	Ground	Condition	Resistance
			CVT fluid temperature: 20°C (68°F)	Approx. 26.0 – 30.0 Ω
F209	13	Ground	CVT fluid temperature: 50°C (122°F)	Approx. 29.0 – 34.0 Ω
			CVT fluid temperature: 80°C (176°F)	Approx. 32.0 – 37.0 Ω

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

2.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (LOCK-UP SELECT SOLENOID VALVE) (PART 1)

1. Disconnect TCM connector.

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

ТСМ		CVT unit		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
F81	37	F51	13	Existed	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

 ${f 3.}$ CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (LOCK-UP SELECT SOLENOID VALVE) (PART 2)

Check continuity between TCM harness connector terminal and ground.

T	TCM		Continuity	
Connector	Terminal	Ground	Continuity	
F81	37	Ground	Not existed	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Repair or replace damaged parts.

4.CHECK TERMINAL CORD ASSEMBLY (PART 1)

- 1. Remove terminal cord assembly. Refer to <u>TM-330, "Removal and Installation"</u>.
- 2. Check continuity between CVT unit harness connector terminal and control valve harness connector terminal.

CVT unit		Control valve		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F209	13	F208	11	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

5.CHECK TERMINAL CORD ASSEMBLY (PART 2)

Check terminal cord assembly harness cladding for damage.

Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to <u>TM-347, "Removal and Installation"</u>.

NO >> Repair or replace damaged parts.

P1777 STEP MOTOR

< DTC/CIRCUIT DIAGNOSIS >

P1777 STEP MOTOR

DTC Logic

А

В

INFOID:000000012200993

DTC	Trouble diagnosis nam	e DTC detection condition Possible causes
P1777	Step Motor Circuit	 Step motor monitor value is OFF when step motor command value of TCM is ON Step motor monitor value is ON when step motor command value of TCM is OFF Harness or connectors (Step motor circuit is open or shorted.) Step motor
	NFIRMATION PROC	
		EDORE
	rive vehicle at a safe	speed.
.PREP/	ARATION BEFORE W	ORK
f another	"DTC CONFIRMATIC	N PROCEDURE" occurs just before, turn ignition switch OFF and wait for at
east 10 s	econds, then perform	the next test.
	>> GO TO 2.	
	K DTC DETECTION	
_		
	ONSULT the engine.	
	t "Data Monitor" in "TF	RANSMISSION".
	t "RANGE" and "VEHI	CLE SPEED".
	the vehicle. ain the following cond	ition for 1 second or more.
	NGE	: "D" position
		: 20 km/h (13 MPH) or more
	the vehicle. at "Self Diagnostic Res	ults" in "TRANSMISSION".
ම With G	ST	
	e procedure "With CON	NSULT".
	<u>" detected?</u>	anasis Drasadura"
	> Go to <u>TM-293, "Dia</u> >> INSPECTION END	gnosis Procedure.
Diagno	sis Procedure	
		INFOID:000000012200994
1. CHEC	K STEP MOTOR CIRC	CUIT (PART 1)
1. Turn	ignition switch OFF.	
	nnect TCM connector	TCM harness connector terminals.
2. Disco		
2. Disco	k resistance between	
2. Disco	ТСМ	
2. Disco	TCM	esistance
2. Disco 3. Chec	TCM or Terminal 27 – 28	esistance

NO >> GO TO 3.

2.CHECK STEP MOTOR CIRCUIT (PART 2)

P1777 STEP MOTOR

< DTC/CIRCUIT DIAGNOSIS >

Check resistance between TCM harness connector terminals and ground.

TCM		Ground	Resistance	
Connector	Terminal	Ground	Resistance	
F81	27	Ground		
	28		Approx. 15.0 Ω	
	29			
	30			

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 3.

3. CHECK STEP MOTOR

1. Disconnect CVT unit connector.

2. Check resistance between CVT unit connector terminals.

CV1	Resistance		
Connector	Terminal	Resistance	
F209	6 – 7	Approx. 30.0 Ω	
F209	8 – 9	Approx. 30.0 32	

3. Check resistance between CVT unit connector terminals and ground.

CVT unit		Ground	Resistance	
Connector	Terminal	Cround	Resistance	
F209	6	Ground		
	7		Approx. 15.0 Ω	
	8			
	9			

Is the inspection result normal?

YES >> GO TO 4. NO

>> GO TO 6.

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

Check continuity between TCM harness connector terminals and CVT unit harness connector terminals.

TCM		CVT unit		Continuity			
Connector	Terminal	Connector Terminal		Continuity			
F81	27	F51			27	9	
	28		8	Existed			
	FOI	29	FDI	7	Existed		
	30		6				

Is the inspection result normal?

YES >> GO TO 5.

>> Repair or replace damaged parts. NO

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

Check continuity between TCM harness connector terminals and ground.

P1777 STEP MOTOR

TC	CM	_			
Connector	Terminal	Ground	Continuity		
	27		_		
F81	28	Ground	Not existed		
FOI	29	Giouna	NOT EXISTED		
	30				
	ion result norr				_
				Intermittent Incident".	
_	Repair or repla	-			
	ERMINAL CO				
				Exploded View". or terminals and control valve harness	connector ter-
minals.					
CV	⁻ unit	Con	trol valve	Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
	6		14		
F209	7	F208	15	Existed	
	8	1 200	16		
	9		17		
	ion result norr	<u>mal?</u>			
	GO TO 7.	aa damaaad	narta		
-	Repair or repla	-			
	ERMINAL CO				
		•	cladding for dam	age.	
	<u>ion result norr</u> 30 TO 8.	<u>nal /</u>			
	Repair or repla	ce damaged	parts.		
NO >> F	• •		F		
. CHECK D	· · /				
. CHECK E	SULT		OCEDURE". Re	er to TM-293. "DTC Logic".	
• CHECK E With CON Perform	SULT DTC CONFIF		OCEDURE". Re	er to <u>TM-293, "DTC Logic"</u> . ".	
• CHECK D With CON Perform Select "S	SULT DTC CONFIF				
With CON With CON Perform Select "S P1777" de YES-1 (Only	SULT DTC CONFIF elf Diagnostic <u>itected?</u> / "P1777" is do	Results" in " ⁻	FRANSMISSION ere is a malfur	". ction of the step motor. Replace the	control valve.
With CON With CON Perform Select "S P1777" de YES-1 (Only	SULT DTC CONFIF elf Diagnostic <u>itected?</u> "P1777" is de Refer to TM-33	Results" in " etected)>>Th 30, "Removal	FRANSMISSION ere is a malfur and Installation	". ction of the step motor. Replace the	
With CON With CON Perform Select "S P1777" de YES-1 (Only F YES-2 ("P17	SULT DTC CONFIF elf Diagnostic tected? ("P1777" is do Refer to TM-33 (777" and "P07	Results" in " etected)>>Th 30. "Removal 25"/"P1777" a	FRANSMISSION ere is a malfur and Installation and "U1000"/"P1	". ction of the step motor. Replace the	
With CON With CON Perform Select "S <u>FIT77" de</u> YES-1 (Only FI YES-2 ("P17 the YES-3 (Other	SULT DTC CONFIF elf Diagnostic <u>tected?</u> (*P1777" is du refer to TM-33 777" and "P07 ne control valver than YES-1	Results" in " etected)>>Th 30. "Removal 25"/"P1777" a ve. Refer to <u>T</u>	FRANSMISSION ere is a malfur and Installation and "U1000"/"P1 M-330, "Remove	". ction of the step motor. Replace the 777", "P0725" and "U1000" are detected	ed)>>Replace
With CON Perform Select "S Perform YES-1 (Only YES-2 ("P17 th YES-3 (Other L	SULT DTC CONFIF elf Diagnostic <u>tected?</u> (*P1777" is du refer to TM-33 777" and "P07 ne control valuer than YES-1 <u>nstallation</u> ".	Results" in " etected)>>Th <u>30, "Removal</u> 25"/"P1777" a ve. Refer to <u>T</u> and YES-2)>	FRANSMISSION ere is a malfur and Installation and "U1000"/"P1 M-330, "Remove >Replace the t	". ction of the step motor. Replace the 777", "P0725" and "U1000" are detected I and Installation".	ed)>>Replace

Р

< DTC/CIRCUIT DIAGNOSIS >

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:000000012200996

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P1778	Step Motor Circuit Intermittent	There is a large difference between the prima- ry pulley speed sensor value and the and the primary pulley speed estimated from the sec- ondary speed sensor value, or there is a large difference between the target pulley ratio and actual pulley 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-297, "Diagnosis Procedure".

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "RANGE", "ATF TEMP SEN", "ACC PEDAL OPEN", "PRI SPEED" and "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following condition for 5 seconds or more.

RANGE	: "D" position
ATF TEMP SEN	: 2.03 – 0.16 V
ACC PEDAL OPEN	: 1.0/8 or more
PRI SPEED	: 1,000 rpm or more
VEHICLE SPEED	: 10 km/h (7 MPH) or more

6. Stop the vehicle.

7. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT".

Is "P1778" detected?

- YES >> Go to <u>TM-297</u>, "Diagnosis Procedure".
- NO >> INSPECTION END

INFOID:000000012200995

P1778 STEP MOTOR

ICVT: RE0E10B1

< DTC/CIRCUIT DIAGNOSIS >	[CVT: RE0F10B]
Diagnosis Procedure	INFOID:000000012200997
1.CHECK STEP MOTOR SYSTEM	
Check step motor system. Refer to TM-293, "DTC Logic".	
Is the inspection result normal?	
YES >> GO TO 2. NO >> Repair or replace damaged parts. Refer to <u>TM-228</u> , "Inspection and Judgme	nt"
2.CHECK PRIMARY SPEED SENSOR SYSTEM	<u></u> .
Check primary speed sensor system. Refer to <u>TM-248, "DTC Logic"</u> .	
<u>Is the inspection result normal?</u> YES >> GO TO 3.	
NO >> Repair or replace damaged parts.	
3. CHECK SECONDARY SPEED SENSOR SYSTEM	
Check secondary speed sensor system. Refer to <u>TM-251, "DTC Logic"</u> . <u>Is the inspection result normal?</u>	
YES >> GO TO 4.	
NO >> Repair or replace damaged parts.	
4. CHECK INTERMITTENT INCIDENT	
Refer to GI-45, "Intermittent Incident".	
Is the inspection result normal?	
YES >> Replace transaxle assembly. Refer to <u>TM-347</u> , " <u>Removal and Installation</u> ".	
NO >> Repair or replace damaged parts.	

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:000000012200999

INFOID:000000012200998

[CVT: RE0F10B]

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 ⇔ 8th gear).

Is the inspection result normal?

- YES >> INSPECTION END
- NO >> Go to TM-298, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:000000012201000

1.CHECK INPUT SIGNALS

- Start engine.
 Check if correct selector lever position ("P", "N", "R" or "D") is displayed as selector lever is moved into
- Check if correct selector level position (P, N, R or D) is displayed as selector level is moved into each position.
 Calact "DENOE" on "DATA MONITOD" and read out the value.
- 3. Select "RENGE" on "DATA MONITOR" and read out the value.
- 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 ⇔ 8th gear).

Is the inspection result normal?

- YES >> INSPECTION END
- NO 1 >> The actual gear position does not change, or shifting into the manual mode is not possible (no gear shifting in the manual mode possible). Or the shift position indicator is not indicated.
 - Check manual mode switch. Refer to TM-272, "Component Inspection (Manual Mode Switch)".
 - · Check CVT main system (Fail-safe function actuated).
 - Perform "SELF-DIÁG RESULTS" mode for "TRANSMISSION". Refer to <u>TM-190</u>, "CONSULT <u>Function</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-190, "CONSULT</u> <u>Function"</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 <u>TM-190</u>, "CONSULT <u>Function"</u>.
- 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-46, "Work flow"</u>.

SHIFT LOCK SYSTEM

< DTC/CIRCUI	T DIAGNO	OSIS >	•••••			[CVT: RE0F10B]
SHIFT LOC	CK SYS	TEM				
Component	Functior	n Check				INFOID:000000012201001
1.CHECK SHI			I (PART 1)			
3. Attempt to s Can the selecto	lector level shift the se or lever be se to <u>TM-299</u>	r to "P" posit lector lever shifted to an	to any other t	•	with the brake pedal relea	ased.
2.CHECK SHI	-	OPERATION	I (PART 2)			
Attempt to shift Can the selecto YES >> INS	the selecto or lever be s PECTION	or lever to ar <u>shifted to an</u> END	ny other than	•	the brake pedal depress	ed.
Diagnosis Pi	rocedure	9				INFOID:000000012201002
1.CHECK POW	NER SOUI	RCE				
3. Turn ignition	stop lamp n switch O	switch conn N.		ch harness co	nnector terminal and gro	und.
+						
Stop lamp s	switch Terminal	-	Voltage			
E102	3	Ground	Battery voltag	le		
Is the inspection YES >> GO NO >> GO 2.CHECK STC) TO 2.) TO 9.		RT 1)	_		
				nent Inspectio	on (Stop Lamp Switch)".	
Is the inspection YES >> GO NO >> GO		rmal?				
3.CHECK CIR	CUIT BET	WEEN STO	P LAMP SWI	TCH AND C\	/T SHIFT SELECTOR (P	ART 1)
	continuity b			vitch harness	connector terminal and th	ne CVT shift selector
Stop lamp s	witch	CVT shift	selector	Continuity		
Connector	Terminal	Connector	Terminal	Continuity		
E102	4	M57	3	Existed		
) TO 4. pair or repla	ace the malf	functioning pa P LAMP SWI		/T SHIFT SELECTOR (P	ART 2)

Check the continuity between the stop lamp switch harness connector terminal and ground.

TM-299

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

Stop lan	np switch		Continuity
Connector	Connector Terminal		Continuity
E102	4	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace the malfunctioning parts.

5.CHCK GROUND CIRCUIT

Check the continuity between the CVT shift selector harness connector terminal and ground.

CVT shit	t selector		Continuity
Connector	Terminal		Continuity
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-301, "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.

Check shift lock solenoid. Refer to <u>TM-301, "Component Inspection (Shift Lock Solenoid)</u>".

Is the inspection result normal?

- YES >> GO TO 8.
- NO >> Repair or replace the malfunctioning parts.

8.CHECK CVT SHIFT SELECTOR HARNESS

Check CVT shift selector harness. Refer to TM-301, "Component Inspection (CVT Shift Selector Harness)".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Repair or replace the malfunctioning parts.

9.DETECT MALFUNCTIONING ITEM

Check the following items:

 Open or short circuit in harness between ignition switch and stop lamp switch connector terminal 3. Refer to PG-43, "Wiring Diagram - IGNITION POWER SUPPLY -".

Ignition switch

• 10A fuse [No.3, fuse block (J/B)]. Refer to PG-80, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace the malfunctioning parts.

10.CHECK INSTALLATION POSITION OF STOP LAMP SWITCH

Adjust stop lamp switch position. Refer to BR-9. "Inspection and Adjustment".

>> GO TO 11.

11.CHECK STOP LAMP SWITCH (PART 2)

Check stop lamp switch. Refer to TM-302, "Component Inspection (Stop Lamp Switch)".

< DTC/CIRCUIT		SIS >			[CVT: RE0F10B]
Is the inspection					
	PECTION				
		ace the malfur	• •		
Component I			ock Soler	ioid)	INFOID:000000012201003
CHECK SHIF	T LOCK S	SOLENOID			
AUTION:	use betw	en the termi	nals when	nector and check that shift applying the voltage.	lock solenoid is activated.
	•	1			
Shift lock so	enola	Cond	itian	Ctatua	
+ (fuse)		Cond	ition	Status	
Termina		Apply battery	voltage bo		
1	2	tween termina		Shift lock solenoid operates	
s the inspection	result nor	mal?			
	PECTION				
NO >> Rep	ace the s	nift lock unit. F	Refer to TM	-317, "Disassembly and As	<u>sembly"</u> .
Component I	nspectio	on (Park Po	osition Sv	witch)	INFOID:000000012201004
.CHECK PARI					
				connector terminals.	
Connect the f Never cause s				applying the voltage.	
Park position swi	tch	Condit	ion	Continuity	
Terminal	Shift	the selector leve	r to "P" positic	on. Existed	
1 – 2		r than above		Not existed	
s the inspection				Not existed	
•	PECTION				
			witch. Refer	to TM-317, "Disassembly	and Assembly".
Component I	nspectio	on (CVT Sh	nift Selec	tor Harness)	INFOID:000000012201005
	•	· ·		,	
.CHECK CVT	SHIFT SE	LECTOR HA	RNESS (PA	ART 1)	
Check the contin narness connect	•		shift select	or harness connector term	inal and the shift lock solenoid
CVT shift sel	ector	Shift lock	solenoid		
		Connector	Terminal	- Continuity	
Connector	Terminal				
Connector M324	Terminal 3	M326	1	Existed	
M324	3		1	Existed	
M324 s the inspection YES >> GO	3 result nor TO 2.	mal?			embly and Assembly".
M324 s the inspection YES >> GO NO >> Rep	3 result nor TO 2. lace the C	<u>mal?</u> VT shift selec	tor harness	. Refer to <u>TM-317, "Disass</u>	embly and Assembly".
M324 S the inspection YES >> GO NO >> Rep 2.CHECK CVT	3 TO 2. lace the C SHIFT SE	<u>mal?</u> VT shift selec LECTOR HA	tor harness RNESS (P4	Refer to <u>TM-317, "Disass</u> ART 2)	embly and Assembly". nal and the park position switch

SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

Shift lock solenoid		Park posi	Continuity		
Connector	Terminal	Connector Terminal		Continuity	
M326	2	M325	1	Existed	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the CVT shift selector harness. Refer to TM-317, "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	CVT shi	Continuity	
Connector	Connector Terminal		Connector Terminal	
M325	2	M324	4	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace the CVT shift selector harness. Refer to <u>TM-317. "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-317</u>, "Disassembly and Assembly".

Component Inspection (Stop Lamp Switch)

1.CHECK STOP LAMP SWITCH

Check the continuity between the stop lamp switch connector terminals.

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

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-20, "Exploded View"</u>.

INFOID:000000012201006

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS SYSTEM SYMPTOM

Symptom Table

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

No.	ltem	Symptom	Condition	Diagnostic Item	Reference	С
				1. Engine idle speed	<u>EC-153</u>	-
				2. Engine speed signal	<u>TM-254</u>	ТМ
				3. Accelerator pedal position sensor	<u>TM-284</u>	
				4. CVT position	<u>TM-233</u>	-
				5. CVT fluid temperature sensor	<u>TM-244</u>	E
				6. CAN communication line	<u>TM-236</u>	-
1	Shift Shock	Large shock. ("N"→ "D" position)	ON vehicle	7. CVT fluid level and state	<u>TM-314</u>	F
		D poonton)		8. Line pressure test	<u>TM-228</u>	-
				9. Torque converter clutch solenoid valve	<u>TM-255</u>	-
				10. Lock-up select solenoid valve	<u>TM-291</u>	G
				11. Transmission range switch	<u>TM-241</u>	-
				12. Control valve	<u>TM-330</u>	-
		-	OFF vehicle	13. Forward clutch	<u>TM-347</u>	- H
				1. Engine idle speed	<u>EC-153</u>	
		Shift Shock Large shock. ("N"→ "R" position)	ON vehicle	2. Engine speed signal	<u>TM-254</u>	
				3. Accelerator pedal position sensor	<u>TM-284</u>	-
				4. CVT position	<u>TM-233</u>	- J - -
				5. CVT fluid temperature sensor	<u>TM-244</u>	
				6. CAN communication line	<u>TM-236</u>	
2	2 Shift Shock			7. CVT fluid level and state	<u>TM-314</u>	
				8. Line pressure test	<u>TM-228</u>	-
				9. Torque converter clutch solenoid valve	<u>TM-255</u>	-
				10. Lock-up select solenoid valve	<u>TM-291</u>	L
				11. Transmission range switch	<u>TM-241</u>	=
				12. Control valve	<u>TM-330</u>	M
		-	OFF vehicle	13. Reverse brake	<u>TM-347</u>	
				1. CVT position	<u>TM-233</u>	-
		Shift Shock Shock is too large for ON vehicle lock-up.		2. Engine speed signal	<u>TM-254</u>	Ν
3	Shift Shook		3. CAN communication line	<u>TM-236</u>	-	
3				4. CVT fluid level and state	<u>TM-314</u>	0
				5. Control valve	<u>TM-330</u>	0
			OFF vehicle	6. Torque converter	<u>TM-351</u>	-

INFOID:000000012201007

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В

< SYMPTOM DIAGNOSIS >

[CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference
				1. CVT fluid level and state	<u>TM-314</u>
				2. CVT position	<u>TM-233</u>
				3. CAN communication line	<u>TM-236</u>
				4. Line pressure test	<u>TM-228</u>
				5. Stall test	<u>TM-226</u>
				6. Step motor	<u>TM-293</u>
			ON vehicle	7. Primary speed sensor	<u>TM-248</u>
4		Vehicle cannot be started from "D" posi-		8. Secondary speed sensor	<u>TM-251</u>
		tion.		9. Accelerator pedal position sensor	<u>TM-284</u>
				10. CVT fluid temperature sensor	<u>TM-244</u>
				11. Secondary pressure sensor	<u>TM-274</u>
				12. Power supply	<u>TM-281</u>
				13. Control valve	<u>TM-330</u>
			OFF vehicle	14. Oil pump assembly	
				15. Forward clutch	<u>TM-347</u>
	Slips/Will			16. Parking components	
	Not Engage			1. CVT fluid level and state	<u>TM-314</u>
				2. CVT position	<u>TM-233</u>
				3. CAN communication line	<u>TM-236</u>
				4. Line pressure test	<u>TM-228</u>
				5. Stall test	<u>TM-226</u>
				6. Step motor	<u>TM-293</u>
			ON vehicle	7. Primary speed sensor	<u>TM-248</u>
5		Vehicle cannot be started from "R" posi-		8. Secondary speed sensor	<u>TM-251</u>
		tion.		9. Accelerator pedal position sensor	<u>TM-284</u>
				10. CVT fluid temperature sensor	<u>TM-244</u>
				11. Secondary pressure sensor	<u>TM-274</u>
				12. Power supply	<u>TM-281</u>
				13. Control valve	<u>TM-330</u>
				14. Oil pump assembly	
			OFF vehicle	15. Reverse brake	<u>TM-347</u>
				16. Parking components	

< SYMPTOM DIAGNOSIS >

[CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference		
				1. CVT fluid level and state	<u>TM-314</u>	A	
				2. Line pressure test	<u>TM-228</u>	-	
				3. Engine speed signal	<u>TM-254</u>	В	
				4. Primary speed sensor	<u>TM-248</u>	-	
				5. Torque converter clutch solenoid valve	<u>TM-255</u>	-	
				6. CAN communication line	<u>TM-236</u>	С	
			ON vehicle	7. Stall test	<u>TM-226</u>	-	
6		Does not lock-up.		8. Step motor	<u>TM-293</u>	ТМ	
0		Does not lock-up.		9. Transmission range switch	<u>TM-241</u>		
				10. Lock-up select solenoid valve	<u>TM-291</u>	-	
				11. CVT fluid temperature sensor	<u>TM-244</u>	E	
				12. Secondary speed sensor	<u>TM-251</u>	-	
				13. Secondary pressure sensor	<u>TM-274</u>	F	
	Slips/Will Not Engage			14. Control valve	<u>TM-330</u>		
			OFF vehicle	15. Torque converter	<u>TM-351</u>	-	
				16. Oil pump assembly	<u>TM-347</u>	G	
				1. CVT fluid level and state	<u>TM-314</u>	-	
				2. Line pressure test	<u>TM-228</u>	H	
				3. Engine speed signal	<u>TM-254</u>	- 11	
				4. Primary speed sensor	<u>TM-248</u>	-	
				5. Torque converter clutch solenoid valve	<u>TM-255</u>		
				6. CAN communication line	<u>TM-236</u>	=	
			ON vehicle	7. Stall test	<u>TM-226</u>		
7		Does not hold lock-up		8. Step motor	<u>TM-293</u>	J	
1		condition.		9. Transmission range switch	<u>TM-241</u>	=	
				10. Lock-up select solenoid valve	<u>TM-291</u>	K	
				11. CVT fluid temperature sensor	<u>TM-244</u>	-	
				12. Secondary speed sensor	<u>TM-251</u>	-	
				13. Secondary pressure sensor	<u>TM-274</u>	L	
				14. Control valve	<u>TM-330</u>	_	
			OFF vehicle	15. Torque converter	<u>TM-351</u>	M	
				16. Oil pump assembly	<u>TM-347</u>		

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< SYMPTOM DIAGNOSIS >

[CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference
				1. CVT fluid level and state	<u>TM-314</u>
				2. Line pressure test	<u>TM-228</u>
				3. Engine speed signal	<u>TM-254</u>
			ON vehicle	4. Primary speed sensor	<u>TM-248</u>
8		Lock-up is not re-	On vehicle	5. Torque converter clutch solenoid valve	<u>TM-255</u>
0		leased.		6. CAN communication line	<u>TM-236</u>
				7. Stall test	<u>TM-226</u>
				8. Control valve	<u>TM-330</u>
			OFF vehicle	9. Torque converter	<u>TM-351</u>
			OFF vehicle	10. Oil pump assembly	<u>TM-347</u>
				1. CVT fluid level and state	<u>TM-314</u>
		With selector lever in "D" position, accelera-	ON vehicle	2. Line pressure test	<u>TM-228</u>
				3. Stall test	<u>TM-226</u>
	Slips/Will			4. Accelerator pedal position sensor	<u>TM-284</u>
	Not Engage			5. CAN communication line	<u>TM-236</u>
				6. Transmission range switch	<u>TM-241</u>
				7. CVT position	<u>TM-233</u>
				8. Step motor	<u>TM-293</u>
9				9. Primary speed sensor	<u>TM-248</u>
9		tion is extremely poor.		10. Secondary speed sensor	<u>TM-251</u>
				11. Accelerator pedal position sensor	<u>TM-284</u>
				12. Secondary pressure sensor	<u>TM-274</u>
				13. CVT fluid temperature sensor	<u>TM-244</u>
				14. Power supply	<u>TM-281</u>
				15. Control valve	<u>TM-330</u>
				16. Torque converter	<u>TM-351</u>
			OFF vehicle	17. Oil pump assembly	TM 247
				18. Forward clutch	<u> </u>

< SYMPTOM DIAGNOSIS >

[CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference
				1. CVT fluid level and state	<u>TM-314</u>
				2. Line pressure test	<u>TM-228</u>
				3. Stall test	<u>TM-226</u>
			4. Accelerator pedal position sensor	<u>TM-284</u>	
				5. CAN communication line	<u>TM-236</u>
				6. Transmission range switch	<u>TM-241</u>
				7. CVT position	TM-233
			ON vehicle	8. Step motor	<u>TM-293</u>
		With selector lever in		9. Primary speed sensor	<u>TM-248</u>
0		"R" position, accelera- tion is extremely poor.		10. Secondary speed sensor	<u>TM-251</u>
				11. Accelerator pedal position sensor	<u>TM-284</u>
				12. Secondary pressure sensor	<u>TM-274</u>
				13. CVT fluid temperature sensor	<u>TM-244</u>
				14. Power supply	<u>TM-281</u>
				15. Control valve	<u>TM-330</u>
			OFF vehicle	16. Torque converter	<u>TM-351</u>
Slips/Will Not Engage	Slips/Will			17. Oil pump assembly	TM 247
			18. Reverse brake	<u> </u>	
				1. CVT fluid level and state	<u>TM-314</u>
				2. Line pressure test	<u>TM-228</u>
				3. Engine speed signal	<u>TM-254</u>
				4. Primary speed sensor	<u>TM-248</u>
				5. Torque converter clutch solenoid valve	<u>TM-255</u>
				6. CAN communication line	<u>TM-236</u>
				7. Stall test	<u>TM-226</u>
		Oline et le els sur	ON vehicle	8. Step motor	<u>TM-293</u>
1		Slips at lock-up.		9. Transmission range switch	<u>TM-241</u>
				10. Lock-up select solenoid valve	<u>TM-291</u>
				11. CVT fluid temperature sensor	<u>TM-244</u>
				12. Secondary speed sensor	<u>TM-251</u>
				13. Secondary pressure sensor	<u>TM-274</u>
				14. Control valve	<u>TM-330</u>
				15. Torque converter	<u>TM-351</u>
			OFF vehicle	16. Oil pump assembly	<u>TM-347</u>

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< SYMPTOM DIAGNOSIS >

[CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Referenc
				1. CVT fluid level and state	<u>TM-314</u>
				2. Line pressure test	TM-228
				3. Accelerator pedal position sensor	<u>TM-284</u>
				4. Transmission range switch	TM-241
				5. CAN communication line	<u>TM-236</u>
				6. Stall test	<u>TM-226</u>
				7. CVT position	<u>TM-233</u>
			ON vehicle	8. Step motor	<u>TM-293</u>
				9. Primary speed sensor	<u>TM-248</u>
10				10. Secondary speed sensor	<u>TM-251</u>
12		No creep at all.		11. Accelerator pedal position sensor	<u>TM-284</u>
				12. CVT fluid temperature sensor	<u>TM-244</u>
				13. Secondary pressure sensor	<u>TM-274</u>
				14. Power supply	<u>TM-281</u>
				15. Control valve	<u>TM-330</u>
			OFF vehicle	16. Torque converter	<u>TM-351</u>
				17. Oil pump assembly	<u></u> <u>TM-347</u>
C				18. Gear system	
				19. Forward clutch	
	Other			20. Reverse brake	
				1. CVT fluid level and state	<u>TM-314</u>
				2. Line pressure test	<u>TM-228</u>
				3. Transmission range switch	<u>TM-241</u>
				4. Stall test	<u>TM-226</u>
				5. CVT position	<u>TM-233</u>
				6. Step motor	<u>TM-293</u>
			ON vehicle	7. Primary speed sensor	<u>TM-248</u>
				8. Secondary speed sensor	<u>TM-251</u>
				9. Accelerator pedal position sensor	<u>TM-284</u>
13		Vehicle cannot run in all positions.		10. CVT fluid temperature sensor	<u>TM-244</u>
				11. Secondary pressure sensor	<u>TM-274</u>
				12. Power supply	<u>TM-281</u>
				13. Control valve	<u>TM-330</u>
				14. Torque converter	<u>TM-351</u>
				15. Oil pump assembly	
				16. Gear system	
			OFF vehicle	17. Forward clutch	<u>TM-347</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-314</u>
				2. Line pressure test	<u>TM-228</u>
				3. Transmission range switch	<u>TM-241</u>
				4. Stall test	<u>TM-226</u>
				5. CVT position	<u>TM-233</u>
				6. Step motor	<u>TM-293</u>
			ON vehicle	7. Primary speed sensor	<u>TM-248</u>
				8. Secondary speed sensor	<u>TM-251</u>
4		With selector lever in "D" position, driving is		9. Accelerator pedal position sensor	<u>TM-284</u>
4		not possible.		10. CVT fluid temperature sensor	<u>TM-244</u>
				11. Secondary pressure sensor	<u>TM-274</u>
				12. Power supply	<u>TM-281</u>
				13. Control valve	<u>TM-330</u>
				14. Torque converter	<u>TM-351</u>
			OFF vehicle	15. Oil pump assembly	
				16. Gear system	<u>TM-347</u>
				17. Forward clutch	<u></u>
	Other			18. Parking components	
	- Other			1. CVT fluid level and state	<u>TM-314</u>
				2. Line pressure test	<u>TM-228</u>
				3. Transmission range switch	<u>TM-241</u>
				4. Stall test	<u>TM-226</u>
				5. CVT position	<u>TM-233</u>
				6. Step motor	<u>TM-293</u>
			ON vehicle	7. Primary speed sensor	<u>TM-248</u>
				8. Secondary speed sensor	<u>TM-251</u>
5		With selector lever in "R" position, driving is		9. Accelerator pedal position sensor	<u>TM-284</u>
Ĵ		not possible.		10. CVT fluid temperature sensor	<u>TM-244</u>
				11. Secondary pressure sensor	<u>TM-274</u>
				12. Power supply	<u>TM-281</u>
				13. Control valve	<u>TM-330</u>
				14. Torque converter	<u>TM-351</u>
				15 Oil pump assembly	
			OFF vehicle	16. Gear system	<u>TM-347</u>
				17. Reverse brake	<u>1 IVI-047</u>
				18. Parking components	

< SYMPTOM DIAGNOSIS >

[CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference
				1. CVT fluid level and state	<u>TM-314</u>
				2. Engine speed signal	<u>TM-254</u>
				3. Primary speed sensor	<u>TM-248</u>
			ONtrakiala	4. Secondary speed sensor	<u>TM-251</u>
16		Judder occurs during lock-up.	ON vehicle	5. Accelerator pedal position sensor	<u>TM-284</u>
		look up.		6. CAN communication line	TM-236
				7. Torque converter clutch solenoid valve	<u>TM-255</u>
				8. Control valve	<u>TM-330</u>
			OFF vehicle	9. Torque converter	<u>TM-35</u>
				1. CVT fluid level and state	<u>TM-314</u>
			ONtrakiala	2. Engine speed signal	<u>TM-254</u>
			ON vehicle	3. CAN communication line	<u>TM-236</u>
		Strange noise in "D" position.		4. Control valve	<u>TM-330</u>
17			OFF vehicle	5. Torque converter	<u>TM-35</u>
	Other			6. Oil pump assembly	<u>TM-347</u>
				7. Gear system	
				8. Forward clutch	
				9. Bearing	
			ON vehicle	1. CVT fluid level and state	<u>TM-31</u>
				2. Engine speed signal	<u>TM-254</u>
		Strange noise in "R"		3. CAN communication line	<u>TM-23</u>
18				4. Control valve	<u>TM-33</u>
10		position.		5. Torque converter	<u>TM-35</u>
			OFF vehicle	6. Oil pump assembly	<u>TM-347</u>
			OFF vehicle	7. Gear system	
				8. Reverse brake	
				1. CVT fluid level and state	<u>TM-314</u>
				2. Engine speed signal	<u>TM-254</u>
			ON vehicle	3. CAN communication line	<u>TM-236</u>
19		Strange noise in "N" position.		4. Control valve	<u>TM-330</u>
				5. Torque converter	<u>TM-35</u>
			OFF vehicle	6. Oil pump assembly	Th4 0.47
				7. Gear system	<u>TM-347</u>

< SYMPTOM DIAGNOSIS >

[CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference
				1. CVT fluid level and state	<u>TM-314</u>
				2. CVT position	<u>TM-233</u>
				3. CAN communication line	<u>TM-236</u>
				4. Step motor	<u>TM-293</u>
20		Vehicle does not de-		5. Primary speed sensor	<u>TM-248</u>
20		celerate by engine brake.	ON vehicle	6. Secondary speed sensor	<u>TM-251</u>
				7. Line pressure test	<u>TM-228</u>
				8. Engine speed signal	<u>TM-254</u>
				9. Accelerator pedal position sensor	<u>TM-284</u>
				10. Control valve	<u>TM-347</u>
-				1. CVT fluid level and state	<u>TM-314</u>
				2. Line pressure test	<u>TM-228</u>
				3. Accelerator pedal position sensor	<u>TM-284</u>
				4. CAN communication line	<u>TM-236</u>
				5. Stall test	<u>TM-226</u>
21			ON vehicle	6. Step motor	<u>TM-293</u>
		Maximum speed low. r		7. Primary speed sensor	<u>TM-248</u>
				8. Secondary speed sensor	<u>TM-251</u>
	Other			9. Secondary pressure sensor	<u>TM-274</u>
				10. CVT fluid temperature sensor	<u>TM-244</u>
				11. Control valve	<u>TM-330</u>
			OFF vehicle	12. Torque converter	<u>TM-351</u>
				13. Oil pump assembly	
				14. Gear system	<u>TM-347</u>
				15. Forward clutch	
		With selector lever in		1. Transmission range switch	<u>TM-241</u>
		"P" position, vehicle does not enter park-	ON vehicle	2. CVT position	<u>TM-233</u>
22		ing condition or, with selector lever in an- other position, park- ing condition is not cancelled.	ing condition or, with selector lever in an- other position, park- ing condition is not	3. Parking components	<u>TM-347</u>
				1. Transmission range switch	<u>TM-241</u>
			ON vehicle	2. CVT fluid level and state	<u>TM-314</u>
23		Vehicle runs with CVT		3. CVT position	<u>TM-233</u>
20		in "P" position.		4. Control valve	<u>TM-330</u>
			OFF vehicle	5. Parking components	TM 247
				6. Gear system	<u> </u>

< SYMPTOM DIAGNOSIS >

[CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference
				1. Transmission range switch	<u>TM-241</u>
				2. CVT fluid level and state	<u>TM-314</u>
			ON vehicle	3. CVT position	<u>TM-233</u>
24	Vehicle runs with in "N" position.	Vehicle runs with CVT		4. Control valve	<u>TM-330</u>
				5. Gear system	
			OFF vehicle	6. Forward clutch	<u>TM-347</u>
				7. Reverse brake	
				1. CVT fluid level and state	<u>TM-314</u>
				2. Engine speed signal	<u>TM-254</u>
				3. Primary speed sensor	<u>TM-248</u>
			ON vehicle	4. Torque converter clutch solenoid valve	<u>TM-255</u>
25		Engine stall.	ON VEHICLE	5. CAN communication line	<u>TM-236</u>
				6. Stall test	<u>TM-226</u>
				7. Secondary pressure sensor	<u>TM-274</u>
	Other			8. Control valve	<u>TM-330</u>
			OFF vehicle	9. Torque converter	<u>TM-351</u>
		Engine stalls when selector lever shifted	ON vehicle	1. CVT fluid level and state	<u>TM-314</u>
				2. Engine speed signal	<u>TM-254</u>
				3. Primary speed sensor	<u>TM-248</u>
26				4. Torque converter clutch solenoid valve	<u>TM-255</u>
20		"N"→"D"or "R".		5. CAN communication line	<u>TM-236</u>
				6. Stall test	<u>TM-226</u>
				7. Control valve	<u>TM-330</u>
			OFF vehicle	8. Torque converter	<u>TM-351</u>
				1. CVT fluid level and state	<u>TM-314</u>
				2. Accelerator pedal position sensor	<u>TM-284</u>
27		Engine speed does not return to idle.	ON vehicle	3. Secondary speed sensor	<u>TM-251</u>
				4. CAN communication line	<u>TM-236</u>
				5. Control valve	<u>TM-347</u>

< SYMPTOM DIAGNOSIS >

[CVT: RE0F10B]

No.	Item	Symptom	Condition	Diagnostic Item	Reference	Α
	28 CV			1. CVT fluid level and state	<u>TM-314</u>	A
				2. CVT position	TM-233	
				3. Line pressure test	<u>TM-228</u>	В
				4. Engine speed signal	<u>TM-254</u>	
			ONLynahiala	5. Accelerator pedal position sensor	<u>TM-284</u>	
28		CVT does not shift	ON vehicle	6. CAN communication line	<u>TM-236</u>	С
				7. Primary speed sensor	<u>TM-248</u>	_
				8. Secondary speed sensor	<u>TM-251</u>	ΤM
				9. Step motor	<u>TM-293</u>	
				10. Control valve	<u>TM-330</u>	
		_	OFF vehicle	11. Oil pump assembly	<u>TM-347</u>	E
	-	Engine does not start		1. Ignition switch and starter	<u>PG-43,</u> <u>STR-26</u>	
29		in "N" or "P" position.	ON vehicle	2. CVT position	<u>TM-233</u>	F
				3. Transmission range switch	<u>TM-241</u>	
	-	Engine starts in posi- tions other than "N" or "P".	ON vehicle	1. Ignition switch and starter	<u>PG-43,</u> <u>STR-26</u>	G
30	Other			2. CVT position	TM-233	
				3. Transmission range switch	<u>TM-241</u>	Н
		When brake pedal is		1. Stop lamp switch		
		depressed with igni- tion switch ON, selec-		2. Shift lock solenoid		
31		tor lever cannot be shifted from "P" posi- tion to other position.		3. CVT shift selector	<u>TM-299</u>	I
		When brake pedal is		1. Stop lamp switch		J
		not depressed with ig-		2. Shift lock solenoid		
32		nition switch ON, se- lector lever can be shifted from "P" posi- tion to other position.	ON vehicle	3. CVT shift selector	<u>TM-299</u>	K
				1. Manual mode switch	<u>TM-268</u>	-
33		Cannot be changed to manual mode.	ON vehicle	2. CAN communication line	<u>TM-236</u>	L
				3. Combination meters	<u>MWI-53</u>	
	1			1. CAN communication line	<u>TM-236</u>	M
34		CVT indicator lamp does not come on.	ON vehicle	2. Combination meters	<u>MWI-53</u>	
				3. TCM power supply and ground	<u>TM-281</u>	

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INFOID:000000012201008

< PERIODIC MAINTENANCE > PERIODIC MAINTENANCE 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:

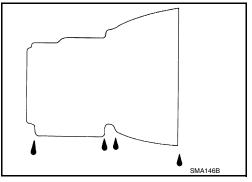
- Check for fluid leakage.
- With the engine warmed up, drive the vehicle in an urban area. 2. When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to 80°C (122 to 176°F).
- 3. Park the vehicle on a level surface.

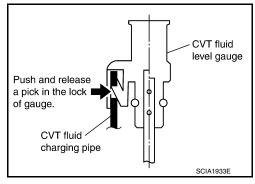
top end of the CVT fluid charging pipe.

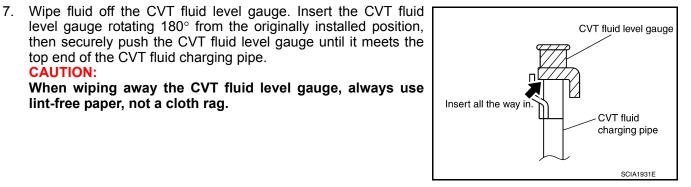
lint-free paper, not a cloth rag.

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.

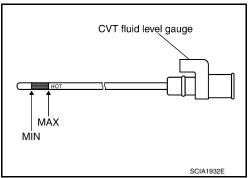






Place the selector lever in "P" or "N" and check that the fluid 8. level is within the specified range. **CAUTION:** When reinstalling CVT fluid level gauge, insert it into the

CVT fluid charging pipe and rotate it to the original installation position until securely locked.



CVT FLUID CONDITION

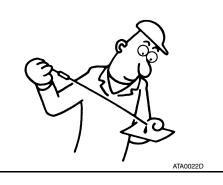
CVT FLUID

< PERIODIC MAINTENANCE >

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 <u>TM-223, "Cleaning"</u>.

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.



[CVT: RE0F10B]

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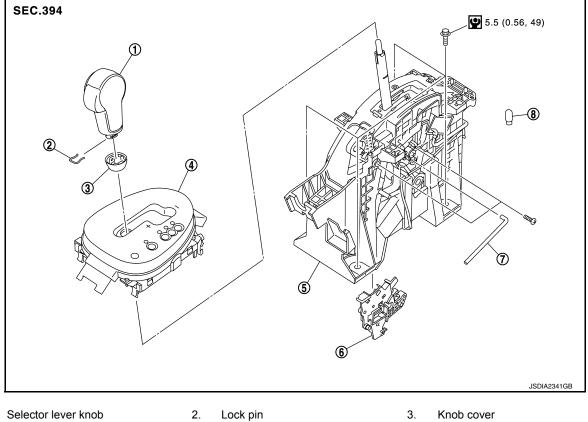
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< REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION CVT SHIFT SELECTOR

Exploded View

INFOID:000000012201009



CVT shift selector assembly

Position indicator bulb

6.

Shift lock unit

- 4 Position indication panel
- 7. Key interlock rod*
- :N·m (kg-m, in-lb)

*: Without push engine starter

Removal and Installation

REMOVAL

1.

CAUTION:

Always apply the parking brake before performing removal and installation.

5.

8.

- 1. Disconnect battery cable from negative terminal. Refer to PG-105, "Removal and Installation".
- 2. Shift the selector lever to "N" position.
- 3. Remove the center console. Refer to IP-24, "Removal and Installation".
- 4. Disconnect the CVT shift selector connector.
- 5. Shift the selector lever to "P" position.
- 6. Remove the key interlock cable from the CVT shift selector assembly. Refer to <u>TM-324</u>, "<u>Removal and</u> <u>Installation</u>" (Without push starter system).
- 7. Remove the control cable from the CVT shift selector assembly. Refer to <u>TM-319</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.

Revision: November 2015

TM-316

2016 JUKE

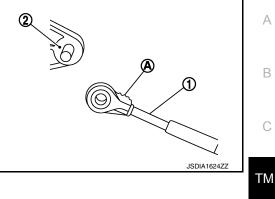
INEOID:000000012201010

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.

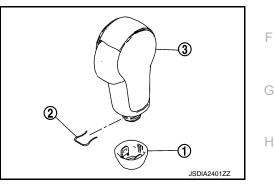
[CVT: RE0F10B]

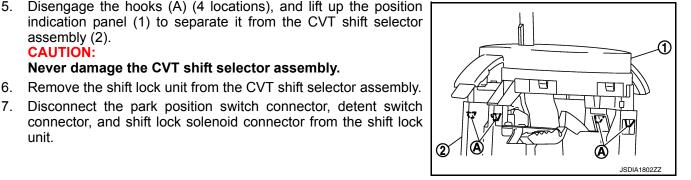


Disassembly and Assembly

DISASSEMBLY

- 1. Slide the selector lever knob cover (1) down. **CAUTION:** Never damage the knob cover.
- Pull out the lock pin (2).
- 3. Pull the selector lever knob (3) and knob cover upwards to remove them.
- Remove the position lamp.





indication panel (1) to separate it from the CVT shift selector assembly (2). **CAUTION:** Never damage the CVT shift selector assembly.

- Remove the shift lock unit from the CVT shift selector assembly.
- 7. Disconnect the park position switch connector, detent switch connector, and shift lock solenoid connector from the shift lock unit.



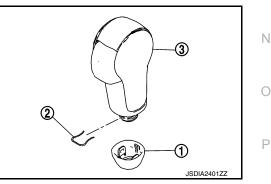
Inspection

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

- Follow the procedure below and place the selector knob onto the CVT shift selector.
- 1. Install the lock pin (2) onto the selector lever knob (3).
- Install the knob cover (1) onto the selector lever knob. 2.
- 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.



INFOID:000000012201012

INSPECTION AFTER INSTALLATION

 Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-233, "Inspection and Adjustment".

INFOID:000000012201011

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CVT SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

- The key can be removed only when the selector lever is in the "P" position. (With key interlock)
 It must not be possible to turn the ignition switch to LOCK when the selector lever is not in the "P" position. (With key interlock)

CONTROL CABLE

< REMOVAL AND INSTALLATION >

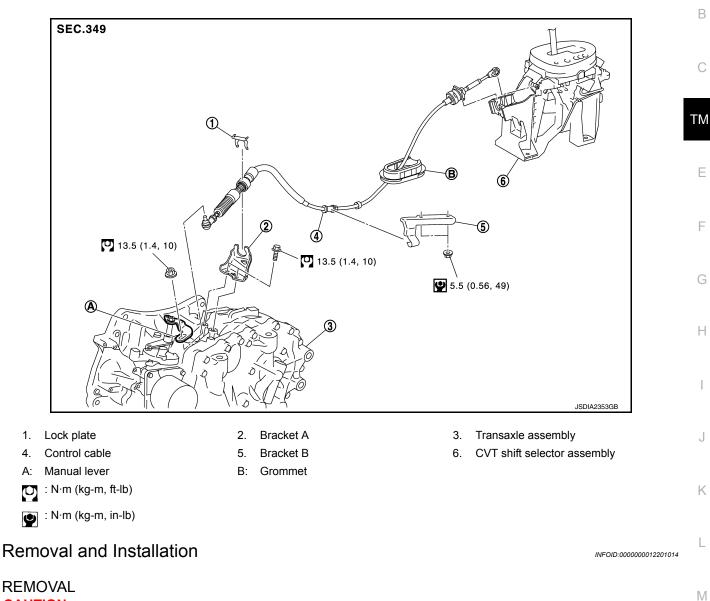
[CVT: RE0F10B]

Exploded View

CONTROL CABLE

INFOID:000000012201013

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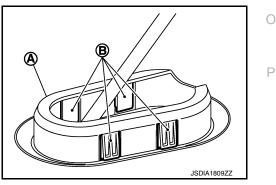


REMOVAL

CAUTION:

Always apply the parking brake before performing removal and installation.

- Remove the battery. Refer to PG-105, "Removal and Installation". 1.
- Remove the control cable from the CVT shift selector assembly. Refer to TM-316, "Removal and Installa-2. tion".
- 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.



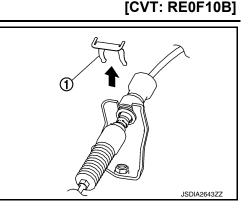
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CONTROL CABLE

< REMOVAL AND INSTALLATION >

5. Remove the lock plate (1).

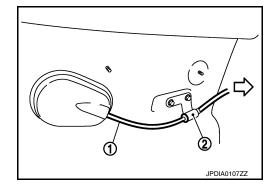
- Remove center muffler from the mounting rubber and lower the center muffler downward. Refer to <u>EX-10, "Removal and Instal-</u> <u>lation"</u>.
- 7. Lift up the heat plate.



8. Remove the control cable (1) from the bracket (2).

\triangleleft :Vehicle front

- 9. Remove the control cable from the vehicle.
- 10. Remove bracket.



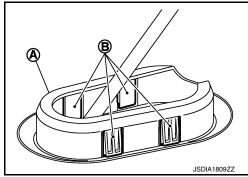
INSTALLATION

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

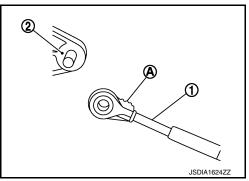
• From below the vehicle, press the grommet (A) into place until the pawls (B) make a click sound.

CAUTION:

- Place the grommet on the floor, then fasten it in place from below the vehicle.
- Check that pulling down on the grommet does not disconnect it.



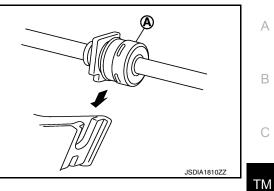
- Pay attention to the following when connecting the control cable to the CVT shift selector.
- 1. When connecting the control cable (1) to the CVT shift selector assembly (2), face the grooved surface of the rib (A) up and insert the control cable until it stops.



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

INFOID:000000012201015

INSPECTION AFTER INSTALLATION

Revision: November 2015

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-233, "Inspection and Adjustment".

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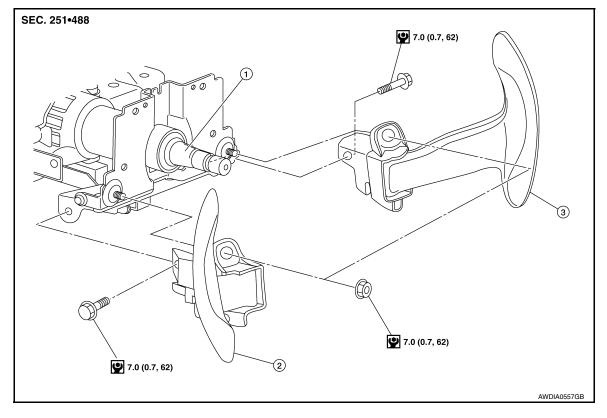
PADDLE SHIFTER

< REMOVAL AND INSTALLATION >

PADDLE SHIFTER

Exploded View

INFOID:000000012201016



- 1. Steering column assembly
- Paddle shifter (shift-down switch) 3. Paddle shifter (shift-up switch)

: N·m (kg-m, in-lb)

Removal and Installation

REMOVAL

- 1. Park the vehicle on a level surface.
- 2. Remove the driver air bag module. Refer to SR-12, "Removal and Installation".
- 3. Remove the steering wheel. Refer to ST-9, "Removal and Installation".

2.

4. Remove the column cover. Refer to IP-13, "Removal and Installation".

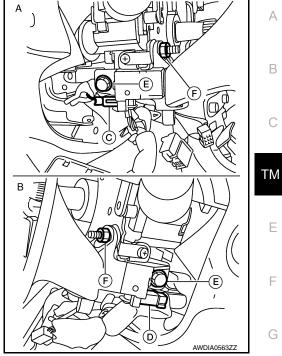
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PADDLE SHIFTER

< REMOVAL AND INSTALLATION >

5. Remove the paddle shifter connector (C) and (D) from paddle shifter.

- А : Side of paddle shifter (shift-down switch)
- В : Side of paddle shifter (shift-up switch)
- 6. Remove the paddle shifter mounting bolts (E) and nuts (F).
- 7. Remove the paddle shifter from the steering column assembly.



INSTALLATION Installation is in the reverse order of removal. А

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KEY INTERLOCK CABLE

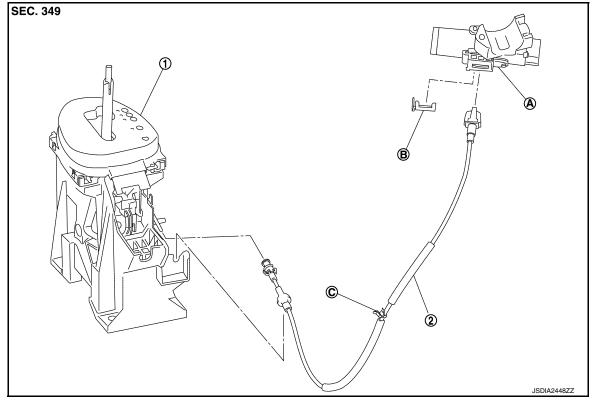
< REMOVAL AND INSTALLATION >

KEY INTERLOCK CABLE

Exploded View

INFOID:000000012201018

[CVT: RE0F10B]



- 1. CVT shift selector assembly
- 2. Key interlock cable

Clip

A: Key cylinder

Removal and Installation

INFOID:000000012201019

REMOVAL

CAUTION:

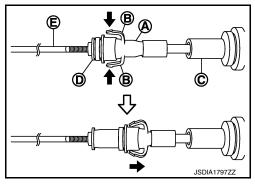
Always apply the parking brake before performing removal and installation.

B:

- 1. Shift the selector lever to the "N" position.
- 2. Remove the selector lever knob. Refer to TM-317, "Disassembly and Assembly".
- 3. Shift the selector lever to the "P" position.
- 4. Remove the center console. Refer to IP-24, "Removal and Installation".
- 5. Press the pawls (B) of the key interlock cable slider (A) while sliding it in the direction of the casing cap (C), and separate the adjusting holder (D) and slider.

E :Key interlock rod

- 6. Remove the key interlock cable from the CVT shift selector.
- 7. Remove the steering column lower cover and driver instrument lower panel. Refer to <u>IP-13</u>, "Removal and Installation".



C: Clip

KEY INTERLOCK CABLE

< REMOVAL AND INSTALLATION >

- Lift clip (A) in the direction of the arrow (←C) and remove in the direction of the arrow (←D).
 - 1 :Key interlock cable
 - B :Key cylinder
- 9. Disconnect the key interlock cable from the key cylinder.
- 10. Disengage the clip and disconnect the key interlock cable from the vehicle.

INSTALLATION

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

 Install the adjusting holder (A) onto the key interlock rod (B), then install the casing cap (C) onto the CVT shift selector cable bracket (D).

CAUTION:

- When installing the key interlock cable, never bend or twist the cable forcefully.
- After connecting the key interlock cable to the CVT shift selector cable bracket, be sure to check that the casing cap is completely fastened to the cable bracket. If the casing cap is easily displaced, replace the key interlock cable.
- While pressing the detent rod (B) down, slide the key interlock cable slider (A) toward the key interlock rod (D) side, and install the adjusting holder (C) and key interlock rod.
 CAUTION:
 - Never squeeze the pawls on the key interlock cable slider when holding the slider.
 - Never apply force in a perpendicular direction to the key interlock rod when sliding the slider.

INSPECTION AFTER INSTALLATION

Inspection

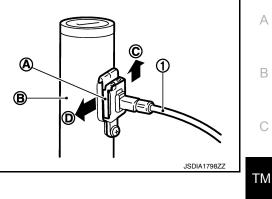
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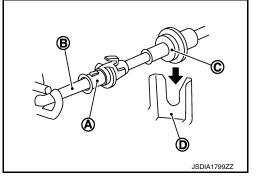
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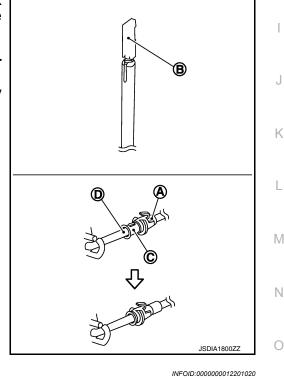
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- Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to <u>TM-233</u>, "Inspection and <u>Adjustment"</u>.
- The key can be removed only when the selector lever is in the "P" position.
- It must not be possible to turn the ignition switch to LOCK when the selector lever is not in the "P" position.





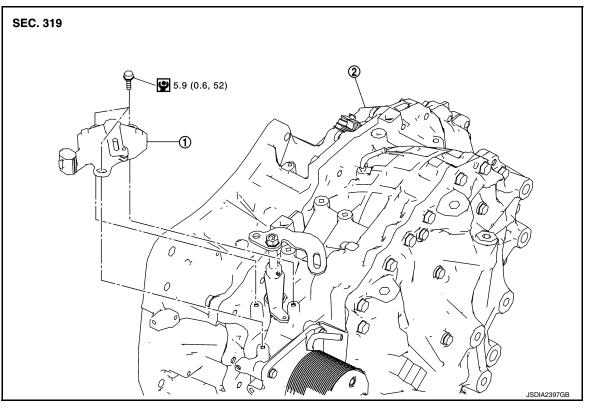


< REMOVAL AND INSTALLATION >

TRANSMISSION RANGE SWITCH

Exploded View

INFOID:000000012201021



- 1. Transmission range switch
- 2. Transaxle assembly
- : N·m (kg-m, in-lb)

Removal and Installation

REMOVAL

- 1. Remove battery. Refer to PG-105, "Removal and Installation".
- 2. Remove transmission range switch connector.
- 3. Remove control cable. Refer to TM-319. "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.

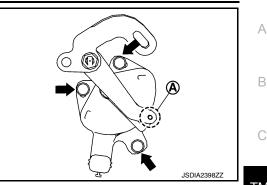
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TRANSMISSION RANGE SWITCH

< REMOVAL AND INSTALLATION >

Loosen mounting bolts (←) of transmission range switch. Insert a pin (\u03c64 mm) into the adjusting holes (A) 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 <u>TM-233</u>. <u>"Inspection and Adjustment"</u>.



ТМ

ADJUSTMENT AFTER INSTALLATION

Adjust the CVT positions after installing the CVT shift selector. Refer to TM-233, "Inspection and Adjustment".

INSPECTION AFTER INSTALLAION

Check the CVT positions after adjusting the CVT positions. Refer to <u>TM-233</u>, "Inspection and Adjustment".

[CVT: RE0F10B]

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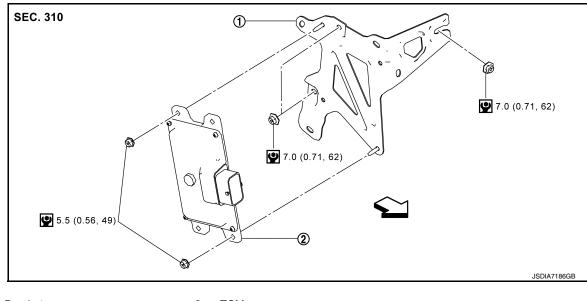
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TCM

Exploded View

INFOID:000000012201024



TCM

1. Bracket

2. TCM

:Vehicle front

● :N·m (kg-m, in-lb)

Removal and Installation

INFOID:000000012201025

CAUTION:

- Never impact on TCM when removing or installing TCM.
- When replacing TCM, note the "CVTF DETERIORATION DATE" value displayed on CONSULT "CON-FORM CVTF DETERIORTN" in MAINTENANCE BOOKLET, before start the operation.
- When replacing TCM and transaxle assembly simultaneously, replace transaxle assembly first and then replace TCM. Refer to <u>TM-347</u>, "<u>Removal and Installation</u>".
- Before replacing TCM, perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to <u>TM-219</u>, <u>"Work Procedure"</u>.

REMOVAL

- 1. Remove the battery. Refer to PG-105, "Removal and Installation".
- 2. Remove air duct (inlet) and air cleaner case. Refer to EM-27, "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:000000012201026

ADJUSTMENT AFTER INSTALLATION

Perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to TM-219, "Work Procedure".

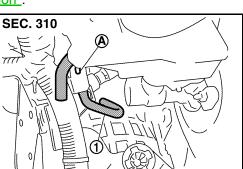
< REMOVAL AND INSTALLATION >

AIR BREATHER HOSE

Removal and Installation

REMOVAL

- 1. Remove air cleaner case. Refer to EM-27, "Removal and Installation".
- 2. Remove clip (A) from bracket.
- 3. Remove air breather hose (1) from transaxle assembly.



B

(A)

A

INSTALLATION

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

- Never bend the air breather hose to prevent damage to the hose.
- Install air breather hose (1) to transaxle tube (A) all the way to the curve of the tube.
- Install air breather hose to transaxle tube so that the paint mark (B) is facing upward.

• Securely install the clip (A) to the bracket.



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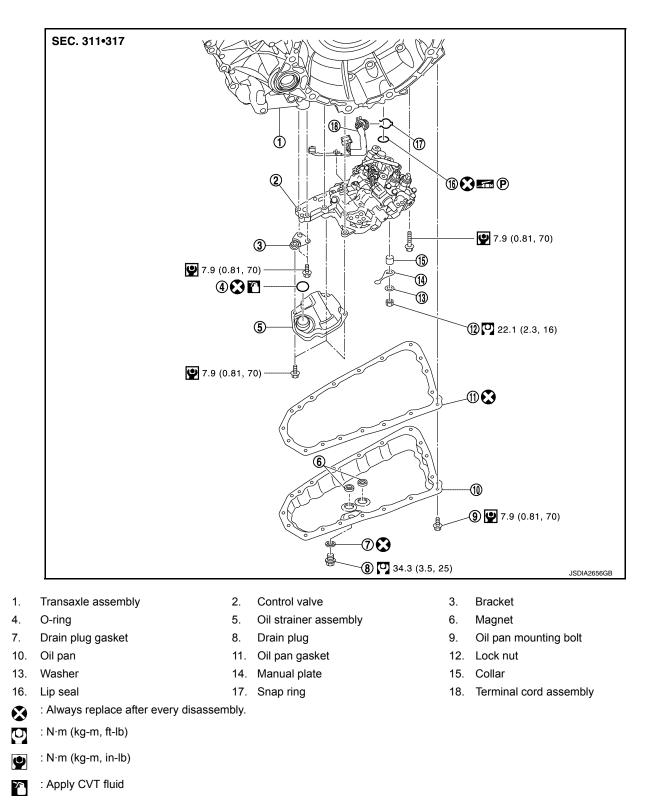
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< REMOVAL AND INSTALLATION >

CONTROL VALVE

Exploded View

INFOID:000000012201028



Removal and Installation

REMOVAL

1. Disconnect battery cable from negative terminal. Refer to PG-105, "Exploded View".

2016 JUKE

CONTROL VALVE

< REMOVAL AND INSTALLATION >

- [CVT: RE0F10B]
- А

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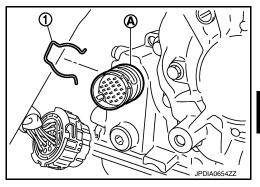
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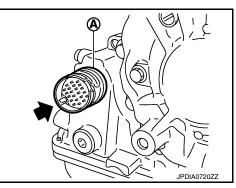
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- 2. Remove drain plug from oil pan and then drain the CVT fluid.
- 3. Remove drain plug gasket.
- 4. Disconnect the CVT unit connector. Refer to <u>TM-150</u>, "Removal and Installation Procedure for CVT Unit <u>Connector</u>".
- 5. Remove the snap ring (1) from the CVT unit connector (A).



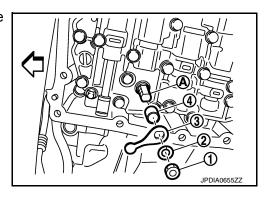


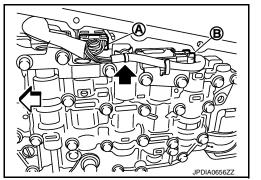
Press the CVT unit connector (A) into the transaxle case.
 CAUTION:

Never damage the CVT unit connector. NOTE:

Clean around the connector to prevent foreign materials from entering into the transaxle case.

- 7. Remove the oil pan mounting bolts, and then remove the oil pan and oil pan gasket.
- 8. Remove the magnets from the oil pan.
- 9. Remove the lock nut (1) and washer (2), and then remove the manual plate (3).
 - <□ : Vehicle front
- 10. Remove the collar (4) from the manual shaft (A). **CAUTION: Never drop the collar.**
- 11. Disconnect the control valve connectors (A) and (B).
 - ← : Clip<⊃ : Vehicle front





CONTROL VALVE

TM-332

< REMOVAL AND INSTALLATION >

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

<□ : Vehicle front

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

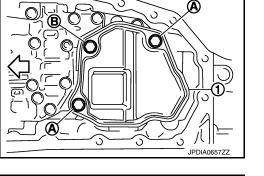
- 15. Remove the control valve mounting bolts (A) and (B), and then remove the control valve from the transaxle case.
 - └□ : Vehicle front

CAUTION:

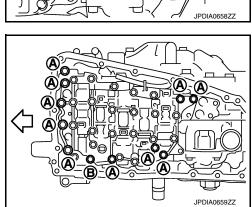
Never drop the control valve, ratio control valve and manual shaft.

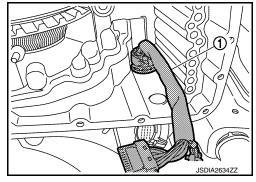
16. Remove terminal cord assembly (1) from the transaxle case inside.

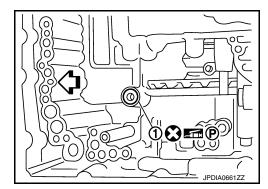
- 17. Remove the lip seal (1) from the transaxle case.



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[CVT: RE0F10B]

< REMOVAL AND INSTALLATION >

[CVT: RE0F10B]

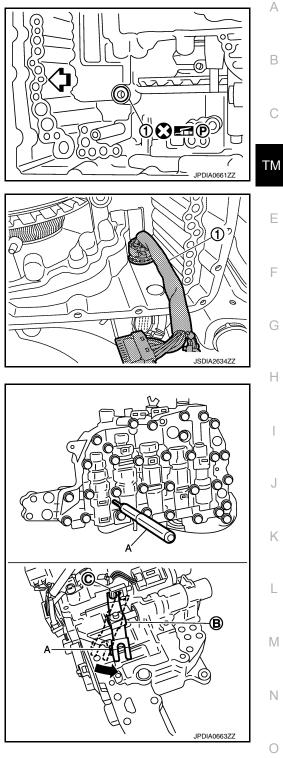
INSTALLATION

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

2. Install terminal cord assembly (1) 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.
 - Never drop the control valve, ratio control valve and manual shaft.



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CONTROL VALVE

< REMOVAL AND INSTALLATION >

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

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

- 7. Pull the linkage fixing pin out.
- 8. Connect the control valve 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 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
NOTE		

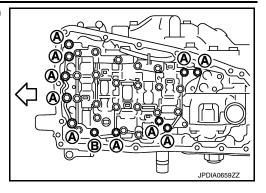
NOTE:

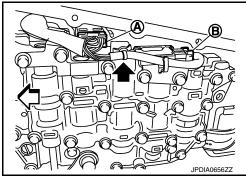
Remove the bracket and adjust the position again if the bolt hole positions are not aligned.

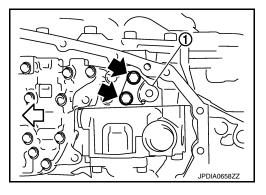
12. Install the collar to the manual shaft.

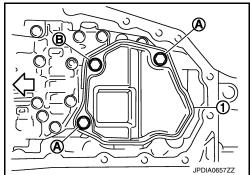
CAUTION:

Never drop the collar.









[CVT: RE0F10B]

CONTROL VALVE

< REMOVAL AND INSTALLATION >

 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-150</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.
 - 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.

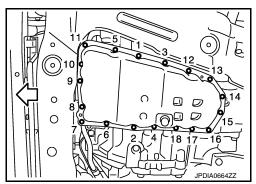
CVT fluid : Refer to <u>MA-11, "Fluids and Lubri-</u> Fluid capacity <u>cants"</u>.

CAUTION:

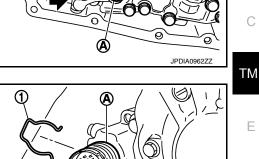
- Use only Genuine CVT fluid. Never mix with other fluid.
- Using CVT fluid other than Genuine CVT fluid will deteriorate in driveability and CVT durability, N and may damage the CVT, which is not covered by the warranty.
- When filling CVT fluid, take care not to scatter heat generating parts such as exhaust.
- Sufficiently shake the container of CVT fluid before using.
- Delete CVT fluid deterioration date with CONSULT after changing CVT fluid. Refer to <u>TM-190</u>, <u>"CONSULT Function"</u>.
- 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

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).

- Check CVT fluid level and condition. Refer to <u>TM-314, "Inspection"</u>.
- Connect battery cable to negative terminal. Refer to <u>PG-105, "Exploded View"</u>.



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[CVT: RE0F10B]

< REMOVAL AND INSTALLATION >

INFOID:000000012201030

Inspection and Adjustment

INSPECTION AFTER REMOVAL

Check oil pan for foreign material.

- If a large amount of worn material is found, clutch plate may be worn.
- If iron powder is found, bearings, gears, or clutch plates may be worn.
- If aluminum powder is found, bushing may be worn, or chips or burrs of aluminum casting parts may enter.

Check points where wear is found in all cases.

INSPECTION AFTER INSTALLATION

Check the CVT fluid level and leakage. Refer to TM-314, "Inspection".

ADJUSTMENT AFTER INSTALLATION

Perform "ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE OR TRANSAXLE ASSEMBLY". Refer to <u>TM-221</u>, "<u>Description</u>".

PRIMARY SPEED SENSOR

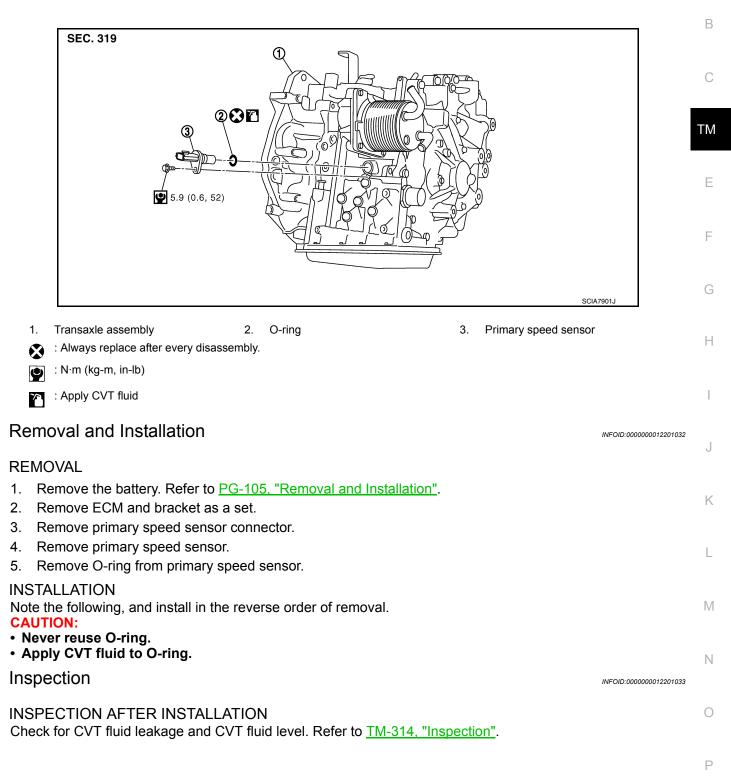
< REMOVAL AND INSTALLATION >

PRIMARY SPEED SENSOR

Exploded View

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SECONDARY SPEED SENSOR

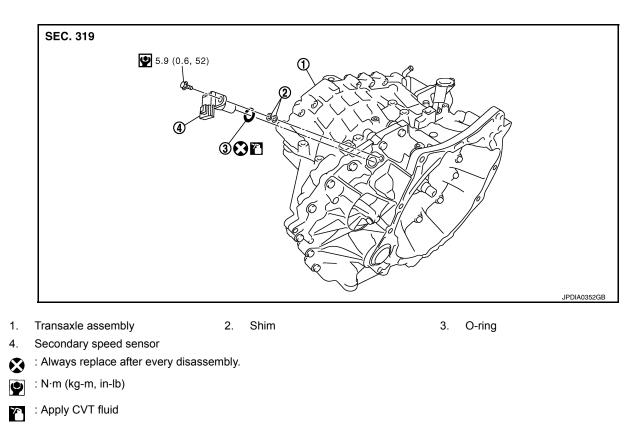
< REMOVAL AND INSTALLATION >

SECONDARY SPEED SENSOR

Exploded View

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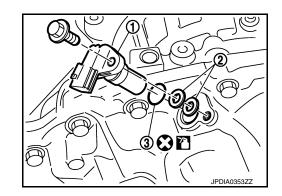
[CVT: RE0F10B]



Removal and Installation

REMOVAL

- 1. Remove air cleaner case. Refer to EM-27, "Removal and Installation".
- 2. Remove secondary speed sensor connector.
- 3. Remove secondary speed sensor (1) and shims (2).
- 4. Remove O-ring (3) from secondary speed sensor.



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

- Never reuse O-ring.
- Apply CVT fluid to O-ring.
- Install two pieces of shims.

Inspection

INSPECTION AFTER INSTALLATION

INFOID:000000012201036

SECONDARY SPEED SENSOR

< REMOVAL AND INSTALLATION >

Check for CVT fluid leakage and CVT fluid level. Refer to TM-314, "Inspection".

[CVT: RE0F10B]

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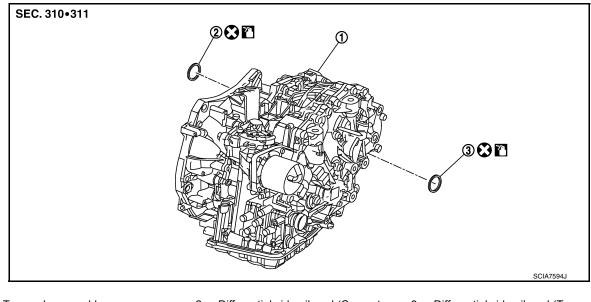
DIFFERENTIAL SIDE OIL SEAL

< REMOVAL AND INSTALLATION >

DIFFERENTIAL SIDE OIL SEAL

Exploded View

INFOID:000000012201037



- 1. Transaxle assembly
- 2. Differential side oil seal (Converter 3 housing side)
- 3. Differential side oil seal (Transaxle case side)

- Always replace after every disassembly.
- : Genuine CVT fluid

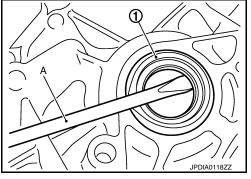
Removal and Installation

REMOVAL

Differential Side Oil Seal (Left Side)

- 1. Remove front drive shaft (left side). Refer to FAX-45, "AWD : Removal and Installation".
- Remove differential side oil seal (1) using an oil seal remover (commercial service tool) (A). CAUTION:

Be careful not to scratch transaxle case and converter housing.



Differential Side Oil Seal (Right Side)

1. Remove transfer assembly. Refer to FAX-45, "AWD : Removal and Installation".

Revision: November 2015

INFOID:000000012201038

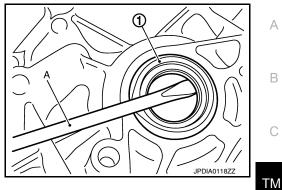
[CVT: RE0F10B]

DIFFERENTIAL SIDE OIL SEAL

< REMOVAL AND INSTALLATION >

 Remove differential side oil seal (1) using an oil seal remover (commercial service tool) (A).
 CAUTION:

Be careful not to scratch transaxle case and converter housing.



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INSTALLATION

Note the followings and installation is in the reverse order of removal.

Differential Side Oil Seal (Transaxle Case Side)

CAUTION:

When inserting the drive shaft, be sure to use protector (SST: KV38107900).

- 1. Measure height (A) of seal lip. Calculate protrusion (C) of oil seal lip according to measured height (A) of seal lip and reference value (B) of side oil insertion.
 - (1) : Differential side oil seal
 - (2) : Transaxle case

Lip protrusion (C) : C=A–B Differential side oil seal insertion : 1.8 mm (0.071 in) reference value (B)

CAUTION:

- Never reuse differential side oil seal.
- Put a mark on the measurement area and measure height of seal lip at four points diagonally using suitable tool.

NOTICE:

Since seal lips have a tolerance of \pm 0.3 mm (\pm 0.012 in) at maximum due to manufacturing tolerances or packing conditions, it is necessary to measure the seal lip height beforehand to clarify the tolerance.

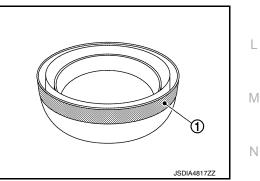
- As an indicator of the parallelism and insertion depth, cut a masking tape (1) to specified width [add 1 mm (0.04 in) to the value calculated from the tip of differential side oil seal lip] and affix to the differential side oil seal.
- Install the differential side oil seal using a drift [outer diameter: 53 mm (2.09 in), inner diameter: 50 mm (1.97 in)] according to the guide of the masking tape. CAUTION:
 - If differential side oil seal is inserted deeper than the reference value, use a new differential side oil seal and perform the steps again.
 - Apply ATF to the differential side oil seal lip and around the oil seal.

NOTE:

A hub cap (Part No. 43234 1HA0A) can be used as a substitute for drift. To use a hub cap, be sure to prepare a new one specifically for patting seal.

- 4. Remove masking tape.
- 5. Adjust as instructed below to optimize the protrusion size and parallelism. **CAUTION:**

If differential side oil seal is inserted deeper than the reference value, use a new differential side oil seal and perform the steps again.





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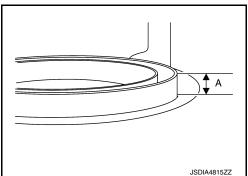
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DIFFERENTIAL SIDE OIL SEAL

< REMOVAL AND INSTALLATION >

Protrusion size (A) CAUTION: Protrusion must fall within ± 0.5mm (0.020 in) of calculated size.



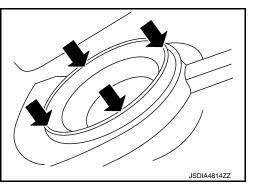
[CVT: RE0F10B]

 Parallelism at four diagonal points (➡) CAUTION: The difference among four diagonal points must be within 0.3 mm (0.012 in).

NOTE:

If differential side oil seal is uneven while installing, tilt suitable tool.

6. Check that the protrusion size and parallelism are adequate.



Differential Side Oil Seal (Converter housing Side) CAUTION:

• Never reuse differential side oil seal.

Install differential side oil seal evenly using a drift [outer diameter: 60 mm (2.36 in)] so that differential side oil seal protrudes by the dimension (A) respectfully.

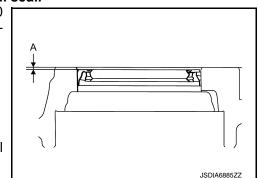
Dimension (A) : Height difference from case end surface is within 1.0 \pm 0.5 mm (0.039 \pm 0.020 in).

NOTE:

The reference is the installation direction of the differential side oil seal.

Inspection

INSPECTION AFTER INSTALLATION Check for CVT fluid leakage and CVT fluid level. Refer to <u>TM-314</u>, "Inspection".



OIL PUMP FITTING BOLT

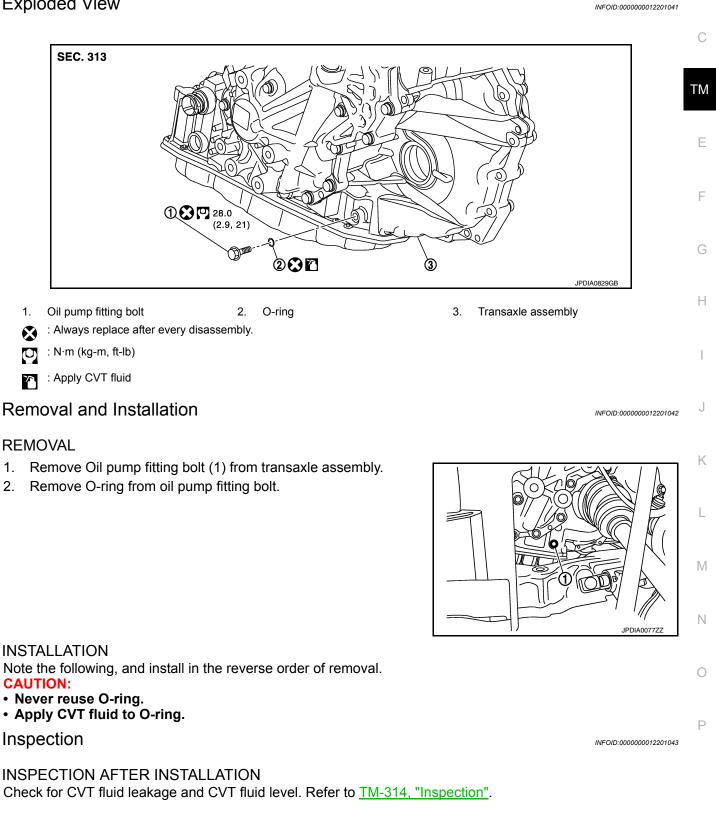
< REMOVAL AND INSTALLATION >

OIL PUMP FITTING BOLT

Description

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

Exploded View



TM-343

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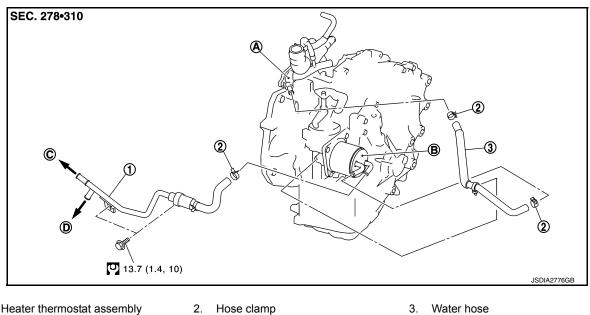
В

< REMOVAL AND INSTALLATION >

Exploded View

INFOID:000000012201044

[CVT: RE0F10B]



- 1. Heater thermostat assembly
- A. Water outlet
- D. To oil cooler
- : N·m (kg-m, ft-lb) U)

Removal and Installation

INFOID:000000012201045

C. To thermostat housing

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.

B. CVT oil warmer

- 1. Remove the battery. Refer to PG-105, "Removal and Installation".
- 2. Remove the ECM and bracket as a set.
- 3. Remove the water hose.
- Remove the heater thermostat. 4.

INSTALLATION

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

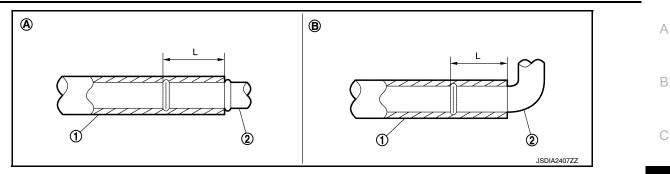
• Refer to the following when installing water hoses.

Water hose (1)	Installation side tube (2)	Direction of paint mark	Hose insertion depth "L"
Water hose	Water outlet	Upward	A: 27 mm (1.06 in) [End reaches the 2-stage bulge.]
	CVT oil warmer	Leftward	B: 27 mm (1.06 in) [End reach-
Heater thermostat assembly	CVT oil warmer	Leftward	es the tube bend R position).]

WATER HOSE

< REMOVAL AND INSTALLATION >

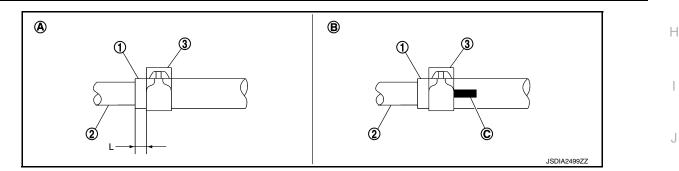
[CVT: RE0F10B]



· Refer to the followings when installing hose clamp. **CAUTION:**

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

Water been (1)	Installation side tube (2)	Hose clamp (3)	
Water hose (1)		Direction of tab	Clamping position
Water hose	Water outlet	Backward	A: 5 – 7 mm (0.20 – 0.28 in) (L) from hose end
	CVT oil warmer	Upward	
Heater thermostat assembly	CVT oil warmer	Upward	B: Align with the end of paint mark (C)

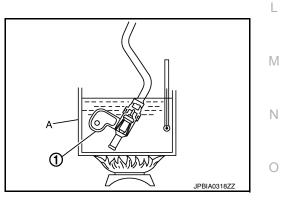


Inspection

INSPECTION AFTER REMOVAL

Heater Thermostat

- Fully immerse the heater thermostat (1) in a container (A) filled with water. Continue heating the water while stirring.
- · Continue heating the heater thermostat for 5 minutes or more after bringing the water to a boil.
- · Quickly take the heater thermostat out of the hot water, measure the heater thermostat within 10 seconds.



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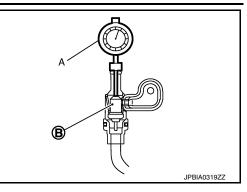
WATER HOSE

< REMOVAL AND INSTALLATION >

• Place dial indicator (A) on the pellet (B) and measure the elongation from the initial state.

Standard : Refer to <u>TM-353, "Heater Thermostat"</u>.

• If out of standard, replace heater thermostat.



INSPECTION AFTER INSTALLATION

Start the engine, and check the joints for coolant leakage. Refer to TM-314, "Inspection".

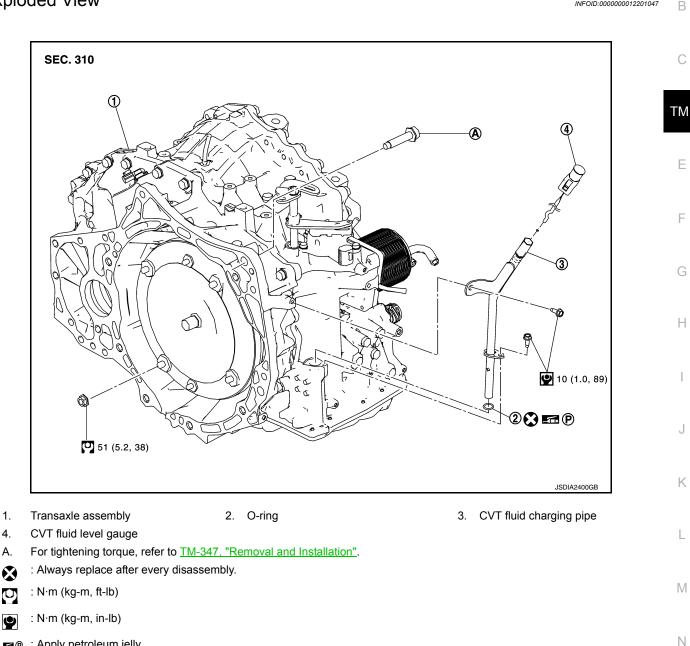
< UNIT REMOVAL AND INSTALLATION >

UNIT REMOVAL AND INSTALLATION TRANSAXLE ASSEMBLY

Exploded View

INFOID:000000012201047

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P : Apply petroleum jelly

Removal and Installation

REMOVAL

WARNING:

Never remove the reservoir tank cap when the engine is hot. Serious burns could occur from high Ρ pressure engine coolant escaping from the reservoir tank. **CAUTION:**

- Perform this step engine is cold.
- When replacing TCM and transaxle assembly simultaneously, replace transaxle assembly first and then replace TCM. Refer to TM-221, "Description".

NOTE:

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

INFOID:000000012201048

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[CVT: RE0F10B]

TRANSAXLE ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

- 1. Remove the battery. Refer to <u>PG-105</u>, "Removal and Installation".
- 2. Drain engine coolant. Refer to CO-10, "Draining".
- 3. Remove the air duct and air cleaner case. Refer to EM-27, "Removal and Installation".
- 4. Remove air breather hose. Refer to TM-329, "Removal and Installation".
- 5. Remove the ECM and bracket as a set.
- 6. Remove CVT fluid level gauge.
- 7. Remove CVT fluid charging pipe from transaxle assembly.
- 8. Remove O-ring from CVT fluid charging pipe.
- 9. 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).
- 10. Remove harness and clip from the transaxle assembly.
- 11. Remove water hose. Refer to <u>TM-344</u>, "Removal and Installation".
- 12. Remove control cable from transaxle assembly. Refer to <u>TM-</u> <u>319, "Removal and Installation"</u>.
- 13. Remove starter motor. Refer to <u>STR-28, "MR16DDT : Removal</u> <u>and Installation"</u>.
- Turn crankshaft, and remove the four tightening nuts (+) for drive plate and torque converter.
 CAUTION:

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

- 15. Remove exhaust front tube. Refer to EX-5, "Exploded View".
- 16. Separate the propeller shaft. Refer to <u>DLN-124</u>, "Removal and <u>Installation"</u>.
- 17. Remove front drive shafts. Refer to <u>FAX-45, "AWD : Removal</u> <u>and Installation"</u>.
- 18. Remove front suspension member from vehicle. Refer to <u>FSU-</u><u>17, "Removal and Installation"</u>.
- 19. Remove transfer assembly from transaxle assembly with power tool. Refer to <u>DLN-94</u>, "<u>Removal and</u> <u>Installation</u>".
- 20. Support transaxle assembly with a transmission jack.

When setting the transmission jack, be careful not to collide against the drain plug.

21. Support engine assembly with a transmission jack. CAUTION:

When setting the transmission jack, be careful not to collide against the drain plug.

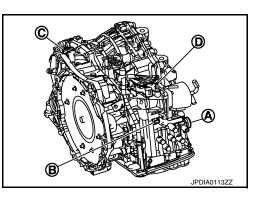
- 22. Remove engine mounting insulator (LH). Refer to EM-68, "AWD : Exploded View".
- 23. Remove bolts fixing transaxle assembly to engine assembly.
- 24. Remove transaxle assembly from vehicle.

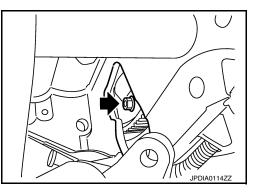
CAUTION:

- Secure torque converter to prevent it from dropping.
- Secure transaxle assembly to a transmission jack.
- 25. Remove heater thermostat. Refer to TM-344, "Removal and Installation".

INSTALLATION

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





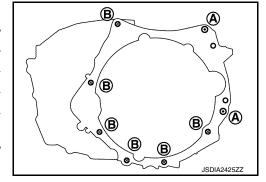
TRANSAXLE ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

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.
- 1. Rotate torgue converter to align a torgue converter stud bolt with the mounting position of starter motor.
- 2. Rotate drive plate to align a torque converter stud bolt insertion hole of drive plate with service hole.
- 3. Install transaxle to engine. **CAUTION:** Be careful not to strike the drive plate when inserting torque converter stud bolts to drive plate holes.
- 4. Tighten the fixing bolts in accordance with the following.

Bolt position	А	В
Insertion direction	Transaxle to engine	Engine to transaxle
Number of bolts	2	6
Bolt length mm (in)	55 (2.17)	50 (1.97)
Tightening torque N⋅m (kg-m, ft-lb)	62 (6.3, 46)	



- 5. After tighten the torque converter nuts (temporarily, tighten the torque converter nuts to the specified torque. CAUTION:
 - When turning crankshaft, turn it clockwise as viewed from the crankshaft pulley side.
 - When tightening the torque converter nuts after fixing the crankshaft pulley bolts, confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to EM-76. "Exploded View".
 - Rotate crankshaft several turns and check that transaxle rotates freely without binding after converter is installed to drive plate.

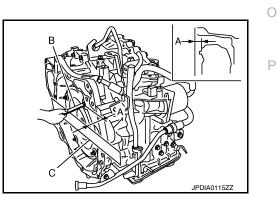
Inspection and Adjustment

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-353, "Torque Converter".



[CVT: RE0F10B]

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TRANSAXLE ASSEMBLY

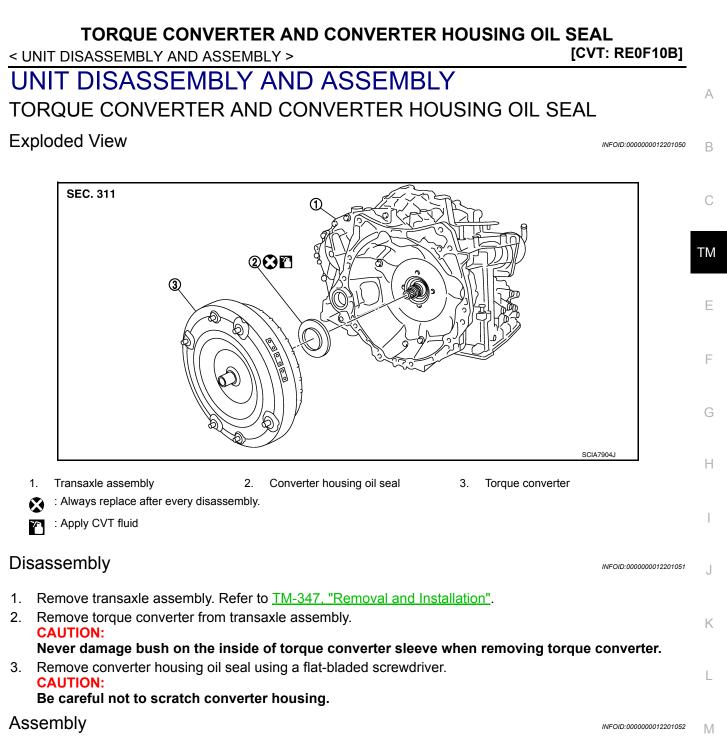
< UNIT REMOVAL AND INSTALLATION >

INSPECTION AFTER INSTALLATION

- Check for CVT fluid leakage and check CVT fluid level. Refer to <u>TM-314</u>, "Inspection".
 Check CVT position. Refer to <u>TM-233</u>, "Inspection and Adjustment".
- Start and warm up the engine. Visually check that there is no leakage of engine coolant and CVT fluid.

ADJUSTMENT AFTER INSTALLATION

Perform "ADDITIONAL SERVICE WHEN REPLACE CONTROL VALVE OR TRANSAXLE ASSEMBLY". Refer to TM-221, "Description".

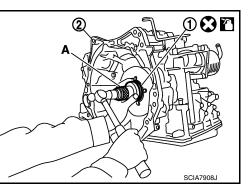


Note the following, and install in the reverse order of removal.

• 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.

Commercial convice tool: A	Unit: mm (in) Outer diameter: 65 (2.56)
Commercial service tool: A	Inner diameter: 60 (2.36)

2 : Transaxle assembly



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TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

< UNIT DISASSEMBLY AND ASSEMBLY >

[CVT: RE0F10B]

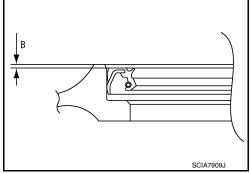
Dimension B $1.0 \pm 0.5 (0.039 \pm 0.020)$

Unit: mm (in)

NOTE:

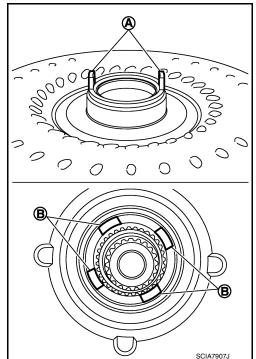
Converter housing oil seal pulling direction is used as the reference.

• After completing installation, check for CVT fluid leakage and CVT fluid level. Refer to <u>TM-314</u>, "Inspection".



• Attach the pawl (A) of the torque converter to the drive sprocket hole (B) on the transaxle assembly side.

- Rotate the torque converter for installing torque converter.
- Never damage the bushing inside the torque converter sleeve when installing the converter housing oil seal.

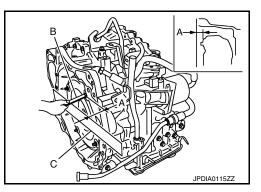


Inspection

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 <u>TM-353, "Torque Converter"</u>.



CAUTION:

SERVICE DATA AND SPECIFICATIONS (SDS) < SERVICE DATA AND SPECIFICATIONS (SDS)

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

General Specification

INFOID:000000012201054

INFOID:000000012201055

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Applied model	Engine	MR16DDT	C
	Axle	AWD	
Transaxle model		RE0F10B	
Transmission gear ratio	D range	2.349 – 0.394	TM
	Reverse	1.750	
	Final drive	5.798	_
Recommended fluid and fluid ca	pacity	Refer to MA-11, "Fluids and Lubricants".	— E

Shift Characteristics

Numerical value data are reference values.

			Unit: rpm	1
Throttle position	Shift pattorn	CVT inp	out speed	G
Throttle position	Shift pattern	At 40 km/h (25 MPH)	At 60 km/h (37 MPH)	-
2/8	"D" position	1,500 – 3,100	1,600 – 3,400	
	ECO mode*	1,500 – 2,400	1,600 – 2,500	H
8/8	"D" position	3,300 - 4,200	4,300 - 5,200	-
	ECO mode*	3,300 - 4,200	4,300 - 5,200	

*: With Integrated Control System **NOTE:**

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	3 000 – 3 500 rpm
	0,000 0,000 1011

Line Pressure

Unit: kPa (bar, kg/cm², psi)

INFOID:000000012201056

INFOID:000000012201057

INFOID:000000012201058

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

*: Reference values

Torque Converter

Dimension between end of converter housing and torque converter	14.4 mm (0.567 in)
Heater Thermostat	INFOID:000000012201059
Standard	
Valve opening temperature	69 – 73°C (156 –163°F)

[CVT: RE0F10B]

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

[CVT: RE0F10B]

Maximum valve lift	5.0 mm/85°C (0.197 in/185°F)
Valve closing temperature	65°C (149°F)

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INFOID:000000012201061

< 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. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.
- Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see "SRS AIR BAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

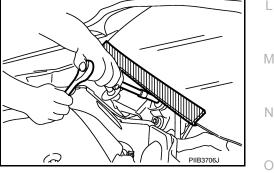
WARNING:

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery or batteries, and wait at least 3 minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

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



Precaution for TCM and Transaxle Assembly Replacement

CAUTION:

windshield.

- To replace TCM, refer to <u>TM-429, "Description"</u>.
- To replace transaxle assembly, refer to TM-431, "Description".

Precautions for Removing Battery Terminal

When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.



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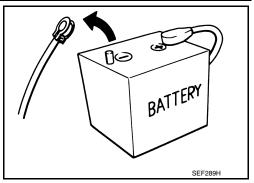
INFOID:000000012990840

PRECAUTIONS

< PRECAUTION >

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

D4D engine	: 20 minutes	YS23DDT	: 4 minutes
HRA2DDT	: 12 minutes	YS23DDTT	: 4 minutes
K9K engine	: 4 minutes	ZD30DDTi	: 60 seconds
M9R engine	: 4 minutes	ZD30DDTT	: 60 seconds
R9M engine	: 4 minutes		
V9X engine	: 4 minutes		
YD25DDTi	: 2 minutes		



[CVT: RE0F10D]

NOTE:

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

• After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

NOTE:

- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
- Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
- Driving for 30 minutes or more on a steep slope.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

NOTE:

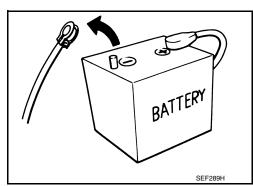
If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

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

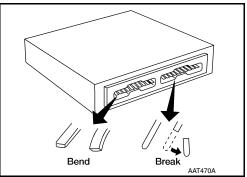
The removal of 12V battery may cause a DTC detection error.

General Precautions

• 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.

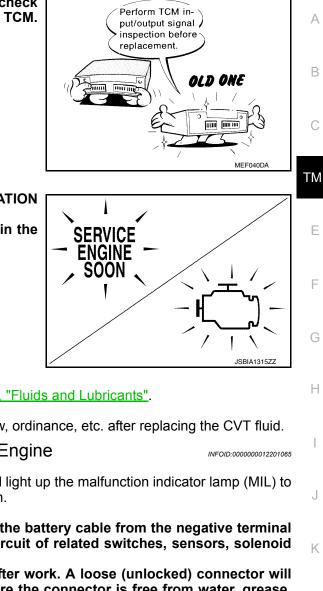


Revision: November 2015

PRECAUTIONS

< PRECAUTION >

• Perform TCM input/output signal inspection and check whether TCM functions normally or not before replacing TCM. Refer to <u>TM-402</u>, "<u>Reference Value</u>".



 Perform "DTC (Diagnostic Trouble Code) CONFIRMATION PROCEDURE".

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

- Always use the specified brand of CVT fluid. Refer to <u>MA-11, "Fluids and Lubricants"</u>.
- 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 TCM and ECM have an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration. **CAUTION:**

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

Removal and Installation Procedure for CVT Unit Connector

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REMOVAL

PRECAUTIONS

< PRECAUTION >

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

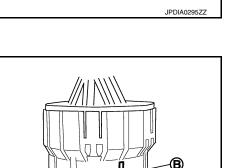
INSTALLATION

- 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.

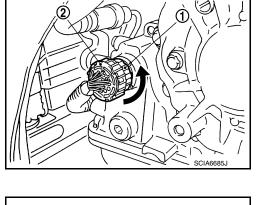
3. Rotate bayonet ring clockwise until marking (A) on CVT unit harness connector terminal body is aligned with the slit (B) on bayonet ring as shown in the figure (correctly fitting condition).

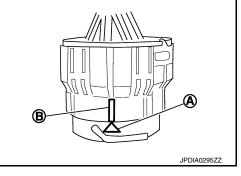
CAUTION:

- 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.



(A)





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[CVT: RE0F10D]

JPDIA0294ZZ

PREPARATION

PREPARATION

Special Service Tools

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INFOID:000000012201067 B

The actual shape of the tools may differ from those illustrated here.		
Tool number (TechMate No.) Tool name	Description	С
1. KV311039S0 () Charging pipe set 2. KV31103920*	CVT fluid changing and adjustment	ТМ
(_) O-ring 2 JSDIA1844ZZ		E
KV38107900	Installing drive shaft	F
() Protector a: 32 mm (1.26 in) dia.		G
PDIA1183J		Н
*: The O-ring as a unit part is set as a SST.		
Commercial Service Tools	INFOID:000000012201068	I

Tool number Tool name		Description	
Power tool		Loosening nuts and bolts	
	PBIC0190E		
Oil seal remover		Removing each oil seal	
	A A		
	JSDIA4998ZZ		
Drift		Installing differential side oil seal [tran-	
a: 53 mm (2.09 in) dia. b: 50 mm (1.97 in) dia.		saxle case side, and converter housing side (2WD models)]	
	ab		
	NT115		

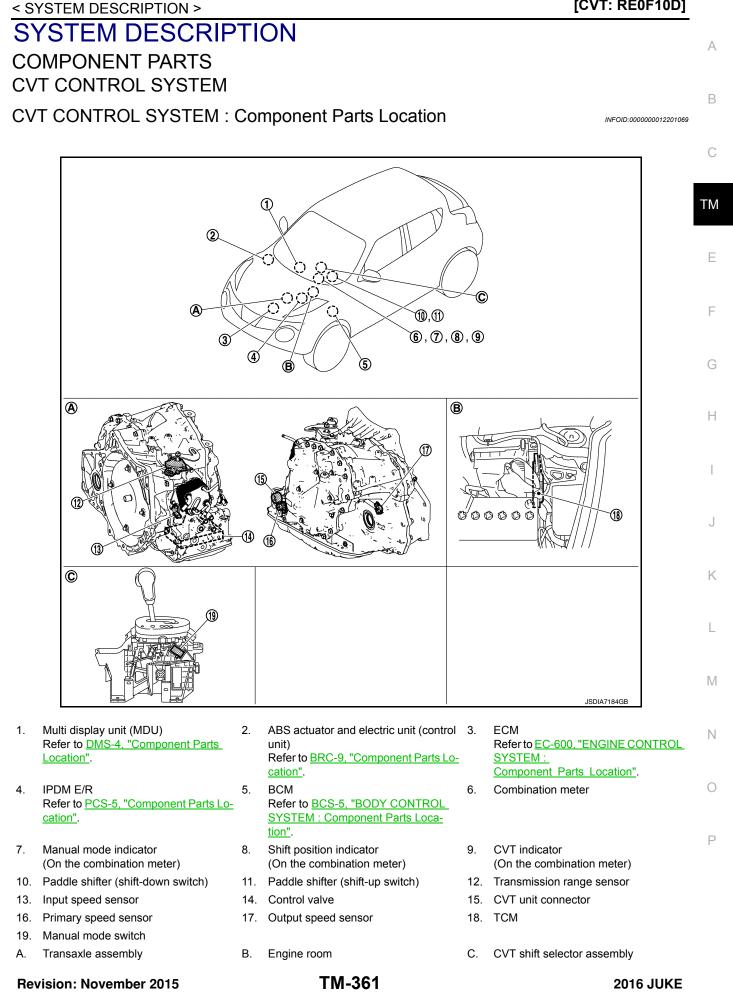
[CVT: RE0F10D]

PREPARATION

< PREPARATION >

Tool number Tool name		Description
Drift a: 60 mm (2.36 in) dia.		Installing differential side oil seal [con- verter housing side (AWD models)]
	SCIA5338E	
Drift		Installing converter housing oil seal
a: 65 mm (2.56 in) dia.		
b: 60 mm (2.36 in) dia.	ab	
	NT115	

[CVT: RE0F10D]



< SYSTEM DESCRIPTION >

NOTE:

- · The following components are included in control valve assembly.
- CVT fluid temperature sensor
- Primary pressure sensor
- Secondary pressure sensor
- Line pressure solenoid valve
- Primary pressure solenoid valve
- Secondary pressure solenoid valve
- Torque converter clutch solenoid valve
- Select solenoid valve

CVT CONTROL SYSTEM : Component Description

INFOID:000000012201070

Name	Function			
ТСМ	TM-363, "CVT CONTROL SYSTEM : TCM"			
Transmission range switch	TM-363, "CVT CONTROL SYSTEM : Transmission Range Switch"			
Primary speed sensor	TM-363, "CVT CONTROL SYSTEM : Primary Speed Sensor"			
Output speed sensor	TM-364, "CVT CONTROL SYSTEM : Output Speed Sensor"			
Input speed sensor	TM-365, "CVT CONTROL SYSTEM : Input Speed Sensor"			
CVT fluid temperature sensor	TM-365, "CVT CONTROL SYSTEM : CVT Fluid Temperature Sensor"			
Primary pressure sensor	TM-366, "CVT CONTROL SYSTEM : Primary Pressure Sensor"			
Secondary pressure sensor	TM-366, "CVT CONTROL SYSTEM : Secondary Pressure Sensor"			
Primary pressure solenoid valve	TM-366, "CVT CONTROL SYSTEM : Primary Pressure Solenoid Valve"			
Secondary pressure solenoid valve	TM-367, "CVT CONTROL SYSTEM : Secondary Pressure Solenoid Valve"			
Select solenoid valve	TM-367, "CVT CONTROL SYSTEM : Select Solenoid Valve"			
Torque converter clutch solenoid valve	TM-367, "CVT CONTROL SYSTEM : Torque Converter Clutch Solenoid Valve"			
Line pressure solenoid valve	TM-368, "CVT CONTROL SYSTEM : Line Pressure Solenoid Valve"			
Manual mode switch	TM-368, "CVT CONTROL SYSTEM : Manual Mode Switch"			
Shift position indicator	TM-368, "CVT CONTROL SYSTEM : Shift Position Indicator"			
Manual mode indicator	TM-369, "CVT CONTROL SYSTEM : Manual Mode Indicator"			
Paddle shifter	TM-369, "CVT CONTROL SYSTEM : Paddle Shifter"			
ECM	 Mainly transmits the following signal to TCM via CAN communication. Engine and CVT integrated control signal NOTE: General term for the communication (torque-down permission, torque-down request, etc.) exchanged between the ECM and TCM. Engine speed signal Engine coolant temperature signal Accelerator pedal position signal Closed throttle position signal Mainly receives the following signal from TCM via CAN communication. Malfunctioning indicator lamp signal 			
BCM	Mainly transmits the following signal to TCM via CAN communication. Stop lamp switch signal 			
ABS actuator and electric unit (control unit)	 Mainly transmits the following signals to TCM via CAN communication. ABS operation signal TCS operation signal VDC operation signal ABS malfunction signal Vehicle speed signal 			

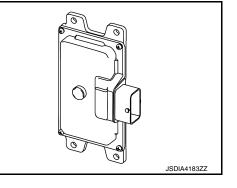
< SYSTEM DESCRIPTION >

[CVT: RE0F10D]

Name	Function	
Combination meter	 Mainly transmits the following signal to TCM via CAN communication. Manual mode signal Non-manual mode signal Manual mode shift up signal Manual mode shift down signal Manual mode shift down signals from TCM via CAN communication. CVT indicator signal Shift position signal Manual mode indicator signal Manual mode shift refusal signal 	B C
MDU	 Mainly transmits the following signal to MDU via CAN communication. NORMAL mode signal ECO mode signal SPORT mode signal 	ТМ

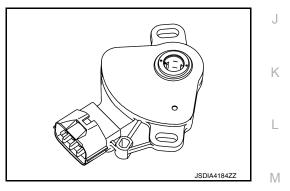
CVT CONTROL SYSTEM : TCM

- The TCM consists of a microcomputer and connectors for signal input and output and for power supply.
- The vehicle driving status is judged based on the signals from the sensors, switches, and other control units, and the optimal transaxle control is performed.
- For TCM control items, refer to <u>TM-379</u>, <u>"CVT CONTROL SYS-</u><u>TEM : System Description"</u>.



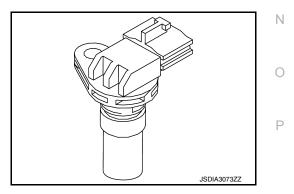
CVT CONTROL SYSTEM : Transmission Range Switch

- 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.



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INFOID:000000012201073

INFOID:000000012201071

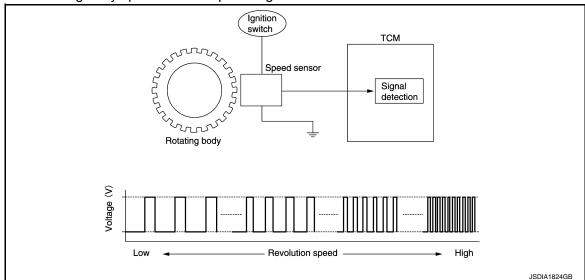
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< SYSTEM DESCRIPTION >

[CVT: RE0F10D]

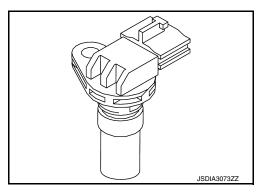
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The primary speed sensor generates an ON-OFF pulse signal according to the rotating body speed. TCM judges the rotating body speed from the pulse signal.

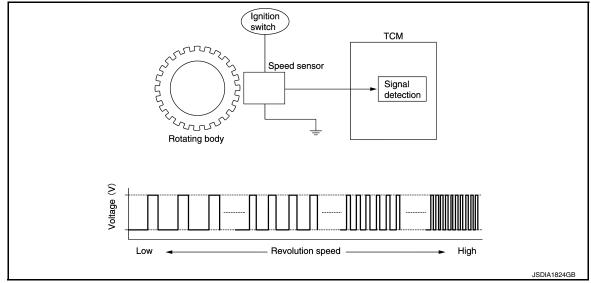


CVT CONTROL SYSTEM : Output Speed Sensor

- The output speed sensor is installed to back side of transaxle.
- The output speed sensor detects final gear speed.



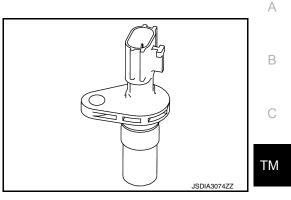
• The output speed sensor generates an ON-OFF pulse signal according to the rotating body speed. TCM judges the rotating body speed from the pulse signal.



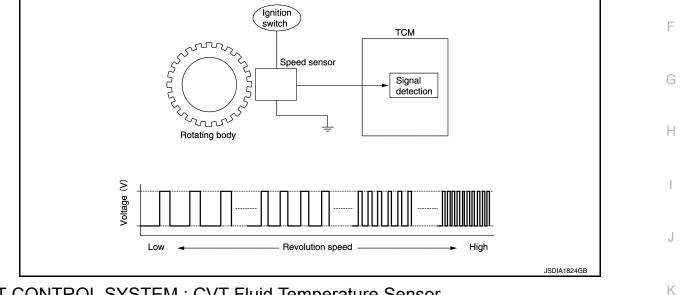
< SYSTEM DESCRIPTION >

CVT CONTROL SYSTEM : Input Speed Sensor

- · The input speed sensor is installed to the front side of transaxle case.
- The input speed sensor detects input shaft speed.

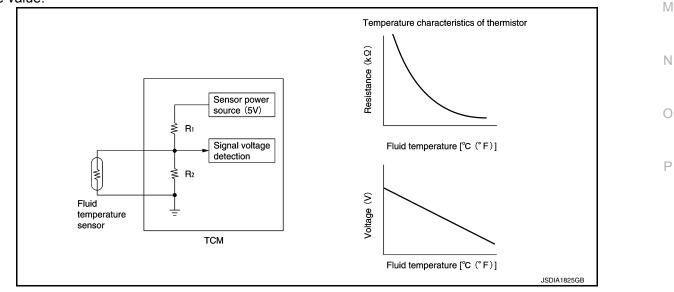


Ε The input speed sensor generates an ON-OFF pulse signal according to the rotating body speed. TCM judges the rotating body speed from the pulse signal.



CVT CONTROL SYSTEM : CVT Fluid Temperature Sensor

- 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.



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INFOID:000000012201076

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[CVT: RE0F10D]

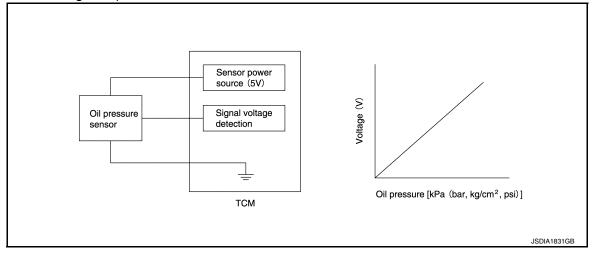
INFOID:000000012201075

< SYSTEM DESCRIPTION >

CVT CONTROL SYSTEM : Primary Pressure Sensor

INFOID:000000012201077

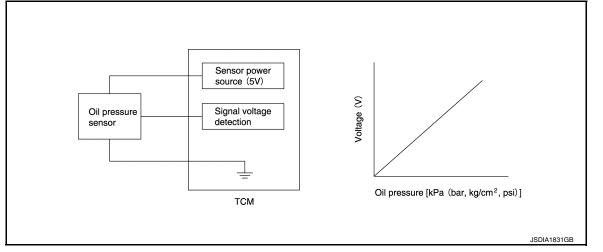
- The primary pressure sensor is installed to control valve.
- The primary pressure sensor detects the pressure applied to the primary pulley.
- When pressure is applied to the ceramic device in the primary pressure sensor, the ceramic device is deformed, resulting in voltage change. TCM evaluates the primary pressure from its voltage change. Voltage is increased along with pressure increase.



CVT CONTROL SYSTEM : Secondary Pressure Sensor

INFOID:000000012201078

- 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 metal diaphragm in the secondary pressure sensor, the metal diaphragm is deformed, resulting in voltage change. TCM evaluates the secondary pressure from its voltage change. Voltage is increased along with pressure increase.



CVT CONTROL SYSTEM : Primary Pressure Solenoid Valve

INFOID:000000012201079

- The primary pressure solenoid valve is installed to control valve.
- The primary pressure solenoid valve controls the primary reducing valve. For information about the primary reducing valve, refer to <u>TM-376</u>, <u>"TRANSAXLE : Component Description"</u>.

< SYSTEM 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 : Secondary Pressure Solenoid Valve

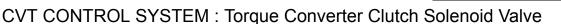
- The secondary pressure solenoid valve is installed to control valve.
- The secondary pressure solenoid valve controls the secondary reducing valve. For information about the secondary reducing valve, refer to TM-376, "TRANSAXLE : Component Description".
- The secondary pressure solenoid valve uses 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 : Select Solenoid Valve

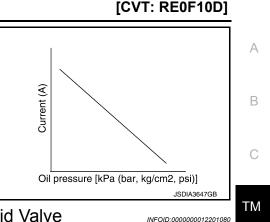
- The select solenoid valve is installed to control valve.
- The select solenoid valve adjusts the forward clutch engaging pressure and the reverse brake engaging pressure. For information about the forward clutch and reverse brake, refer to TM-376, "TRANSAXLE : Component Description".
- The select solenoid valve uses the linear solenoid valve [N/H (normal high) type].

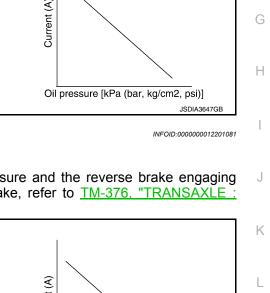
NOTE:

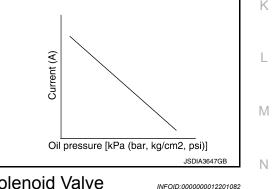
- The principle of the linear solenoid valve utilizes the fact that the force pressing on the valve spool installed inside the coil increases nearly in proportion to the current. This allows it to produce a fluid pressure that is proportional to this pressing force.
- The N/H (normal high) type produces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



- The torque converter clutch solenoid valve is installed to control valve.
- The torque converter clutch solenoid valve controls the torque converter clutch control valve. For information about the torque converter clutch control valve, refer to TM-376, "TRANSAXLE : Component Description".







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< SYSTEM DESCRIPTION >

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

CVT CONTROL SYSTEM : Line Pressure Solenoid Valve

- 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-376</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 : Manual Mode Switch

- The manual mode switch [mode select switch and position select switch (shift-up/shift-down)] is installed in the CVT shift selector assembly.
- The mode select switch detects the position (the main shift gate side or manual shift gate side) of the selector lever and transmits a manual mode signal or a not manual mode signal to the combination meter. Then, the TCM receives a manual mode signal or non-manual mode signal from the combination meter.
- The position select switch (shift-up) detects that the selector lever is shifted to the shift-up side of the manual shift gate and transmits a manual mode shift up signal to the combination meter. Then, the TCM receives a manual mode shift up signal from the combination meter.
- The position select switch (shift-down) detects that the selector lever is shifted to the shift-down side of the manual shift gate and transmits a manual mode shift down signal to the combination meter. Then, the TCM receives a manual mode shift down signal from the combination meter.

CVT CONTROL SYSTEM : CVT Indicator lamp

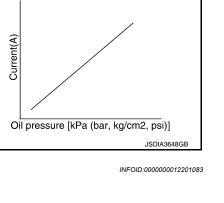
- CVT indicator lamp is positioned on the combination meter.
- CVT indicator lamp turns on for a certain period of time when the ignition switch turns ON, and then turns OFF.

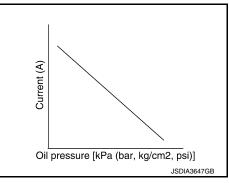
Condition (status)	CVT indicator lamp
Ignition switch OFF.	OFF
Ignition switch ON.	ON
Approx. 2 seconds after ignition switch ON	OFF

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.

Revision: November 2015





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[CVT: RE0F10D]

< SYSTEM DESCRIPTION >

CVT CONTROL SYSTEM : Manual Mode Indicator

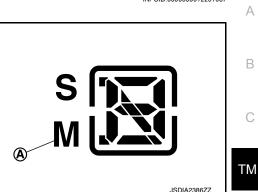
- Manual mode indicator (A) is positioned on the combination meter.
- · The manual mode indicator illuminates when the selector lever is operated to the manual shift gate side. It also displays the gear position (M1 \Leftrightarrow M7) when the selector lever is operated to the + side or - side. (Operates only during driving.)
- The manual mode indicator turns off when the selector lever is operated to the main shift gate side.

Condition (status)	Manual mode indicator
Selector lever is operated to the manual shift gate side.	Display
Selector lever is operated to the + side or – side.	M1⇔M7
Selector lever is operated to the main shift gate side.	Nothing displayed.

CVT CONTROL SYSTEM : Paddle Shifter

- The paddle shifter is installed to the steering column.
- The paddle shifter transmits shift up and shift down signals to combination meter. Then TCM receives signals from the combination meter via CAN communication.





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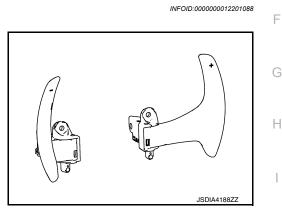
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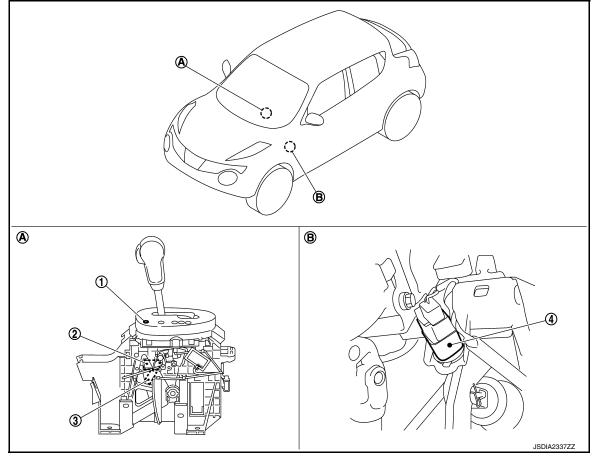


< SYSTEM DESCRIPTION >

SHIFT LOCK SYSTEM : Component Parts Location

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[CVT: RE0F10D]



- Shift lock release button cover* 1.
- 2. Shift lock solenoid
- Park position switch 3.

4. Stop lamp switch CVT shift selector assembly

A:

B: Brake pedal, upper

*: Shift lock release button becomes operative by removing shift lock cover.

SHIFT LOCK SYSTEM : Component Description

INFOID:000000012201090

Component	Function	
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.	
Lock lever	 Rotates according to shift lock solenoid activation and releases the shift lock. If shift lock solenoid does not activate, lock lever can be rotated when shift lock release button is pressed and shift lock is released. 	
Detent rod	It links with the selector button and restricts the selector lever movement.	
Park position switch	It detects that the selector lever is in "P" position.	
Shift lock release button	Forcibly releases the shift lock when pressed.	
Stop lamp switch	 The stop lamp switch turns ON when the brake pedal is depressed. When the stop lamp switch turns ON, the shift lock solenoid is energized. 	

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STRUCTURE AND OPERATION TRANSAXLE

TRANSAXLE : Cross-Sectional View

[CVT: RE0F10D]

INFOID:000000012201091

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6 0 ТΜ P ? -(19 -(18) 73 0 0 1 <u>ି</u>ଜ୍ୟ jind -16) 8 -(15) 9 ⓓ 13 Ð ി ⓓ B **(A)** JSDIA5169ZZ 2. Oil pump 3. Planetary gear

- Converter housing 1.
- Control valve 4.
- Primary pulley 7.
- 10. Transaxle case
- Reduction gear 13.
- 16. Drive sprocket
- 19. Oil pump chain
- 2WD models Α.

- 5. Oil pan
- Secondary pulley 8.
- 11. Differential case
- Idler gear 14.
- 17. Torque converter
- Β. 4WD models

- 6. Steel belt
- 9. Side cover
- 12. Final gear
- 15. Output gear
- 18. Driven sprocket

< SYSTEM DESCRIPTION >

TRANSAXLE : Operation Status

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Selector lever position	Parking mech- anism	Forward clutch	Reversebrake	Primary pulley	Secondary pulley	Steel belt	Final drive
Р	×						
R			×	×	×	×	×
Ν							
D		×		×	×	×	×

TRANSAXLE : Transaxle Mechanism

INFOID:000000012201093

TORQUE CONVERTER (WITH LOCK-UP FUNCTION)

In the same way as a conventional A/T, the torque converter is a system that increases the engine torque and transmits the torque to the transaxle. A symmetrical 3-element, 1-stage, 2-phase type is used here.

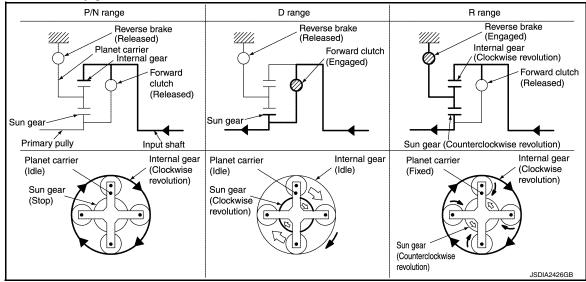
OIL PUMP

Utilizes a vane-type oil pump that is driven by the engine through the oil pump drive chain in order to increase efficiency of pump discharge volume in low-speed zone and optimize pump discharge volume in high-speed zone. Discharged oil from oil pump is transmitted to control valve. It is used as the oil of primary and second-ary pulley operation, the oil of clutch operation, and the lubricant for each part.

PLANETARY GEAR

- A planetary gear type of forward/reverse selector mechanism is installed between the torque converter and primary pulley.
- The power from the torque converter is input via the input shaft, operating a wet multi-plate clutch by means of hydraulic pressure to switch between forward and reverse driving.





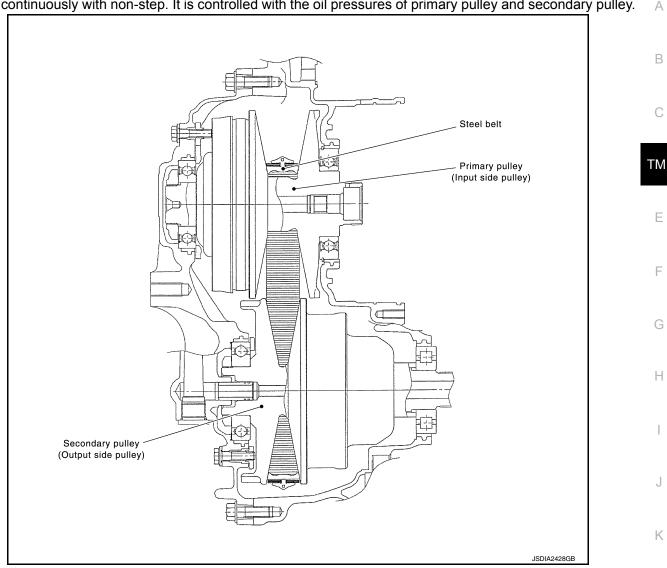
BELT & PULLEY

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).

< SYSTEM DESCRIPTION >

[CVT: RE0F10D]

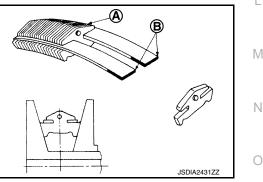
The groove width changes according to wrapping radius of steel belt and pulley from low status to overdrive status continuously with non-step. It is controlled with the oil pressures of primary pulley and secondary pulley.



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-

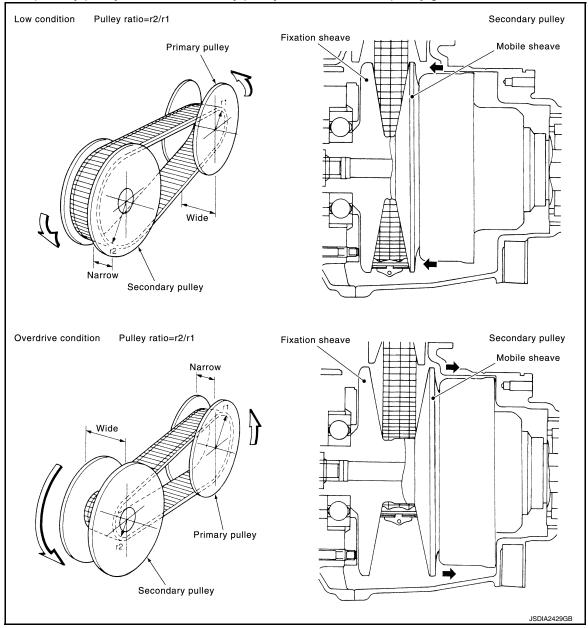
Pulley

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

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< SYSTEM DESCRIPTION >

The movable sheave slides on the shaft to change the groove width of the pulley. Input signals of engine load (accelerator pedal opening), primary pulley speed and secondary pulley speed change the operation pressures of the primary pulley and the secondary pulley, and controls the pulley groove width.

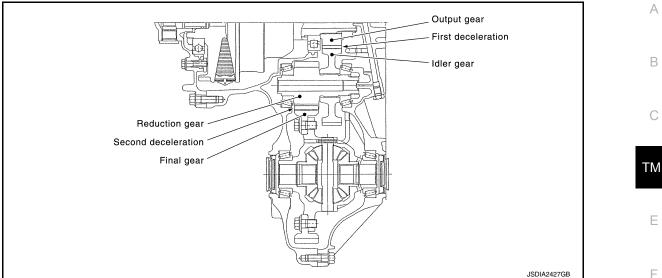


FINAL DRIVE AND DIFFERENTIAL

The deceleration gears are composed of 2 stages: primary deceleration (output gear, idler gear pair) and secondary deceleration (reduction gear, final gear pair). All of these gears are helical gears.

< SYSTEM DESCRIPTION >

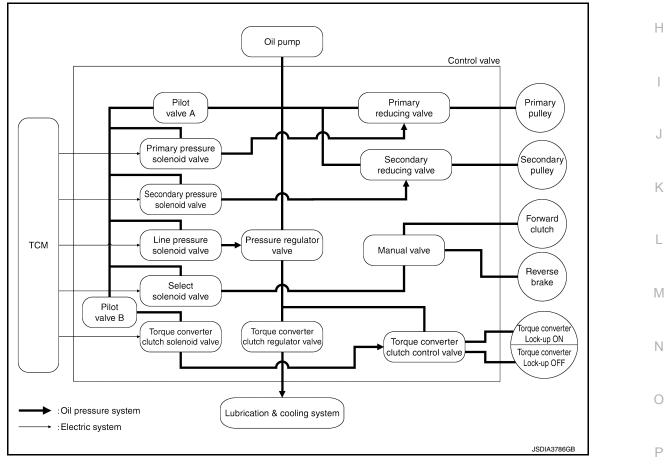
The lubrication oil is the same as the CVT fluid which lubricates the entire transaxle.



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.



< SYSTEM DESCRIPTION >

TRANSAXLE : Component Description

INFOID:000000012201095

[CVT: RE0F10D]

Part name	Function					
Torque converter	Increases engine torque and transmits it to the transaxle.					
Oil pump	Utilizes a vane-type oil pump that is driven by the engine through the oil pump drive chain in order to increase efficiency of pump discharge volume in low-speed zone and optimize pump discharge volum in high-speed zone. Discharged oil from oil pump is transmitted to control valve. It is used as the oil of primary and secondary pulley operation, the oil of clutch operation, and the lubricant for each part.					
Forward clutch	The forward clutch is wet and multiple plate type clutch that consists of clutch drum, piston, drive plate, and driven plate. It is a clutch to move the vehicle forward by activating piston hydraulically, engaging plates, and directly connecting sun gear and input shaft.					
Reverse brake	The reverse brake is a wet multiple-plate type brake that consists of transaxle case, piston, drive plate, and driven plate. It is a brake to move the vehicle in reverse by activating piston hydraulically, engaging plates, and fixing planetary gear.					
Internal gear	The internal gear is directly connected to forward clutch drum. It is a gear that moves the outer edge of pinion planet of planet carrier. It transmits power to move the vehicle in reverse when the planet carrier is fixed.					
Planet carrier	Composed of a carrier, pinion planet, and pinion shaft. This gear fixes and releases the planet carrier in order to switch between forward and reverse driving.					
Sun gear	Sun gear is a set part with planet carrier and internal gear. It transmits transmitted force to primary fixed sheave. It rotates in forward or reverse direction according to activation of either forward clutch or reverse brake.					
Input shaft	The input shaft is directly connected to forward clutch drum and transmits traction force from torque corverter. In shaft center, there are holes for hydraulic distribution to primary pulley and hydraulic distribution for lockup ON/OFF.					
Primary pulley	It is composed of a pair of pulleys (the groove width is changed freely in the axial direction) and the					
Secondary pulley	belt. 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					
Steel belt	secondary pulley.					
Manual shaft						
Parking rod	When the manual shaft is in the P position, the parking rod that is linked to the manual shaft rotates the					
Parking pawl	 parking pole. When the parking pole rotates, it engages with the parking gear, fixing the parking gear. As a result, the secondary pulley that is integrated with the parking gear is fixed. 					
Parking gear						
Output gear						
Idler gear	The deceleration gears are composed of 2 stages: primary deceleration (output gear, idler gear pair) and					
Reduction gear	secondary deceleration (reduction gear, final gear pair). All of these gears are helical gears.					
Differential						
Torque converter regulator valve	Adjusts the feed pressure to the torque converter to the optimum pressure corresponding to the driving condition.					
Pressure regulator valve	Adjusts the discharge pressure from the oil pump to the optimum pressure (line pressure) corresponding to the driving condition.					
Torque converter clutch control valve	Adjusts the torque converter engage and disengage pressures.					
Manual valve	Distributes the clutch operation pressure to each circuit according to the selector lever position.					
Secondary reducing valve	Reduces line pressure and adjusts secondary pressure.					
Primary reducing valve	Reduces line pressure and adjusts primary pressure.					
Pilot valve A	 Reduces line pressure and adjusts pilot pressure to the solenoid valves listed below. Primary pressure solenoid valve Secondary pressure solenoid valve Select solenoid valve Line pressure solenoid valve 					
Pilot valve B	Reduces pilot pressure and adjusts pilot pressure to the torque converter clutch solenoid valve.					

FLUID COOLER & FLUID WARMER SYSTEM

TM-376

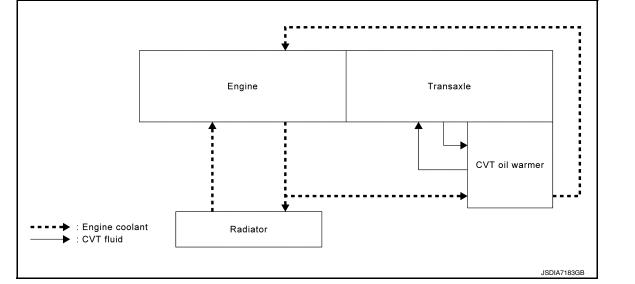
< SYSTEM DESCRIPTION >

FLUID COOLER & FLUID WARMER SYSTEM : System Description

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[CVT: RE0F10D]

CVT FLUID COOLER SCHEMATIC



COMPONENT DESCRIPTION

CVT Oil Warmer

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

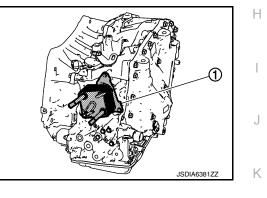
SHIFT LOCK SYSTEM

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 satis-Μ fied.
- 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)



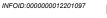
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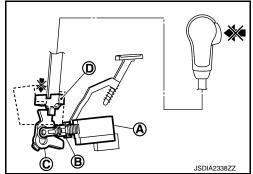
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< SYSTEM DESCRIPTION >

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.

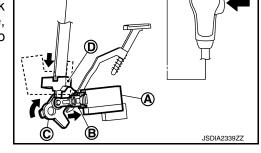
The connecting lock lever (C) is located at the position shown in the figure when the solenoid rod is extended. It prevents the movement of the detent rod (D). The selector lever cannot be shifted from the P position for this reason.

[CVT: RE0F10D]



When brake pedal is depressed (selector lever operation allowed)

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



P POSITION HOLD MECHANISM (IGNITION SWITCH LOCK)

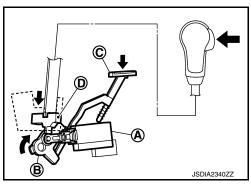
The shift lock solenoid (A) is not energized when the ignition switch is in any position other than ON. The shift mechanism is locked and P position is held. The operation cannot be performed from P position if the brake pedal is depressed with the ignition switch ON when the operation system of shift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

D : Detent rod

CAUTION:

Use the shift lock release button only when the selector lever

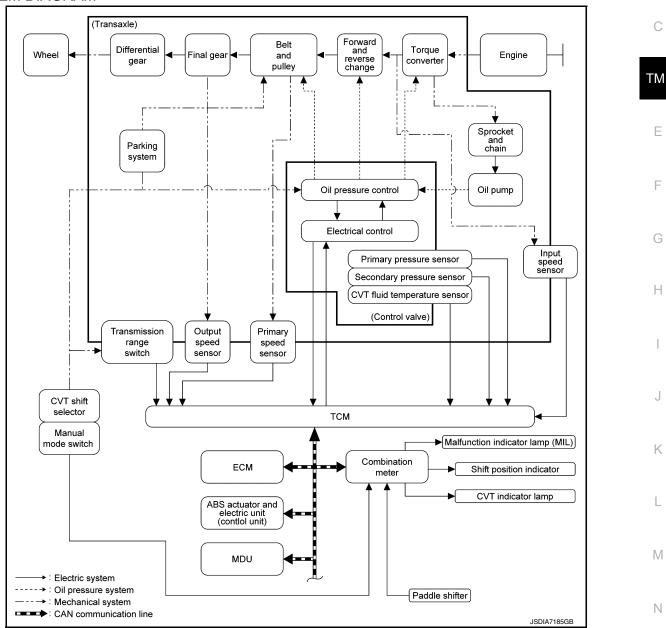
cannot be operated even if the brake pedal is depressed with the ignition switch ON.



SYSTEM CVT CONTROL SYSTEM

CVT CONTROL SYSTEM : System Description

SYSTEM DIAGRAM



MAIN CONTROL CONTENTS OF TCM

Controls	Reference		
Line pressure control	TM-384, "LINE PRESSURE CONTROL : System Description"		
Shift control	TM-386. "SHIFT CONTROL : System Description"		
Select control	TM-389, "SELECT CONTROL : System Description"		
Lock-up control	TM-390. "LOCK-UP CONTROL : System Description"		
Integrated Control System	TM-391. "INTEGRATED CONTROL SYSTEM : System Descrip- tion"		
Fail-safe	TM-409, "Fail-safe"		

[CVT: RE0F10D]

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Revision: November 2015

< SYSTEM DESCRIPTION >

Self-diagnosis function

Communication function with CONSULT

TM-397, "CONSULT Function" TM-397, "CONSULT Function"

LIST OF CONTROL ITEMS AND INPUT/OUTPUT

	Control Item	Line pressure control	Shift control	Select 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)	×	×		×	
	Stop lamp switch signal (CAN communication)	×	×	×	×	
	Primary pressure sensor					×
	Secondary pressure sensor	×	×			×
Input	CVT fluid temperature sensor	×	×	×	×	×
	Primary speed sensor	×	×	×	×	×
	Output speed sensor	×	×		×	×
	Input speed sensor	×	×	×	×	×
	Transmission range switch	×	×	×	×	×
	Manual mode switch signal (Manual mode signal, non-manual mode signal, manual mode shift up signal, manual mode shift down sig- nal) (CAN communication)	×	×		×	
	Paddle shift up signal, Paddle shift down signal (CAN communication)	×	×		×	
	Line pressure solenoid valve	×	×	×		×
	Primary pressure solenoid valve	×	×			×
Output	Torque converter clutch solenoid valve				×	×
Juipul	Secondary pressure solenoid valve	×	×			×
	Select solenoid valve			×		×
	Shift position 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

< SYSTEM DESCRIPTION >

DTC	Vehicle behavior	Conditions of vehicle
P062F	Not changed from normal driving	
P0705	 Shift position indicator on combination meter is not displayed Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_
P0706	 Shift position indicator on combination meter is not displayed Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_
	Start is slowAcceleration is slow	Engine coolant temperature when engine start: Temp. $\ge 10^{\circ}C$ (50°F)
P0711	Selector shock is largeStart is slowAcceleration is slow	Engine coolant temperature when engine start: $-35^{\circ}C (-31^{\circ}F) \le Temp. < 10^{\circ}C (50^{\circ}F)$
	Selector shock is largeStart is slowAcceleration is slow	Engine coolant temperature when engine star: Temp. < –35°C (–31°F)
	Start is slowAcceleration is slow	Engine coolant temperature when engine start: Temp. \geq 10°C (50°F)
P0712	Selector shock is largeStart is slowAcceleration is slow	Engine coolant temperature when engine start: $-35^{\circ}C (-31^{\circ}F) \le \text{Temp.} < 10^{\circ}C (50^{\circ}F)$
	Selector shock is largeStart is slowAcceleration is slow	Engine coolant temperature when engine star: Temp. < –35°C (–31°F)
	Start is slowAcceleration is slow	Engine coolant temperature when engine start: Temp. \ge 10°C (50°F)
P0713	Selector shock is largeStart is slowAcceleration is slow	Engine coolant temperature when engine start: $-35^{\circ}C (-31^{\circ}F) \le Temp. < 10^{\circ}C (50^{\circ}F)$
	Selector shock is largeStart is slowAcceleration is slow	Engine coolant temperature when engine star: Temp. < –35°C (–31°F)
P0715	 Start is slow Acceleration is slow Lock-up is not performed Manual mode is not activated 	_
P0717	Start is slowAcceleration is slowLock-up is not performed	_
P0740	Start is slowAcceleration is slowLock-up is not performed	_
P0743	Start is slowAcceleration is slowLock-up is not performed	_
P0744	 Start is slow Acceleration is slow Lock-up is not performed 	_

< SYSTEM DESCRIPTION >

DTC	Vehicle behavior	Conditions of vehicle
P0746	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_
P0776	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed Vehicle speed is not increased 	When a malfunction occurs on the low oil pressure side
	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	When a malfunction occurs on the high oil pressure side
P0778	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_
P0779	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	
P0826	Manual mode is not activated	
P0841	Not changed from normal driving	
P0847	Not changed from normal driving	_
P0848	Not changed from normal driving	
P084C	Not changed from normal driving	
P084D	Not changed from normal driving	
P0863	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_
P0890	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed Vehicle speed is not increased 	
P0962	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_
P0963	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_
P0965	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	When a malfunction occurs on the low oil pressure side
	Selector shock is largeLock-up is not performed	When a malfunction occurs on the high oil pressure side
P0966	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	

< SYSTEM DESCRIPTION >

DTC	Vehicle behavior	Conditions of vehicle	
P0967	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_	_
P17F0	Not changed from normal driving	_	
P17F1	Not changed from normal driving	_	-
P17F2	Not changed from normal driving	_	
P2765	 Start is slow Acceleration is slow Lock-up is not performed Manual mode is not activated 	-	
P2813	 Selector shock is large Start is slow Acceleration is slow Vehicle speed is not increased 	When a malfunction occurs on the low oil pressure side	_
	Selector shock is large	When a malfunction occurs on the high oil pressure side	_
P2814	Selector shock is large		
P2815	Selector shock is large	-	
U0073	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_	_
U0100	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_	_
U0102	Not changed from normal driving	_	-
U0140	Not changed from normal driving		-
U0141	Not changed from normal driving	-	-
U0155	Not changed from normal driving	-	
U0164	Not changed from normal driving	-	-
U0300	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_	_
U1000	Not changed from normal driving	-	-
U1117	Not changed from normal driving	_	-

CVT CONTROL SYSTEM : Protection Control

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. Limits engine output when a wheel spin occurs in any of right and left drive wheels.
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.
Normal return condi- tion	Wheel spin convergence returns the control to the normal control.

TORQUE IS REDUCED WHEN DRIVING WITH THE REVERSE GEAR

TM-383

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< SYSTEM DESCRIPTION >

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

CONTROL WHEN FLUID TEMPERATURE IS HIGH

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

REVERSE PROHIBIT CONTROL

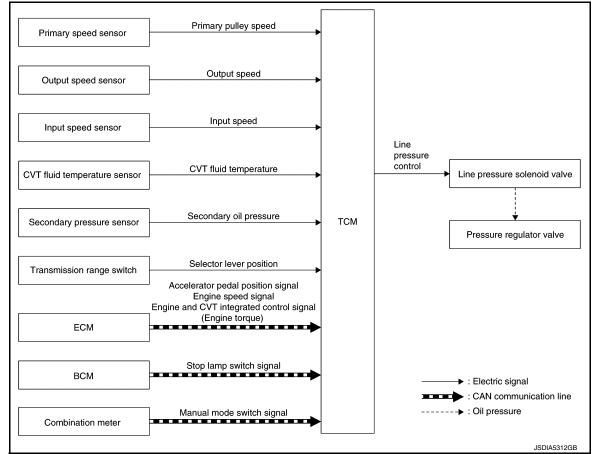
Control	The reverse brake is controlled to avoid becoming engaged when the selector lever is set in "R" position while driving in forward direction at more than the specified speed.
Vehicle behavior in control	If the selector lever is put at "R" position when driving with the forward gear, the gear becomes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

LINE PRESSURE CONTROL

LINE PRESSURE CONTROL : System Description

INFOID:000000012201101

SYSTEM DIAGRAM



< SYSTEM DESCRIPTION >

DESCRIPTION

Highly accurate line pressure control and secondary pressure control reduces friction for improvement of fuel A 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, oil pressure, and manual mode switch signal.

Secondary Pressure Feedback Control

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

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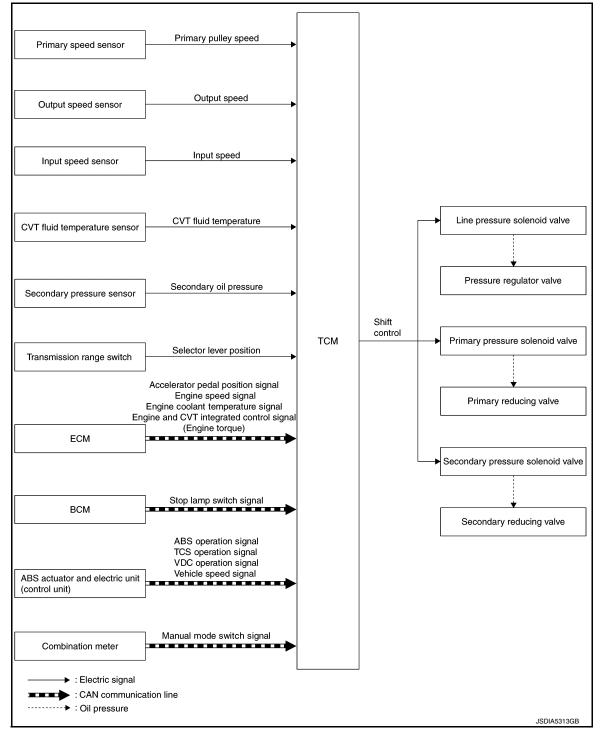
< SYSTEM DESCRIPTION >

SHIFT CONTROL : System Description

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[CVT: RE0F10D]

SYSTEM DIAGRAM



DESCRIPTION

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

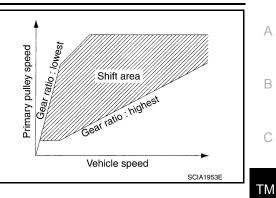
Shift Position Function

D Position (Normal)

< SYSTEM DESCRIPTION >

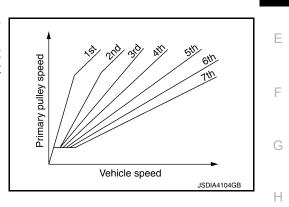
[CVT: RE0F10D]

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



M Position (Manual Mode)

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



Manual Mode Information

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 shifts to UP side (+ 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 shifts to DOWN side (- side) while driving in M1.
- When the selector lever shifts to UP (+ side) side while driving in M7.

Blipping Control

Κ Using engine torque, the blipping control enables a faster and more responsive gear shifting by compensating inertia torque generated from the rotational change during gear shifting in real time.

Operation

L The blipping control is activated when shifting up/down in manual mode or when shifting up/down in "Ds" position.

NOTE:

The blipping control is not activated when the vehicle is in the following conditions:

- When CAN communication is abnormal.
- During the retard inhibit signal transmission from ECM within the engine-CVT integrated control.
- Engine coolant temperature is less than 20°C (68°F).
- CVT fluid temperature is more than 120°C (248°F).
- Vehicle speed is less than 20 km/h (13 MPH).
- · When ABS, TCS or VDC is active.
- During wheel spin.
- · ECM selects blipping control or normal shift control according to the gear position, the selector lever position. etc.
- The blipping control is activated when ECM judges it controllable after receiving a control permit signal from Ρ TCM.

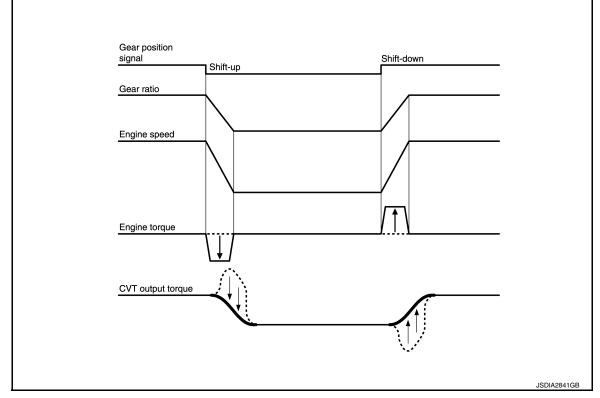
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< SYSTEM DESCRIPTION >

· ECM controls engine torque, based on generated inertia torque.

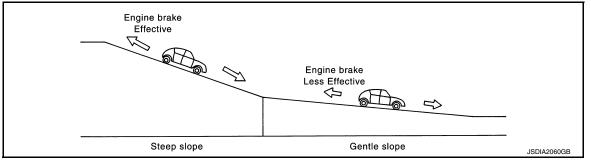


Hill Climbing And Descending Control

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

NOTE:

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



Control In Acceleration

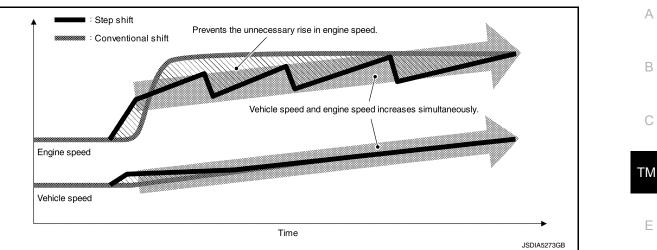
From change of the vehicle speed or accelerator pedal position, the acceleration request level of the driver or driving scene is evaluated. In start or acceleration during driving, the gear shift characteristics with linearity of revolution increase and vehicle speed increase are gained to improve the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

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.

 When the accelerator pedal is depressed 4/8 or more in D position, CVT performs step shifting to allow the vehicle speed and engine speed to increase simultaneously. This improves the feel of acceleration and enables the fuel economy by preventing unnecessary rise in engine speed, compared to the conventional shifting.

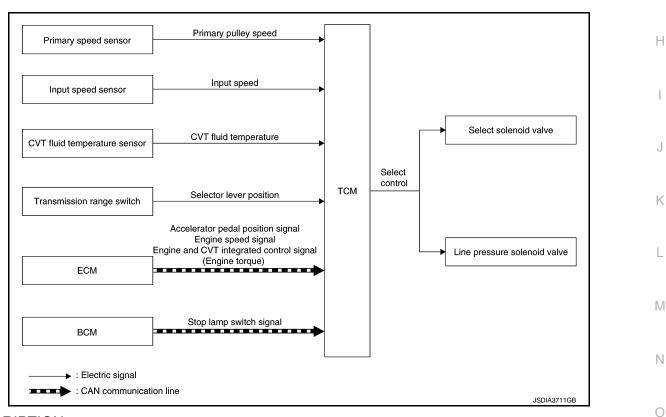
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SELECT CONTROL

SELECT CONTROL : System Description

SYSTEM DIAGRAM



DESCRIPTION

Based on accelerator pedal angle, engine speed, primary pulley speed, and the input 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

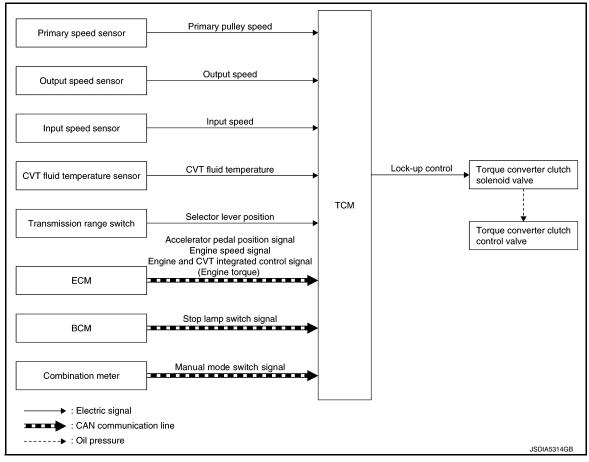
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< SYSTEM DESCRIPTION >

LOCK-UP CONTROL : System Description

[CVT: RE0F10D]

SYSTEM DIAGRAM



DESCRIPTION

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

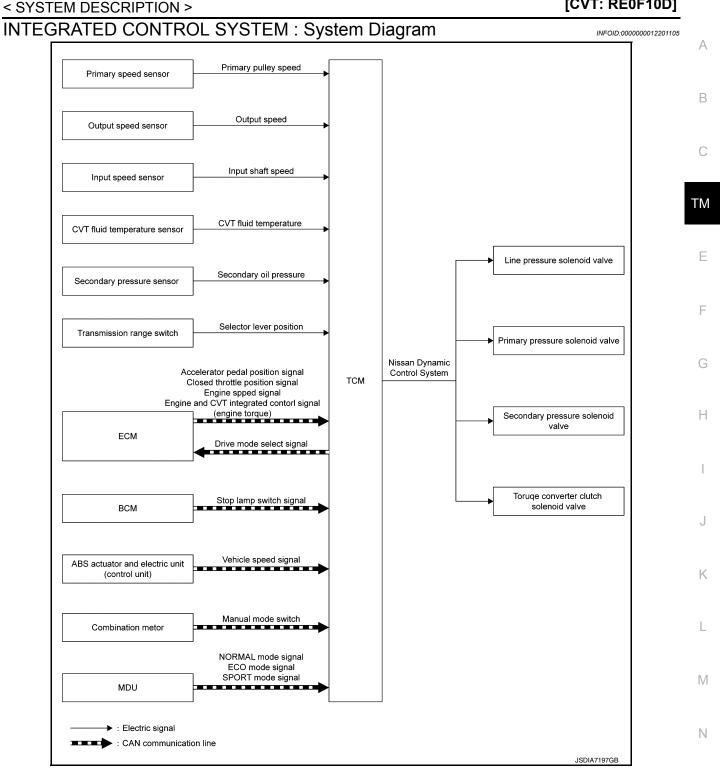
Lock-up engagement

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

Lock-up release condition

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

[CVT: RE0F10D]



INTEGRATED 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.
- When the selector lever is in any position other than D position, the gear shift line is not changed according to changes in the control mode.

CONTROL DESCRIPTION

Revision: November 2015

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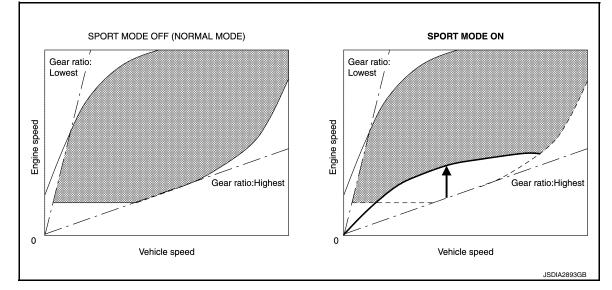
< SYSTEM DESCRIPTION >

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	 Keeps high engine speed and provides direct feel and acceleration performance suitable for driving on winding road. Sport mode performs the following control: High gear ratio limit Step shift Braking down shift Acceleration off ratio hold Cornering ratio hold 		
ECO mode Driving mode that selects the shift schedule with priority on fuel economy which gives to lution.			

Sport Mode Function

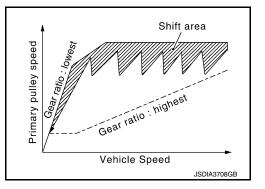
High Gear Ratio Limit

• Engine speed is kept higher than at D position driving, which helps to operate a "sporty" driving.



Step Shift

• Pressing down the accelerator pedal allows to drive the vehicle with a feeling of A/T-like gear shifting.



Braking Down Shift

< SYSTEM DESCRIPTION >

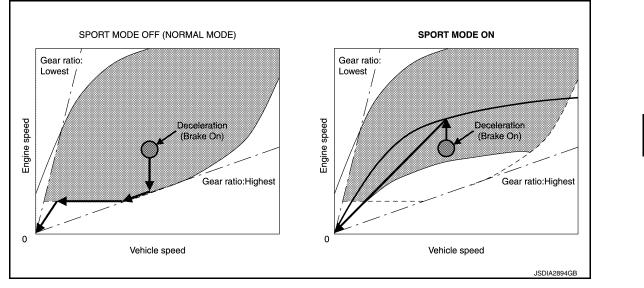
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• At a moderate braking operation before corner etc., the engine speed increases according to the deceleration and the transaxle shifts down automatically, in order to optimize the response at reacceleration while providing an adequate engine braking.

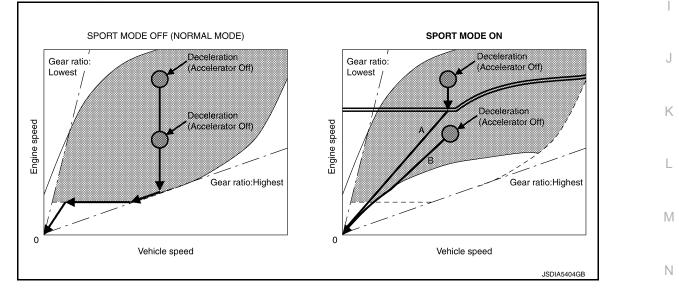


Acceleration Off Ratio Hold

• When the vehicle is decelerated by quickly releasing the foot from accelerator pedal, transmission does not shift up automatically to keep a constant gear ratio, holding the high engine speed.

When the vehicle is decelerated (by accelerator pedal OFF) in upper area of double line in below chart, the engine speed shows a characteristic like "A".

On the other hand, when the vehicle is decelerated (by accelerator pedal OFF) in lower area of double line in below chart, the engine speed shows a characteristic like "B".



Cornering Ratio Hold

• Transaxle holds gear ratio in order to keep a smooth vehicle speed during the curve and to give an adequate driving force at the curve end.

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.

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ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SYSTEM DESCRIPTION >

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Description

This system is an on board diagnostic system that records exhaust emission-related diagnostic information and detects a sensors/actuator-related malfunction. A malfunction is indicated by the malfunction indicator lamp (MIL) and stored in ECU memory as a DTC. The diagnostic information can be obtained with the diagnostic tool (GST: Generic Scan Tool).

GST (Generic Scan Tool)

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When GST is connected with a data link connector equipped on the vehicle side, it will communicate with the control module equipped in the vehicle and then enable various kinds of diagnostic tests. Refer to <u>GI-53</u>. "<u>Description</u>".

NOTE:

Service \$0A is not applied for regions where it is not mandated.

DIAGNOSIS SYSTEM (TCM)

< 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-414</u>, "<u>DTC Index</u>".

2 TRIP DETECTION DIAGNOSIS

Item

(Refer to <u>TM-414</u>, "DTC Index") 2 trip detection diagnosis

(Refer to TM-414, "DTC Index")

1 trip detection diagnosis

When initial malfunction is detected, TCM memorizes DTC of the 1st trip. MIL does not light at this stage. <1 trip>

If the same malfunction is detected again in next driving, TCM memorizes DTC. When DTC is memorized, MIL lights. <2 trip>

"Trip" of the "2 trip detection diagnosis" indicates the driving mode that executes self-diagnosis during driving. ×: Check possible —: Check not possible

DTC

Display at the

2nd trip

×

Display at the

1st trip

×

DIAGNOSIS DESCRIPTION : DTC and DTC of 1st Trip

DTC at the 1st trip

Display at the

2nd trip

2 TRIP DETECTION DIAGNOSIS THAT ILLUMINATES MIL

Display at the

1st trip

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- The DTC number of the 1st trip is the same as the DTC number.
- When a malfunction is detected at the 1st trip, TCM memorizes DTC of the 1st trip. MIL does not light at this stage. If the same malfunction is not detected at the 2nd trip (conforming to necessary driving conditions), DTC at the 1st trip is erased from TCM. If the same malfunction is detected at the 2nd trip, TCM memorizes DTC and MIL lights at the same time.
- The DTC of the 1st trip is specified in Service \$01 of SAE J1979/ISO 15031-5. Since detection of DTC at the 1st trip does not illuminate MIL, warning for a problem is not given to a driver.
- For procedure to delete DTC and 1st trip DTC from TCM, refer to TM-397, "CONSULT Function".
- If DTC of the 1st trip is detected, it is necessary to check the cause according to the "Diagnosis flow". Refer to <u>TM-426</u>, "Work Flow".

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-666</u>, "<u>DIAGNOSIS DESCRIPTION</u> : <u>Malfunc-</u> <u>tion Indicator Lamp (MIL)</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

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DIAGNOSIS SYSTEM (TCM)

< 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.

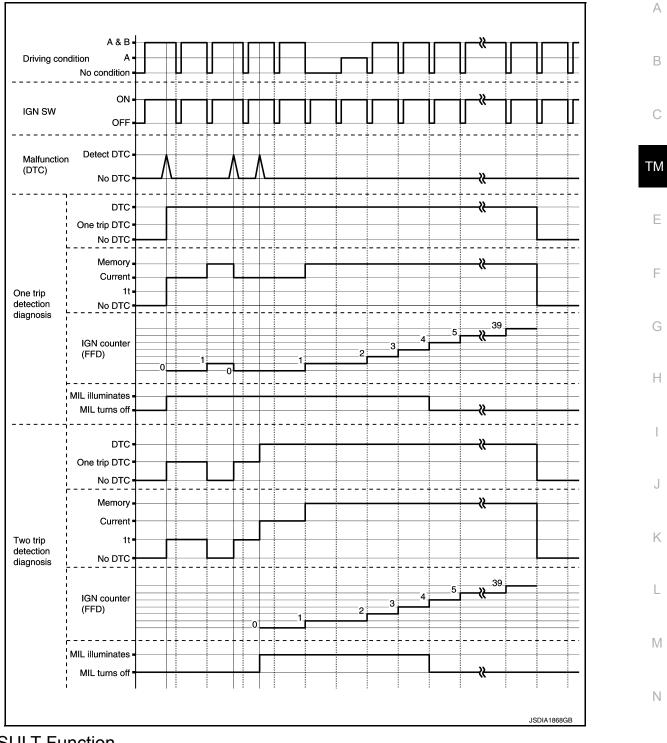
- Engine speed is 400 rpm or more.
- Water temperature was 70°C (158°F) or more.
- In closed loop control, vehicle speed of 70 120 km/h (43 75 MPH) continued for 60 seconds or more.
- In closed loop control, vehicle speed of 30 60 km/h (19 37 MPH) continued for 10 seconds or more.
- In closed loop control,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



CONSULT Function

INFOID:000000012201113

[CVT: RE0F10D]

APPLICABLE ITEM

Conditions	Function	
Work Support	The settings for ECU functions can be changed.	
Self Diagnostic Results	The ECU self diagnostic results are displayed.	
Data Monitor	The ECU input/output data is displayed in real time.	
ECU Identification	The ECU part number is displayed.	
CALIB DATA	The calibration data status of TCM can be checked.	

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< SYSTEM DESCRIPTION >

SELF DIAGNOSTIC RESULTS Refer to <u>TM-414</u>, "DTC Index".

DTC at 1st trip and method to read DTC

- DTC (P0705, P0712, P0715, etc.) is specified by SAE J2012/ISO 15031-6.
- DTC and DTC at 1st trip are displayed on "Self Diagnostic results" of CONSULT.
- When DTC is currently detected, "CRNT" is displayed. If "PAST" is displayed, it shows a malfunction occurred in the past. The trip number of drive without malfunction of concerned DTC can be confirmed with "IGN counter" inside "FFD".
- When the DTC at the 1st trip is detected, "1t" is displayed.

DTC deletion method

NOTE:

If the ignition switch is left ON after repair, turn OFF the ignition switch and wait for 10 seconds or more. Then, turn the ignition ON again. (Engine stop)

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

IGN counter

The ignition counter is displayed in "FFD" and the number of times of satisfied "Driving condition A" is displayed after normal recovery of DTC. Refer to <u>TM-395</u>, "<u>DIAGNOSIS DESCRIPTION</u> : <u>Counter System</u>".

- 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

NOTE:

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

Monitored item	(Unit)	Remarks
VSP SENSOR	(km/h or mph)	Displays the vehicle speed calculated from the CVT output shaft speed.
ESTM VSP SIG	(km/h or mph)	Displays the vehicle speed signal (ABS) received through CAN communication.
INPUT SPEED SENSOR	(rpm)	Displays the input speed calculated from the pulse signal of the input speed sensor.
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 output speed sensor.
ENG SPEED SIG	(rpm)	Displays the engine speed received through CAN communication.
SEC PRESSURE SEN	(V)	Displays the signal voltage of the secondary pressure sensor.
PRI PRESSURE SEN	(V)	Displays the signal voltage of the primary pressure sensor.
ATF TEMP SEN	(V)	Displays the signal voltage of the CVT fluid temperature sensor.
G SENSOR [*]	(G)	Displays the decel G signal received through CAN communication.
VIGN SEN	(V)	Displays the battery voltage applied to TCM.
PVING VOLT	(V)	Displays the backup voltage of 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.
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.

< SYSTEM DESCRIPTION >

[CVT: RE0F10D]

Monitored item	(Unit)	Remarks	
PULLEY GEAR RATIO		Displays the pulley gear ratio calculated from primary pulley speed/secondary pulley speed.	
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.	
SEC PRESSURE	(MPa)	Displays the secondary pressure calculated from the signal voltage of the secondary pressure sensor.	
PRI PRESSURE	(MPa)	Displays the primary pressure calculated from the signal voltage of the primary pressure sensor.	
FLUID TEMP	(°C or °F)	Displays the CVT fluid temperature calculated from the signal voltage of the CVT flu- id temperature sensor.	
DSR REV	(rpm)	Displays the target primary pulley speed calculated from processing of gear shift control.	
TGT PLLY GR RATIO		Displays the target gear ratio of the pulley from processing of gear shift control.	
LU PRS	(MPa)	Displays the target oil pressure of the torque converter clutch solenoid valve calcu- lated from oil pressure processing of gear shift control.	
LINE PRS	(MPa)	Displays the target oil pressure of the line pressure solenoid valve calculated from oil pressure processing of gear shift control.	
TRGT PRI PRESSURE	(MPa)	Displays the target oil pressure of the primary pressure solenoid valve calculated from oil pressure processing of gear shift control.	
TRGT SELECT PRESSURE	(MPa)	Displays the target oil pressure of the select solenoid valve calculated from oil pres- sure processing of gear shift control.	
TRGT SEC PRESSURE	(MPa)	Displays the target oil pressure of the secondary pressure 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.	
SEC SOLENOID CURRENT	(A)	Displays the command current from TCM to the secondary pressure solenoid valve.	
SELECT SOLENOID CUR- RENT	(A)	Displays the command current from TCM to the select solenoid valve.	
SOLMON1	(A)	Monitors the command current from TCM to the torque converter clutch solenoid valve and displays the monitored value.	
SOLMON2	(A)	Monitors the command current from TCM to the line pressure solenoid valve and displays the monitored value.	
PRI SOL MON	(A)	Monitors the command current from TCM to the primary pressure solenoid valve and displays the monitored value.	
SEC SOL MON CURRENT	(A)	Monitors the command current from TCM to the secondary pressure solenoid valve and displays the monitored value.	
SELECT SOL MON CURRENT	(A)	Monitors the command current from TCM to the select 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).	
L POSITION SW*	(On/Off)	Displays the operation status of the transmission range switch (L position).	
DS RANGE SW*	(On/Off)	Displays the operation status of the transmission range switch (Ds position).	

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< SYSTEM DESCRIPTION >

Monitored item	(Unit)	Remarks
BRAKESW	(On/Off)	Displays the reception status of the stop lamp switch signal received through CAN communication.
IDLE SW	(On/Off)	Displays the reception status of the closed throttle position signal received through CAN communication.
SPORT MODE SW*	(On/Off)	Displays the reception status of the sport mode switch signal received through CAN communication.
ECO MODE SW	(On/Off)	Displays the reception status of the ECO mode switch signal received through CAN communication.
STRDWNSW	(On/Off)	Displays the operation status of the paddle shifter (down switch).
STRUPSW	(On/Off)	Displays the operation status of the paddle shifter (up switch).
DOWNLVR	(On/Off)	Displays the operation status of the selector lever (down switch).
UPLVR	(On/Off)	Displays the operation status of the selector lever (up switch).
NONMMODE	(On/Off)	Displays if the selector lever position is not at the manual shift gate.
MMODE	(On/Off)	Displays if the selector lever position is at the manual shift gate.
TOW MODE SW*	(On/Off)	Displays the reception status of the TOW mode switch signal received through CAN communication.
SHIFT IND SIGNAL		Displays the transaxle value of shift position signal transmitted via CAN communi- cation.
CVT LAMP*	(On/Off)	Displays the transaxle status of the CVT warning lamp signal transmitted through CAN communication.
SPORT MODE IND*	(On/Off)	Displays the transaxle status of the SPORT indicator lamp signal transmitted through CAN communication.
MANU MODE SIGNAL	(On/Off)	Displays the transaxle status of the manual mode signal transmitted through CAN communication.
DS RANGE SIGNAL*	(On/Off)	Displays the shift position signal status from transmission range switch (Ds position).
ECO MODE SIGNAL	(On/Off)	Displays the transaxle status of the ECO mode signal transmitted through CAN communication.
VDC ON	(On/Off)	Displays the reception status of the VDC operation signal received through CAN communication.
TCS ON	(On/Off)	Displays the reception status of the TCS operation signal received through CAN communication.
ABS FAIL SIGNAL	(On/Off)	Displays the reception status of the ABS malfunction signal received through CAN communication.
ABS ON	(On/Off)	Displays the reception status of the ABS operation signal received through CAN communication.
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.
G SEN CALIBRATION*	(YET/DONE)	Displays the status of "G SENSOR CALIBRATION" in "Work Support".
N IDLE STATUS*	(On/Off)	Displays idle neutral status.
ENGBRKLVL	(On/Off)	Displays the setting of "ENGINE BRAKE ADJ" in "Work Support".
DRIVE MODE STATS*		Displays the drive mode status recognized by TCM.
SNOW MODE*	(On/Off)	Displays whether it is the SNOW mode.
ECO MODE*	(On/Off)	Displays whether it is the ECO mode.
NORMAL MODE*	(On/Off)	Displays whether it is the NORMAL mode.
SPORT MODE*	(On/Off)	Displays whether it is the SPORT mode.
AIR BLDING STATE*	(INCOMP/ COMP)	Displays the status of "ELECTRIC O.P. AIR BLEEDING" in "Work Support".

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< SYSTEM DESCRIPTION >

[CVT: RE0F10D]

Monitored item	(Unit)	Remarks
ELECTRIC OP DUTY*	(%)	Displays the command signal value (duty) of the electric oil pump transmitted from TCM.
E-OP DUTY MON*	(%)	Monitors the status signal value (duty) transmitted from the electric oil pump and displays the monitored value.
ELECTRIC OP RELAY*	(On/Off)	Displays the command status from TCM to the electric oil pump relay.
E-OP RELAY MON*	(On/Off)	Monitors the command status from TCM to the oil pump relay and displays the mon- itored value.
CVT-B		Displays CVT fluid temperature count.This monitor item does not use.
CVT-A		Displays CVT fluid temperature count.This monitor item does not use.
G SENSOR*	(V)	Displays the signal voltage of the G sensor.

*: Not applicable but displayed.

WORK SUPPORT

Item name	Description
CONFORM CVTF DETERIORTN	Checks the degradation level of the CVT fluid under severe conditions.
G SENSOR CALIBRATION*	Compensates the G sensor.
ERASE LEARNING VALUE	Erases learning value memorized by TCM.
ENGINE BRAKE ADJ.	Although there is no malfunction on the transaxle and the CVT system, if a cus- tomer 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".
WRITE IP CHARA - REPLACEMENT AT/CVT	Writes IP characteristics when transaxle assembly is replaced.
READ IP CHARA - REPLACEMENT TCM	Reads IP characteristics when TCM is replaced.
WRITE IP CHARA - REPLACEMENT TCM	Writes IP characteristics when TCM is replaced.

*: This item does not use.

Engine brake adjustment

5	, ,		Κ
	ENGINE BRAKE LE	EVEL	
	ON : Tur	n ON the engine brake control.	
	OFF : Tur	n OFF the engine brake control.	L
Check	the degradation le	evel of the CVT fluid.	
	CVTF degradation I	evel data	M
	210,000 or more	: Replacement of the CVT fluid is required.	
	Less than 210,000	: Replacement of the CVT fluid is not required.	Ν

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Ρ

TCM

Reference Value

INFOID:000000012201114

CONSULT DATA MONITOR STANDARD VALUE

- In CONSULT, electric shift timing or lock-up timing, i.e. operation timing of each solenoid valve, is displayed. Therefore, if there is an obvious difference between the shift timing estimated from a shift shock (or engine speed variations) and that shown on the CONSULT, the mechanism parts (including the hydraulic circuit) excluding the solenoids and sensors may be malfunctioning. In this case, check the mechanical parts following the appropriate diagnosis procedure.
- Shift point (gear position) displayed on CONSULT slightly differs from shift pattern described in Service Manual. This is due to the following reasons.
- Actual shift pattern may vary slightly within specified tolerances.
- While shift pattern described in Service Manual indicates start of each shift, CONSULT shows gear position at end of shift.
- The solenoid display (ON/OFF) on CONSULT is changed at the start of gear shifting. In contrast, the gear position display is changed at the time when gear shifting calculated in the control unit is completed.
 NOTE:

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

Monitor item	Condition	Value/Status (Approx.)
VSP SENSOR	While driving	Almost same as the speedometer display.
ESTM VSP SIG	While driving	Almost same as the speedometer display.
INPUT SPEED SENSOR	In driving (lock-up ON)	Approximately matches the engine speed.
PRI SPEED SEN	In driving (lock-up ON)	Approximately matches the engine speed.
SEC REV SENSOR	While driving	VSP SENSOR × 45
ENG SPEED SIG	Engine running	Almost same reading as tachometer
SEC PRESSURE SEN	 After engine warm up Selector lever: "N" position At idle 	1.2 – 1.3 V
PRI PRESSURE SEN	 After engine warm up Selector lever: "N" position At idle 	0.7 – 0.9 V
	CVT fluid: Approx. 20°C (68°F)	2.0 – 2.1 V
ATF TEMP SEN	CVT fluid: Approx. 50°C (122°F)	1.4 – 1.5 V
	CVT fluid: Approx. 80°C (176°F)	0.9 – 1.0 V
G SENSOR	Always	0 G
VIGN SEN	Ignition switch: ON	10 – 16 V
PVIGN VOLT	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)	Approximately matches the engine speed.
SEC SPEED	While driving	VSP SENSOR × 45
ENG SPEED	Engine running	Almost same reading as tachometer
SLIP REV	While driving	Engine speed – Input speed
	In driving (forward)	2.6310 - 0.3780
PULLEY GEAR RATIO	In driving (reverse)	2.6310

TCM

< ECU DIAGNOSIS INFORMATION >

[CVT: RE0F10D]

Monitor item	Condition	Value/Status (Approx.)
	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
ACCEL POSI SEN I	Accelerator pedal fully depressed	80.00 deg
VENG TRQ	While driving	The value changes along with acceleration/ deceleration.
PRI TRQ	While driving	The value changes along with acceleration/ deceleration.
TRQ RTO	While driving	The value changes along with acceleration/ deceleration.
SEC PRESSURE	 After engine warm up Selector lever: "N" position At idle 	1.1 MPa
PRI PRESSURE	 After engine warm up Selector lever: "N" position At idle 	0.4 – 0.45 MPa
FLUID TEMP	Ignition switch ON.	Displays the CVT fluid temperature.
DSR REV	While driving	It varies along with the driving condition.
	In driving (forward)	2.6310 - 0.3780
TGT PLLY GR RATIO	In driving (reverse)	2.6310
	Engine startedVehicle is stopped.	–0.50 MPa
LU PRS	 Selector lever: "D" position Accelerator pedal position: 1/8 or less Vehicle speed: 20 km/h (12 MPH) or more 	0.45 MPa
LINE PRS	 After engine warm up Selector lever: "N" position At idle 	1.1 MPa
TRGT PRI PRESSURE	 After engine warm up Selector lever: "N" position At idle 	0.4 – 0.5 MPa
TARGET SELECT PRESSURE	After engine warm upSelector lever: "N" positionAt idle	0 MPa
	Selector lever: "D" positionAt idle	0.3 – 0.5 MPa
TARGET SEC PRESSURE	 After engine warm up Selector lever: "N" position At idle 	1.1 MPa
ISOLT1*	-	—
ISOLT2 *	-	_
PRI SOLENOID*	_	—
SEC SOLENOID CURRENT*	_	—
SELECT SOLENOID CURRENT*	_	_
SOLMON1*	_	_
SOLMON2*	_	_
PRI SOL MON*	_	_

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ТСМ

< ECU DIAGNOSIS INFORMATION >

Monitor item	Condition	Value/Status (Approx.)
SEC SOL MON CURRENT*	_	_
SELECT SOL MON CURRENT*	_	
D POSITION SW	Selector lever: "D" position	On
D POSITION SW	Other than the above	Off
N POSITION SW	Selector lever: "N" position	On
IN FOSITION SW	Other than the above	Off
R POSITION SW	Selector lever: "R" position	On
R POSITION SW	Other than the above	Off
P POSITION SW	Selector lever: "P" position	On
P POSITION SW	Other than the above	Off
L POSITION SW	Always	Off
DS RANGE SW	Always	Off
BRAKESW	Brake pedal is depressed	On
DRAKESW	Brake pedal is released	Off
	Accelerator pedal is released	On
IDLE SW	Accelerator pedal is fully depressed	Off
SPORT MODE SW	Always	Off
ECO MODE SW	Always	Off
STRDWNSW	Paddle shifter (Down) is pulled	On
STRDWINSW	Other than the above	Off
STRUPSW	Paddle shifter (Up) is pulled	On
5110F3W	Other than the above	Off
DOWNLVR	Selector lever: -side	On
DOWNEVR	Other than the above	Off
UPLVR	Selector lever: +side	On
OPLVR	Other than the above	Off
NONMMODE	Manual shift gate position (neutral, +side, - side)	Off
	Other than the above	On
MMODE	Manual shift gate position (neutral, +side, - side)	On
	Other than the above	Off
TOW MODE SW	Always	Off

ТСМ

< ECU DIAGNOSIS INFORMATION >

[CVT: RE0F10D]

Monitor item	Condition	Value/Status (Approx.)
	When the selector lever is positioned in be- tween each position.	OFF
	Selector lever: "P" position	Р
	Selector lever: "R" position	R
	Selector lever: "N" position	Ν
	Selector lever: "D" position	D
SHIFT IND SIGNAL	Manual mode: 1st	M1
	Manual mode: 2nd	M2
	Manual mode: 3rd	M3
	Manual mode: 4th	M4
	Manual mode: 5th	M5
	Manual mode: 6th	M6
	Manual mode: 7th	M7
	Approx. 2 seconds after ignition switch ON	On
CVT LAMP	Other than the above	Off
SPORT MODE IND	Always	Off
	Driving with manual mode	On
MANU MODE SIGNAL	Other than the above	Off
DS RANGE SIGNAL	Always	Off
ECO MODE SIGNAL	Always	Off
	When VDC malfunction signal is received	On
VDC ON	Other than the above	Off
	When TCS malfunction signal is received	On
TCS ON	Other than the above	Off
	When ABS malfunction signal is received	On
ABS FAIL SIGNAL	Other than the above	Off
	ABS is activated	On
ABS ON	Other than the above	Off
	Selector lever: "P" and "N" positions	N/P
	Selector lever: "R position	R
RANGE	Selector lever: "D" position	_
	Selector lever: "M" position	D
M GEAR POS	Manual mode: 1st – 7th	1 to 7
	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%)
	When G sensor calibration is completed	DONE
G SEN CALIBRATION	When G sensor calibration is not completed	YET
	When idle neutral control is operated	On
N IDLE STATUS	When idle neutral control is not operated	Off

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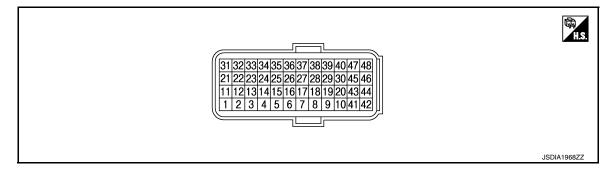
< ECU DIAGNOSIS INFORMATION >

[CVT: RE0F10D]

Monitor item	Condition	Value/Status (Approx.)
ENGBRKLVL	When the engine brake level of "ENGINE BRAKE ADJ". in "Work Support" is ON	On
ENGORALVL	When the engine brake level of "ENGINE BRAKE ADJ". in "Work Support" is OFF	Off
	Integrated Control System: NORMAL mode	NORMAL
DRIVE MODE STATS	Integrated Control System: ECO mode	ECO
	Integrated Control System: SPORT mode	SPORT
SNOW MODE	Always	Off
ECO MODE	Integrated Control System: ECO mode	On
	Other than the above	Off
NORMAL MODE	Integrated Control System: NORMAL mode	On
	Other than the above	Off
SPORT MODE	Integrated Control System: SPORT mode	On
SPORTMODE	Other than the above	Off
AIR BLDING STATE	Always	INCOMP
ELECTRIC OP DUTY	Always	0%
E-OP DUTY MON	Always	0%
ELECTRIC OP RELAY	Always	Off
E-OP RELAY MON	Always	Off
CVT-B*		_
CVT-A*		_
	Vehicle stoppedVehicle is level	2.5 V
G SENSOR	During acceleration	Positive value
	During deceleration	Negative value

*: These monitor items do not use.

TERMINAL LAYOUT



INPUT/OUTPUT SIGNAL STANDARD

	nal No. e color)	Description	n	Condition Va	
+	-	Signal	Input/ Output		Value (Approx.)
2* (BR)	_	_	_		_

[CVT: RE0F10D]

Terminal No. (Wire color)		Descriptior	ו	Condition		Value (Approx.)	A
+	_	Signal	Input/ Output		Condition	value (Approx.)	
4 (W)	Ground	D range switch	Input		Selector lever: "D" position	10 – 16 V	В
				-	Other than the above	0 V 10 – 16 V	
5 (LG)	Ground	N range switch	Input	Ignition	Selector lever: "N" position Other than the above	0 V	С
6	Cround	R range switch	Innut	switch ON	Selector lever: "R" position	10 – 16 V	
(G)	Ground	R range switch	Input		Other than the above	0 V	ТМ
7 (SB)	Ground	P range switch	Input		Selector lever: "P" position Other than the above	10 – 16 V 0 V	_
11 (Y)	Ground	Sensor ground	_		Always	0 V	E
					CVT fluid: Approx. 20°C (68°F)	2.01 – 2.05 V	F
12 (SB)	Ground	CVT fluid tempera- ture sensor	Input	Ignition switch ON	CVT fluid: Approx. 50°C (122°F)	1.45 – 1.50 V	-
				UN	CVT fluid: Approx. 80°C 176°F)	0.90 – 0.94 V	G
16 (P)	Ground	Secondary pres- sure sensor	Input	 After engine warm up Selector lever: "N" position At idle 		1.2 – 1.3 V	Н
17 (P)	Ground	Primary pressure sensor	Input		gine warm up r lever: "N" position	0.7 – 0.85 V	I
23 (P)		CAN-L	Input/ Output		_	_	J
24 (V)	Ground	Input speed sensor	Input		sition: "M1" position speed: 20 km/h (12 MPH)	880 Hz 1mSec/div	K
26		Sensor power sup-	<u> </u>	Ignition sv	vitch: ON	5.0 V	
(LG)	Ground	ply	Output	Ignition sv	vitch: OFF	0 V	M
30	Ground	Line pressure sole-	Output		gine warming up r lever: "N" position	2.5mSec/div 2.5mSec/div 5V/div JSDIA1897GB	N O
(Y)	Ground	noid valve	Julput	 Selecto 	gine warming up r lever: "D" position s the accelerator pedal fully	2.5mSec/div 2.5mSec/div 5V/div JSDIA1898GB	Ρ

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< ECU DIAGNOSIS INFORMATION >

Terminal No. (Wire color)		Descriptior	1	Condition	
+	_	Signal	Input/ Output	Condition	Value (Approx.)
33 (L)	_	CAN-H	Input/ Output	_	_
34 (R)	Ground	Output speed sen- sor	Input	 Shift position: "M1" position Vehicle speed: 20 km/h (12 MPH) 	200 Hz 2.5mSec/div 5V/div JSDIA1904GB
35 (BG)	Ground	Primary speed sen- sor	Input	 Shift position: "M1" position Vehicle speed: 20 km/h (12 MPH) 	700 Hz 1mSec/div 5V/div JSDIA1905GB
37 (L)	Ground	Select solenoid valve	Output	 Engine started Vehicle is stopped Selector lever: "N" position 	2.5mSec/div
38 (LG)	Ground	Torque converter clutch solenoid valve	Output	 Selector lever: "D" position Accelerator pedal position: 1/8 or less Vehicle speed: 20 km/h (12 MPH) or more 	1mSec/div 5V/div JSDIA1900GB
		Vaive	Engine startedVehicle is stopped	2.5mSec/div 2.5mSec/div 5V/div JSDIA1903GB	
39 (G)	Ground	Secondary pres- sure solenoid valve	Output	 Shift position: "M1" position Vehicle speed: 20 km/h (12 MPH) 	2.5mSec/div 2.5mSec/div 5V/div JSDIA1897GB

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< ECU DIAGNOSIS INFORMATION >

[CVT: RE0F10D]

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	А
+	_	Signal	Input/ Output	Condition	value (Applox.)	
40 (W)	Ground	Primary pressure solenoid valve	Output	 Shift position: "M1" position Vehicle speed: 20 km/h (12 MPH) 		С
41 (B)	Ground	Ground		Always	5V/div JSDIA1897GB	ТМ
42 (B)	Ground	Ground		Always	0 V	E
45 (V)	Ground	Battery power sup- ply (Memory back- up)	Input	Always	10 – 16 V	F
46 (GR)	Ground	Battery power sup- ply (Memory back- up)	Input	Always	10 – 16 V	G
47	Ground	Ignition power sup-	Input	Ignition switch: ON	10 – 16 V	
(LG)	Ground	ply	input	Ignition switch: OFF	0 V	Н
48	Ground	Ignition power sup-	Input	Ignition switch: ON	10 – 16 V	
(W)	Ground		Ignition switch: OFF	0 V		

*: This harness does not use.

Fail-safe

INFOID:000000012201115

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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	_	M
P0705	 Shift position indicator on combination meter is not displayed Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 		Ν
P0706	 Shift position indicator on combination meter is not displayed Selector shock is large Start is slow 		0
	Acceleration is slowLock-up is not performed		Ρ

DTC	Vehicle behavior	Conditions of vehicle
	Start is slowAcceleration is slow	Engine coolant temperature when engine start: Temp. $\ge 10^{\circ}C$ (50°F)
P0711	Selector shock is largeStart is slowAcceleration is slow	Engine coolant temperature when engine start: $-35^{\circ}C (-31^{\circ}F) \le Temp. < 10^{\circ}C (50^{\circ}F)$
	Selector shock is largeStart is slowAcceleration is slow	Engine coolant temperature when engine star: Temp. < –35°C (–31°F)
	Start is slowAcceleration is slow	Engine coolant temperature when engine start: Temp. \geq 10°C (50°F)
P0712	Selector shock is largeStart is slowAcceleration is slow	Engine coolant temperature when engine start: $-35^{\circ}C (-31^{\circ}F) \le \text{Temp.} < 10^{\circ}C (50^{\circ}F)$
	Selector shock is largeStart is slowAcceleration is slow	Engine coolant temperature when engine star: Temp. < –35°C (–31°F)
	Start is slowAcceleration is slow	Engine coolant temperature when engine start: Temp. \geq 10°C (50°F)
P0713	Selector shock is largeStart is slowAcceleration is slow	Engine coolant temperature when engine start: $-35^{\circ}C (-31^{\circ}F) \le \text{Temp.} < 10^{\circ}C (50^{\circ}F)$
	Selector shock is largeStart is slowAcceleration is slow	Engine coolant temperature when engine star: Temp. < –35°C (–31°F)
P0715	 Start is slow Acceleration is slow Lock-up is not performed Manual mode is not activated 	_
P0717	Start is slowAcceleration is slowLock-up is not performed	_
P0740	Start is slowAcceleration is slowLock-up is not performed	_
P0743	Start is slowAcceleration is slowLock-up is not performed	_
P0744	Start is slowAcceleration is slowLock-up is not performed	_
P0746	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_
P0776	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed Vehicle speed is not increased 	When a malfunction occurs on the low oil pressure side
	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	When a malfunction occurs on the high oil pressure side
P0778	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_

[CVT: RE0F10D]

DTC	Vehicle behavior	Conditions of vehicle
00770	Selector shock is largeStart is slow	
P0779	Acceleration is slowLock-up is not performed	
P0826	Manual mode is not activated	
P0841	Not changed from normal driving	
P0847	Not changed from normal driving	_
P0848	Not changed from normal driving	_
P084C	Not changed from normal driving	
P084D	Not changed from normal driving	
P0863	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	
P0890	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed Vehicle speed is not increased 	
P0962	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_
P0963	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_
P0965	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	When a malfunction occurs on the low oil pressure side
	Selector shock is largeLock-up is not performed	When a malfunction occurs on the high oil pressure side
P0966	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_
P0967	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	_
P17F0	Not changed from normal driving	_
P17F1	Not changed from normal driving	_
P17F2	Not changed from normal driving	
P2765	 Start is slow Acceleration is slow Lock-up is not performed Manual mode is not activated 	_
P2813	 Selector shock is large Start is slow Acceleration is slow Vehicle speed is not increased 	When a malfunction occurs on the low oil pressure side
	Selector shock is large	When a malfunction occurs on the high oil pressure side
P2814	Selector shock is large	_
P2815	Selector shock is large	_

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DTC	Vehicle behavior	Conditions of vehicle
U0073	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	
U0100	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	
U0102	Not changed from normal driving	
U0140	Not changed from normal driving	_
U0141	Not changed from normal driving	_
U0155	Not changed from normal driving	_
U0164	Not changed from normal driving	_
U0300	 Selector shock is large Start is slow Acceleration is slow Lock-up is not performed 	
U1000	Not changed from normal driving	—
U1117	Not changed from normal driving	

Protection Control

INFOID:000000012201116

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. Limits engine output when a wheel spin occurs in any of right and left drive wheels.
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.
Normal return condi- tion	Wheel spin convergence returns the control to the normal control.

TORQUE IS REDUCED WHEN DRIVING WITH THE REVERSE GEAR

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

CONTROL WHEN FLUID TEMPERATURE IS HIGH

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

REVERSE PROHIBIT CONTROL

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INFOID:000000012201117

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[CVT: RE0F10D]

< ECU DIAGNOSIS INFORMATION >

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

ТСМ

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	Items (CONSULT screen terms)	Reference	E
	P0863	CONTROL UNIT (CAN)	TM-506, "DTC Logic"	
	U0073	COMM BUS A OFF	TM-444, "DTC Logic"	
	U0100	LOST COMM (ECM A)	TM-445, "DTC Logic"	F
	U0102	LOST COMM (TRANSFER)	TM-446, "DTC Logic"	
	U0140	LOST COMM (BCM)	TM-447, "DTC Logic"	
1	U0141	LOST COMM (BCM A)	TM-448, "DTC Logic"	G
	U0155	LOST COMM (IPC)	TM-449, "DTC Logic"	
	U0164	LOST COMM (HVAC)	TM-450, "DTC Logic"	Н
	U0300	CAN COMM DATA	TM-451, "DTC Logic"	
	U1000	CAN COMM CIRCUIT	TM-452, "DTC Logic"	
	U1117	LOST COMM (ABS)	TM-453, "DTC Logic"	
	P0740	TORQUE CONVERTER	TM-478, "DTC Logic"	
	P0743	TORQUE CONVERTER	TM-480, "DTC Logic"	.1
	P0778	PC SOLENOID B	TM-488, "DTC Logic"	0
	P0779	PC SOLENOID B	TM-489, "DTC Logic"	
2	P0962	PC SOLENOID A	TM-509, "DTC Logic"	K
2	P0963	PC SOLENOID A	TM-511, "DTC Logic"	
	P0966	PC SOLENOID B	TM-515, "DTC Logic"	I
	P0967	PC SOLENOID B	TM-517, "DTC Logic"	L
	P2814	SELECT SOLENOID	TM-528, "DTC Logic"	
	P2815	SELECT SOLENOID	TM-530, "DTC Logic"	N

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Priority	DTC	Items (CONSULT screen terms)	Reference
	P062F	EEPROM	TM-454, "DTC Logic"
	P0705	T/M RANGE SENSOR A	TM-455, "DTC Logic"
	P0706	T/M RANGE SENSOR A	TM-460, "DTC Logic"
	P0711	FLUID TEMP SENSOR A	TM-463, "DTC Description"
	P0712	FLUID TEMP SENSOR A	TM-468, "DTC Logic"
	P0713	FLUID TEMP SENSOR A	TM-470, "DTC Logic"
	P0715	INPUT SPEED SENSOR A	TM-472, "DTC Logic"
3	P0717	INPUT SPEED SENSOR A	TM-475, "DTC Logic"
3	P0826	UP/DOWN SHIFT SWITCH	TM-491, "DTC Logic"
	P0841	FLUID PRESS SEN/SW A	TM-497, "DTC Logic"
	P0847	FLUID PRESS SEN/SW B	TM-498, "DTC Logic"
	P0848	FLUID PRESS SEN/SW B	TM-500, "DTC Logic"
	P084C	FLUID PRESS SEN/SW H	TM-502, "DTC Logic"
	P084D	FLUID PRESS SEN/SW H	TM-504, "DTC Logic"
	P0890	ТСМ	TM-507, "DTC Logic"
	P2765	INPUT SPEED SENSOR B	TM-522, "DTC Logic"
	P0744	TORQUE CONVERTER	TM-482, "DTC Logic"
	P0746	PC SOLENOID A	TM-484, "DTC Logic"
	P0776	PC SOLENOID B	TM-486, "DTC Logic"
4	P0965	PC SOLENOID B	TM-513, "DTC Logic"
4	P17F0	CVT JUDDER (T/M INSPECTION)	TM-519, "DTC Description"
	P17F1	CVT JUDDER (C/V INSPECTION)	TM-520, "DTC Description"
	P17F2	CVT JUDDER (T/C INSPECTION)	TM-521, "DTC Description"
	P2813	SELECT SOLENOID	TM-526, "DTC Logic"

DTC Index

INFOID:000000012201118

NOTE:

 If multiple malfunction codes are detected at the same time, check each code according to the "DTC check priority list". Refer to <u>TM-413</u>, "<u>DTC Inspection Priority Chart</u>".

• The ignition counter is displayed in "FFD". Refer to TM-397. "CONSULT Function".

DTC	;*1, *2	Items		*0	Perma-	
GST	CONSULT (TRANSMISSION)	(CONSULT screen terms)	Trip	MIL ^{*3}	nent DTC group ^{*4}	Reference
P062F	P062F	EEPROM	1	ON	В	<u>TM-454</u>
P0705	P0705	T/M RANGE SENSOR A	2	ON	В	<u>TM-455</u>
P0706	P0706	T/M RANGE SENSOR A	2	ON	В	<u>TM-460</u>
P0711	P0711	FLUID TEMP SENSOR A	2	ON	А	<u>TM-463</u>
P0712	P0712	FLUID TEMP SENSOR A	2	ON	В	<u>TM-468</u>
P0713	P0713	FLUID TEMP SENSOR A	2	ON	В	<u>TM-470</u>
P0715	P0715	INPUT SPEED SENSOR A	2	ON	В	<u>TM-472</u>
P0717	P0717	INPUT SPEED SENSOR A	2	ON	В	<u>TM-475</u>
P0740	P0740	TORQUE CONVERTER	2	ON	В	<u>TM-478</u>
P0743	P0743	TORQUE CONVERTER	2	ON	В	<u>TM-480</u>
P0744	P0744	TORQUE CONVERTER	2	ON	В	<u>TM-482</u>

ТСМ

< ECU DIAGNOSIS INFORMATION >

[CVT: RE0F10D]

А		Perma-			Items	DTC ^{*1, *2}	
A	Reference	nent DTC group ^{*4}	MIL ^{*3}	Trip	(CONSULT screen terms)	CONSULT (TRANSMISSION)	GST
В	<u>TM-484</u>	В	ON	2	PC SOLENOID A	P0746	P0746
D	<u>TM-486</u>	В	ON	2	PC SOLENOID B	P0776	P0776
	<u>TM-488</u>	В	ON	2	PC SOLENOID B	P0778	P0778
С	<u>TM-489</u>	В	ON	2	PC SOLENOID B	P0779	P0779
	<u>TM-491</u>	_		1	UP/DOWN SHIFT SWITCH	P0826	
ТМ	<u>TM-497</u>	В	ON	2	FLUID PRESS SEN/SW A	P0841	P0841
I IVI	<u>TM-498</u>	В	ON	2	FLUID PRESS SEN/SW B	P0847	P0847
	<u>TM-500</u>	В	ON	2	FLUID PRESS SEN/SW B	P0848	P0848
E	<u>TM-502</u>	В	ON	2	FLUID PRESS SEN/SW H	P084C	P084C
	<u>TM-504</u>	В	ON	2	FLUID PRESS SEN/SW H	P084D	P084D
_	<u>TM-506</u>	В	ON	1	CONTROL UNIT (CAN)	P0863	P0863
F	<u>TM-507</u>	В	ON	1	ТСМ	P0890	P0890
	<u>TM-509</u>	В	ON	2	PC SOLENOID A	P0962	P0962
G	<u>TM-511</u>	В	ON	2	PC SOLENOID A	P0963	P0963
	<u>TM-513</u>	В	ON	2	PC SOLENOID B	P0965	P0965
	<u>TM-515</u>	В	ON	2	PC SOLENOID B	P0966	P0966
Н	<u>TM-517</u>	В	ON	2	PC SOLENOID B	P0967	P0967
	<u>TM-519</u>	—		1	CVT JUDDER (T/M INSPECTION)	P17F0	_
1	<u>TM-520</u>	—	_	1	CVT JUDDER (C/V INSPECTION)	P17F1	_
	<u>TM-521</u>	—	-	1	CVT JUDDER (T/C INSPECTION)	P17F2	_
	<u>TM-522</u>	В	ON	2	INPUT SPEED SENSOR B	P2765	P2765
J	<u>TM-526</u>	В	ON	2	SELECT SOLENOID	P2813	P2813
	<u>TM-528</u>	В	ON	2	SELECT SOLENOID	P2814	P2814
K	<u>TM-530</u>	В	ON	2	SELECT SOLENOID	P2815	P2815
	<u>TM-444</u>	В	ON	1	COMM BUS A OFF	U0073	U0073
	<u>TM-445</u>	В	ON	1	LOST COMM (ECM A)	U0100	U0100
L	<u>TM-446</u>	—	_	1	LOST COMM (TRANSFER)	U0102	_
	<u>TM-447</u>	—	_	1	LOST COMM (BCM)	U0140	_
В. Л.	<u>TM-448</u>	—	_	1	LOST COMM (BCM A)	U0141	_
Μ	<u>TM-449</u>	—	_	1	LOST COMM (IPC)	U0155	_
	<u>TM-450</u>	—	_	1	LOST COMM (HVAC)	U0164	_
Ν	<u>TM-451</u>	—	_	1	CAN COMM DATA	U0300	_
	<u>TM-452</u>	—	_	1	CAN COMM CIRCUIT	U1000	_
_	<u>TM-453</u>	—		1	LOST COMM (ABS)	U1117	

*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.

*3: Refer to <u>TM-395</u>, "<u>DIAGNOSIS DESCRIPTION</u> : <u>Malfunction Indicator Lamp (MIL)</u>". *4: Refer to <u>TM-443</u>, "<u>Description</u>".

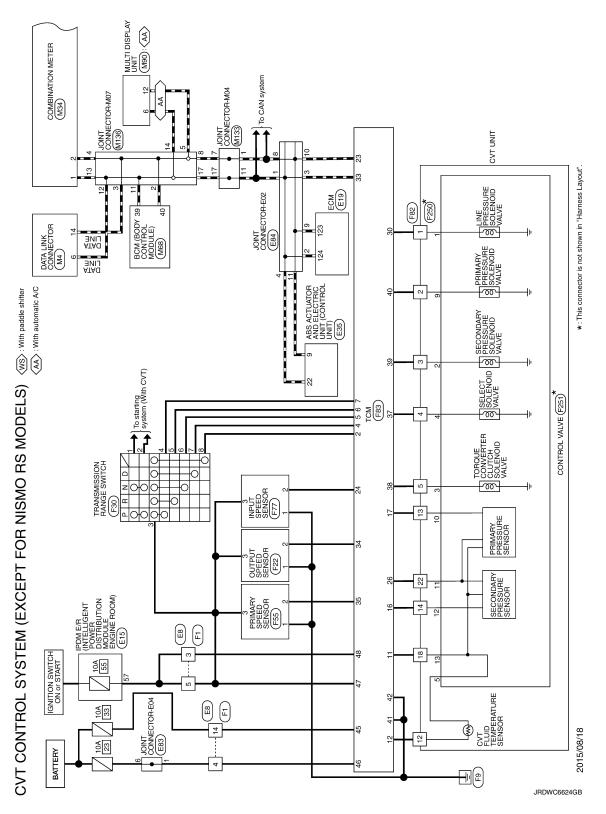
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WIRING DIAGRAM CVT CONTROL SYSTEM

Wiring Diagram

INFOID:000000012201119



Revision: November 2015

CVT CONTROL SYSTEM

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M57

CVT SHIFT SELECTOR

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(M324

MODE SELECT SWITCH

POSITION SELECT SWITCH

(SW)

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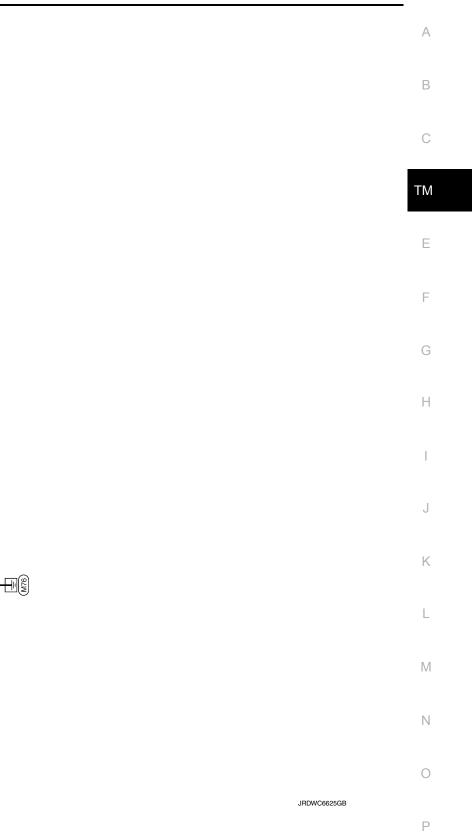
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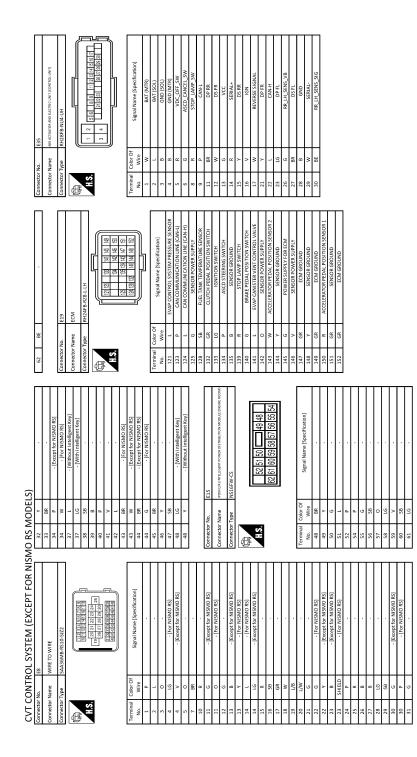
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M324

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COMBINATION METER (M34)





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Corrector No. M4 Connector Name DATA LINK CONNECTOR Connector Type BOLGFW Connector Type 141 16 143	CO	8 16 · · · · · · · · · · · · · · · · · ·	Connector No. MA4 Connector Name COMBINATION METER Connector Type TH40FW-MH MS Register 1019 B 17 85 41 21 11	Terminal Color Of Signal Aurol Color Of Signal Color Of Signal Name (Specification) No. Write Color Harrison Color Of Signal Name (Specification) Color Of C	2 P VUNCLEPERDSMALLB-ULGE) 5 G PADDLE_SPEDSMALLB-ULGE) 6 BR FULLURT.ENDORSIGNAL 7 R ALRBAGSIGNAL 8 P ALRBAGSIGNAL 9 W SSAFELLURT.ENDORSIGNAL 10 SSAFELLURT.ENDORSIGNAL 11 G BARRELUDLCESWITCH SIGNAL
1250 CrT UNIT R022M6F1X	Signal Name [Specification]		- E231 F241 F266	1 2 3 4 5 9 9 10 11 12	Signal Name (Specification)
Connector No. Connector Name Connector Type	Terminal Color Of No. Wire 1 - 2 - 3 -	5 - 12 - 13 - 14 - 13 - 13 - 13 - 13 - 13 - 13	22 - Connector No. Connector Name Connector Type		Terminal Color Of No. Wire 1 GY 2 BR 3 Y 4 P 5 B 9 O 10 L
O RS MODELS) Connector Name Connector Name RH4056 A23-LRH Connector Type RH4056 A23-LRH (112234) (21234) (21234) (112234) (21	Color Of Signal Wire BR W LG LG	SG PANGESW Y SFINGOR (BOUND SB CUT FLUID TENPERATURE SENOR P SECONDARY PRESSURG SENOR P PRIMARY PRESSURG SENOR	- 8 × - < 8 -	LG TORQUE CI G SECONI W PRIMJ B B B GR	LIG IGNITION POWER SUPPLY IGNITION POWER SUPPLY
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CVT CONTROL SYSTEM (EXCEPT FOR NISMO RS MODELS) Connector Name Among Among A	Terminal Color Of Signal Name [Specification] No. Wree SetOR_MOD 1 B SetOR_MOD 2 V TUBIN SETOR 3 LG VIGN	Connector No. F82 Connector Name CYT UNT Connector Type Rx22FCY		Tal Co	13 98 - 13 P - 14 P - 18 Y - 23 16 -

CVT CONTROL SYSTEM

JRDWC6628GB

	A
Image: specification Image: specification	В
M97 PADDLL SHIFTER (SHIFT-UP) PADDLL SHIFTER (SHIFT-UP) Signal Name (Specification) AD4FW . Signal Name (Specification) . Signal Name (Specification) .	С
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5) MM3 EM (BOPY CONTROL MODULE) IM42E-MM3 IM42E-MM3 Signal Name (Specification) Signal Name (Specification) Signal Name (Specification) Signal Name (Specification) COMBI SM NAMUT 3 COMBI SM NAMUT 4 COMBI SM NOTITUT 1 COMBI SM OLTITUT 3 COMBI SM OLTITUT 3 COMAI SM OLTITUT 3 COMBI SM OLTITUT 3 COMAI SM OLTITUT	I
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COL SYSTEM (EXCEPT FG MANUAL MODE SHIT TOOM SIG MANUAL MODE SHIT TOOM SIG MANUAL MODE SHIT TOOM SIGAL ANBLET SENSO REGUND FULL LIVEL SENSOR REGUND FADDLE SHITER FOOM SUTCHS REGUND FADDLE SHITER FOOM SUTCHS REGUND FADDLE SHITER FOOM SUTCHS MANUAL MODE SIGNAL MANUAL MODE SIGN	Μ
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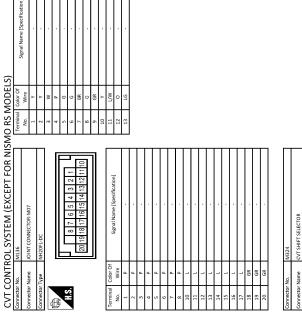
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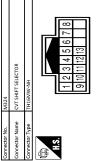
[CVT: RE0F10D]

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Revision: November 2015

< WIRING DIAGRAM >





TM-422

JRDWC6630GB

CVT SHIFT LOCK SYSTEM

CVT SHIFT SELECTOR

(M324) M57

M326

SHIFT LOCK

M326 PARK

00

M57 M324



CVT SHIFT LOCK SYSTEM

CONNECTOR-M02

10A

JOINT CONNECTOR-M08 (M134)

(TTM) E105

86

Wiring Diagram

*: This connector is not shown in "Harness Layout".

INFOID:000000012201120

[CVT: RE0F10D]

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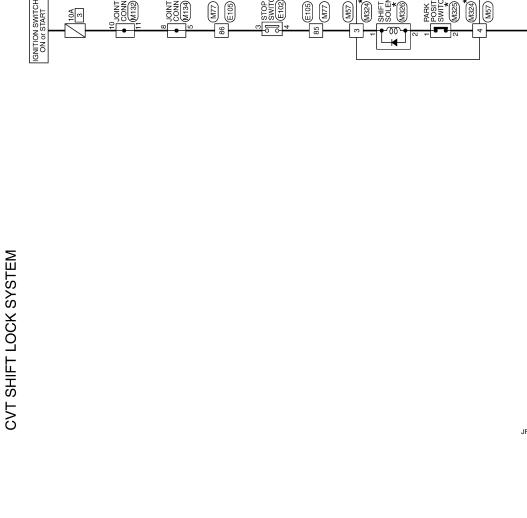
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STOP LAMP SWITCH E102

E105 (LTM)

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JRDWC6639GB

2015/08/18

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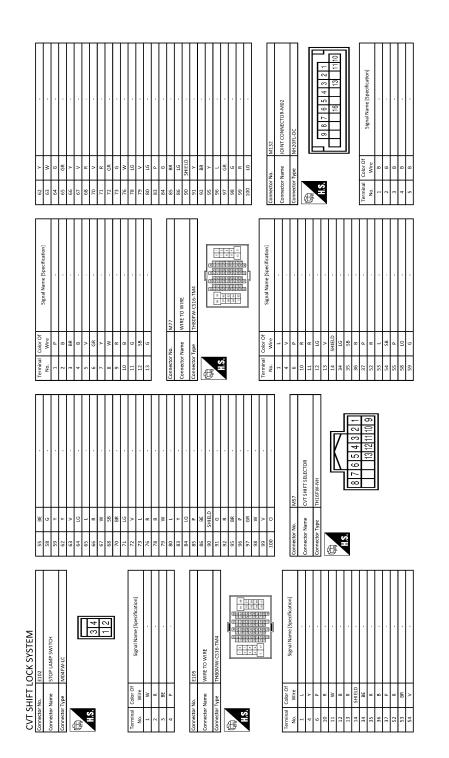
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JRDWC6640GB

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OCK SYSTEM	Μ
CVT SHIFT LOCK SVSTEM	Ν
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< WIRING DIAGRAM >

< BASIC INSPECTION >

BASIC INSPECTION DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:000000012201121

[CVT: RE0F10D]

NOTE:

"DTC" includes DTC at the 1st trip.

1.OBTAIN INFORMATION ABOUT SYMPTOM

Refer to <u>TM-427</u>, "<u>Diagnostic Work Sheet</u>" and interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred) as much as possible when the customer brings in the vehicle.

>> GO TO 2.

2.CHECK DTC

- 1. Before checking the malfunction, check whether any DTC exists.
- 2. If DTC exists, perform the following operations.
- Records the DTCs. (Print out using CONSULT and affix to the Work Order Sheet.)
- Erase DTCs.
- Check the relation between the cause found by DTC and the malfunction information from customer. <u>TM-539</u>, "Symptom Table" can be used effectively.
- 3. Check the relevant information including STI, etc.

Do malfunction information and DTC exists?

Malfunction information and DTC exists.>>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 TM-409, "Fail-safe".

Interview sheet can be used effectively when reproduce malfunction conditions. Refer to <u>TM-427</u>, "<u>Diagnostic</u> <u>Work Sheet</u>".

Verify the relationship between the symptom and the conditions in which the malfunction described by the customer occurs.

>> GO TO 5.

4.REPRODUCE MALFUNCTION SYMPTOM

Check the malfunction described by the customer on the vehicle.

Check if the behavior is fail safe or normal operation. Refer to TM-409, "Fail-safe".

Interview sheet can be used effectively when reproduce malfunction conditions. Refer to <u>TM-427</u>, "<u>Diagnostic</u> <u>Work Sheet</u>".

Verify the relationship between the symptom and the conditions in which the malfunction described by the customer occurs.

>> GO TO 6.

5.PERFORM "DTC CONFIRMATION PROCEDURE"

Perform "DTC CONFIRMATION PROCEDURE" of the appropriate DTC to check if DTC is detected again. Refer to <u>TM-413</u>, "<u>DTC Inspection Priority Chart</u>" when multiple DTCs are detected, and then determine the order for performing the diagnosis.

Is any DTC detected?

YES >> GO TO 7.

NO >> Follow <u>GI-45. "Intermittent Incident"</u> to check.

 $\mathbf{6}$. IDENTIFY MALFUNCTIONING SYSTEM WITH "DIAGNOSIS CHART BY SYMPTOM"

DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

Use <u>TM-539</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.

		1
>> GO TO 8.		5
7.REPAIR OR REPLACE THE MALFUNCTIONING PARTS		В
Repair or replace the detected malfunctioning parts.		
Reconnect parts or connector after repairing or replacing, and then era	ase DTC if necessary.	С
>> GO TO 8.		
8.FINAL CHECK		ТМ
Perform "DTC CONFIRMATION PROCEDURE" again to make sure the		
Check that malfunctions are not reproduced when obtaining the mal referring to the symptom inspection result in step 3 or 4.	function information from the customer,	Е
Is DTC or malfunction symptom reproduced?		
YES-1 (DTC is reproduced.)>>GO TO 5.		F
YES-2 (Malfunction is reproduced.)>>GO TO 6. NO >> Before delivering the vehicle to the customer, make sure t	that DTC is erased.	Γ
Diagnostic Work Sheet	INFOID:000000012201122	
		G
DESCRIPTION There are many exercise conditions that may eause a malfunction		
There are many operating conditions that may cause a malfunction of the transmission parts. By understanding those conditions prop-		Н
erly, a quick and exact diagnosis can be achieved. In general, perception of a problem varies depending on individuals.	KEY POINTS	
Ask the customer about his/her concerns carefully. It is important to	WHAT Vehicle & engine model	I
understand the phenomenon or status. To systemize all the informa- tion for the diagnosis, prepare the question sheet referring to the	WHEN Date, Frequencies WHERE Road conditions	
question points.	HOW Operating conditions, Weather conditions,	J
In some cases, multiple conditions that appear simultaneously may cause a DTC to be detected.	Symptoms	
	SEF907L	К
		17

Worksheet Sample

				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/mile
Symptom			□ Vehicle doe	s not start. (R position	□ D position □ M po	osition)
			Upshifting c	loes not occur.	shifting does not occur	:
			Lock-up ma	Ilfunction		
			□ Shift point is	s too high. □ Shif	ft point is too low.	
			□ Shift shock	(□ N⇒D □ Lock-up □ F	R, D, and M position)	
			\Box Slip (\Box N \Rightarrow	D 🛛 Lock-up 🖾 R, D, an	nd M position)	
			□ Noise	□ Vibration		
			When selector	r lever position is shifted, shif	ft pattern does not cha	nge.
			□ Other ()
First occurrence □ Recently (as from month of year)						
Frequency of occurre	ence		□ Always	Under certain condition	ns 🗆 Sometimes	s (time(s)/day)

Revision: November 2015



2016 JUKE

[CVT: RE0F10D]

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DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[CVT: RE0F10D]

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

ADDITIONAL SERVICE WHEN REPLACING TCM

[CVT: RE0F10D] < BASIC INSPECTION > ADDITIONAL SERVICE WHEN REPLACING TCM А Description INFOID:000000012201123 Always perform the following items when the TCM is replaced. For work procedure, refer to TM-429, "Work В Procedure". TCM PROGRAMMING Since vehicle specifications are not vet written in a new TCM, it is necessary to write them with CONSULT. **CAUTION:** When replacing TCM, save TCM data on CONSULT before removing TCM. ТΜ SAVING AND WRITING OF TCM DATA • TCM performs accurate control by retrieving data (inherent characteristic value) of each solenoid. For this reason, it is necessary to save data of current TCM in CONSULT before replacing the TCM. After this, the saved data must be written in new TCM. Ε Work Procedure INFOID:000000012201124 1.CHECK NEW TCM PART NUMBER F Check new TCM part number to see whether it is blank TCM or not. NOTE: Part number of blank TCM is 310F6-XXXXX. Check the part number when ordering TCM or with the one included in the label on the container box. Is the new TCM a blank TCM? Н YES >> GO TO 2. NO >> GO TO 3. 2.saving TCM data (vehicle specifications) (P)With CONSULT Turn ignition switch OFF. 1. Turn ignition switch ON. 2. Select "Re/programming, Configuration". 3. Select "AT/CVT". NOTE: If "AT/CVT" is not displayed and TCM data cannot be saved on CONSULT, GO TO 3. Κ Select "Programming". Save TCM data on CONSULT according to the CONSULT display. >> GO TO 3. **3.**REPLACE TCM M 1. Turn ignition switch OFF and wait for 10 seconds.

2. Replace TCM. Refer to TM-554, "Removal and Installation".

>> GO TO 4.

4.LOAD CALIBRATION DATA

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

2. Turn ignition switch ON.

 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 5.

NO >> GO TO 7.

5.STORE CALIBRATION DATA

1. Turn ignition switch OFF and wait for 5 seconds.

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ADDITIONAL SERVICE WHEN REPLACING TCM

< BASIC INSPECTION >

[CVT: RE0F10D]

2. Turn ignition switch ON.

Does the shift position indicator display "P" at the same time when turning ON the ignition switch?

YES >> GO TO 6.

NO >> Check harness between battery and TCM harness connector terminal. Refer to <u>TM-507</u>, "Diagnosis Procedure".

 $6. {\tt WRITE TCM DATA (VEHICLE SPECIFICATIONS)}$

() With CONSULT

- 1. Select "Programming".
- 2. Perform programming according to the CONSULT display.

>> WORK END

7. DETECT MALFUNCTIONING ITEM

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 4.

NO >> Repair or replace the malfunctioning parts.

ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY [CVT: RE0F10D]

< BASIC INSPECTION >

ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

Description

Perform the following work after the transaxle assembly is replaced. For work procedure, refer to TM-431, В "Work Procedure".

WRITING TCM DATA

 TCM performs accurate control by retrieving data (inherent characteristic value) of each solenoid. For this reason, after replacing transaxle assembly, it is necessary to write new data in TCM.

ERASING OF CVT FLUID DEGRADATION LEVEL DATA

• TCM records the degradation level of the CVT fluid calculated from the vehicle driving status. Therefore, if ΤM the transaxle assembly is replaced, it is necessary to erase the CVT fluid degradation level data recorded by TCM.

Work Procedure

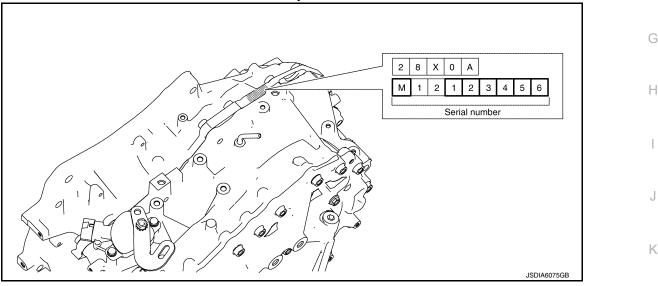
Ε INFOID:000000012201126

INFOID:000000012201125

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1. CHECK THE SERIAL NUMBER

Write down the serial number of new transaxle assembly.



2.

2.WRITE TCM DATA (IP CHARACTERISTICS VALUE)

NOTE:

Write data of new solenoid in TCM according to the following instructions:

With CONSULT

CAUTION:

When the work is interrupted, obtain data again from the supplied CD.

- 1. Shift the selector lever to the P position.
- Turn ignition switch OFF and wait for 10 seconds. 2.
- Turn ignition switch ON. 3.
- Insert the supplied CD into CONSULT.
- Select "Work Support" in "TRANSMISSION". 5.
- Select "WRITE IP CHARA REPLACEMENT AT/CVT". 6.
- Check that the serial number displayed on CONSULT screen and those written in the memo agree. 7.
- 8. Write data in TCM according to the instructions on the CONSULT screen. NOTE:

When writing is complete, the shift position indicator of the combination meter displays P.

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ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

< BASIC INSPECTION >

[CVT: RE0F10D]

 $\overline{\mathbf{3}}$.erase CVT fluid degradation level data

() With CONSULT

- 1. Select "WORK SUPPORT" in "TRANSMISSION".
- 2. Select "CONFORM CVTF DETERIORTN".
- 3. Touch "Clear".

>> WORK END

ADDITIONAL SERVICE WHEN REPLACING TCM AND TRANSAXLE ASSEM-

< BASIC INSPECTION >

ADDITIONAL SERVICE WHEN REPLACING TCM AND TRANSAXLE AS-SEMBLY

Description INFOID:000000012201127 В When replacing TCM and transaxle assembly as a set, perform the following work. For work procedure, refer to TM-433, "Work Procedure". TCM PROGRAMMING Since vehicle specifications are not vet written in a new TCM, it is necessary to write them with CONSULT. CAUTION: When replacing TCM, save TCM data on CONSULT before removing TCM. ТΜ WRITING TCM DATA TCM performs accurate control by retrieving data (inherent characteristic value) of each solenoid. For this Ε reason, after replacing TCM and transaxle assembly, it is necessary to write new data in TCM. Work Procedure INFOID:000000012201128 **1.**SAVE TCM DATA (VEHICLE SPECIFICATIONS) (P)With CONSULT Turn ignition switch OFF. 1. 2. Connect all of disconnected connectors. 3. Turn ignition switch ON. Select "Re/programming, Configuration". 4. Н Select "AT/CVT". 5 NOTE: If "AT/CVT" is not displayed and TCM data cannot be saved on CONSULT, GO TO 2. 6. Select "Programming". Save TCM data on CONSULT according to the CONSULT display. >> GO TO 2. 2. REPLACE TCM AND TRANSAXLE ASSEMBLY 1. Turn ignition switch OFF and wait for 10 seconds. Κ Replace TCM and transaxle assembly. Refer to TM-554, "Removal and Installation" (TCM), TM-577, 2. "Removal and Installation" (Transaxle assembly). CAUTION: Write down the serial number of new transaxle assembly. L M 2 8 X 0 А М 1 2 1 2 3 4 5 6 Ν 0) Serial number G Ò 9

Revision: November 2015

>> GO TO 3.

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[CVT: RE0F10D]

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ADDITIONAL SERVICE WHEN REPLACING TCM AND TRANSAXLE ASSEM-

< BASIC INSPECTION >

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[CVT: RE0F10D]

3.WRITE TCM DATA (VEHICLE SPECIFICATIONS)

NOTE:

Write data saved in CONSULT into a new TCM according to the following instructions:

() With CONSULT

- 1. Select "Programming".
- 2. Perform programming according to the CONSULT display.

>> GO TO 4.

4.WRITE TCM DATA (IP CHARACTERISTICS VALUE)

NOTE:

Write data of new solenoid in TCM according to the following instructions:

() With CONSULT

CAUTION:

When the work is interrupted, obtain data again from the supplied CD.

- 1. Shift the selector lever to the P position.
- 2. Turn ignition switch OFF and wait for 10 seconds.
- 3. Turn ignition switch ON.
- 4. Insert the supplied CD into CONSULT.
- 5. Select "Work Support" in "TRANSMISSION".
- 6. Select "WRITE IP CHARA REPLACEMENT AT/CVT".
- 7. Check that the serial number displayed on CONSULT screen and those written in the memo agree.
- 8. Write data in TCM according to the instructions on the CONSULT screen.

NOTE:

When writing is complete, the shift position indicator of the combination meter displays P.

>> WORK END

CVT FLUID COOLER SYSTEM

< BASIC INSPECTION >

CVT FLUID COOLER SYSTEM

Cleaning

Whenever an automatic transaxle is repaired, overhauled, or replaced, the CVT fluid cooler mounted in the radiator must be inspected and cleaned.

Metal debris and friction material, if present, can be trapped or be deposited in the CVT fluid cooler. This debris can contaminate the newly serviced CVT or, in severe cases, can block or restrict the flow of CVT fluid. In either case, malfunction of the newly serviced CVT may occur.

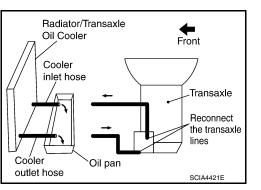
Debris, if present, may deposit as CVT fluid enters the cooler inlet. It will be necessary to back flush the cooler through the cooler outlet in order to flush out any built up debris.

CVT FLUID COOLER CLEANING PROCEDURE

- 1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
- 2. Identify the inlet and outlet fluid cooler hoses.
- Disconnect the fluid cooler inlet and outlet rubber hoses from the steel cooler tubes or bypass valve.
 NOTE:

Replace the cooler hoses if rubber material from the hose remains on the tube fitting.

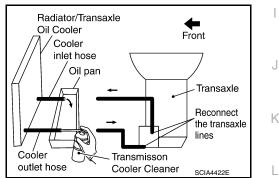
4. Allow any CVT fluid that remains in the cooler hoses to drain into the oil pan.

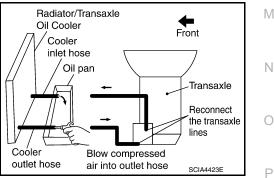


- Insert the extension adapter hose of a can of Transmission Cooler Cleaner into the cooler outlet hose.
 CAUTION:
 - Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
 - Spray Transmission Cooler Cleaner only with adequate ventilation.
 - Avoid contact with eyes and skin.
 - Never breath vapors or spray mist.
- Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
- 7. Insert the tip of an air gun into the end of the cooler outlet hose.
- 8. Wrap a shop rag around the air gun tip and end of the cooler outlet hose.
- Blow compressed air regulated to 5 to 9 kg/cm² (70 to 130 psi) through the cooler outlet hose for 10 seconds to force out any remaining CVT fluid.
- 10. Repeat steps 5 through 9 three additional times.
- 11. Position an oil pan under the banjo bolts that connect the CVT fluid cooler steel lines to the transaxle.
- 12. Remove the banjo bolts.
- 13. Flush each steel line from the cooler side back toward the transaxle by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
- 14. Blow compressed air regulated to 5 to 9 kg/cm² (70 to 130 psi) through each steel line from the cooler side back toward the transaxle for 10 seconds to force out any remaining CVT fluid.

TM-435

- 15. Ensure all debris is removed from the steel cooler lines.
- 16. Ensure all debris is removed from the banjo bolts and fittings.





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[CVT: RE0F10D]

INFOID:000000012201129

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< BASIC INSPECTION >

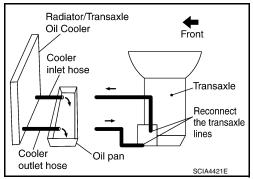
17. Perform "CVT FLUID COOLER DIAGNOSIS PROCEDURE".

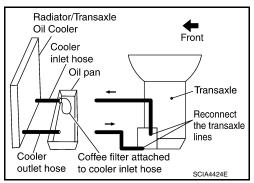
CVT FLUID COOLER DIAGNOSIS PROCEDURE

NOTE:

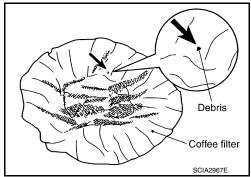
Insufficient cleaning of the cooler inlet hose exterior may lead to inaccurate debris identification.

- 1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
- 2. Clean the exterior and tip of the cooler inlet hose.
- Insert the extension adapter hose of a can of Transmission Cooler Cleaner into the cooler outlet hose.
 CAUTION:
 - Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
 - Spray Transmission Cooler Cleaner only with adequate ventilation.
 - Avoid contact with eyes and skin.
 - Never breath vapors or spray mist.
- Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
- 5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.





Radiator/Transaxle Oil Cooler Front Cooler inlet hose Coffee filter Transaxle Reconnect the transaxle lines Cooler Blow compressed outlet hose Oil pan air into outlet hose SCIA4425E



- 6. Insert the tip of an air gun into the end of the cooler outlet hose.
- 7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
- 8. Blow compressed air regulated to 5 to 9 kg/cm² (70 to 130 psi) through the cooler outlet hose to force any remaining CVT fluid into the coffee filter.
- 9. Remove the coffee filter from the end of the cooler inlet hose.
- 10. Perform "CVT FLUID COOLER INSPECTION PROCEDURE".

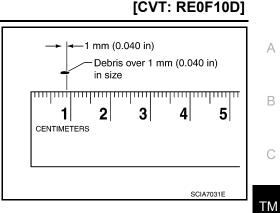
CVT FLUID COOLER INSPECTION PROCEDURE

- 1. Inspect the coffee filter for debris.
- a. If small metal debris less than 1 mm (0.040 in) in size or metal powder is found in the coffee filter, this is normal. If normal debris is found, the CVT fluid cooler/radiator can be reused and the procedure is ended.

CVT FLUID COOLER SYSTEM

< BASIC INSPECTION >

b. If one or more pieces of debris are found that are over 1 mm (0.040 in) in size and/or peeled clutch facing material is found in the coffee filter, the fluid cooler is not serviceable. The radiator/ fluid cooler must be replaced and the inspection procedure is ended.



CVT FLUID COOLER FINAL INSPECTION

After performing all procedures, ensure that all remaining oil is cleaned from all components.

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STALL TEST

< BASIC INSPECTION >

STALL TEST

Work Procedure

INSPECTION

- 1. Check the engine oil level. Replenish if necessary. Refer to LU-28, "Inspection".
- 2. Check for leak of the CVT fluid. Refer to TM-545, "Inspection".
- Drive for about 10 minutes to warm up the vehicle so that the CVT fluid temperature is 50 to 80°C (122 to 176°F).
- 4. Be sure to apply the parking brake and block the tires.
- 5. Start the engine, depress the brake pedal and put the selector lever to the D position.
- 6. While depressing the brake pedal, depress the accelerator pedal gradually.
- 7. Read the stall speed quickly. Then, release your foot from the accelerator pedal quickly. CAUTION:

Do not depress the accelerator pedal for 5 seconds or more during the test.

Stall speed : Refer to <u>TM-584, "Stall Speed"</u>.

- 8. Place the selector lever in the N position.
- 9. Cool the CVT fluid. CAUTION:

Run the engine with the idle speed for at least 1 minute.

10. Put the selector lever to the R position and perform Step 6 to Step 9 again.

NARROWING-DOWN MALFUNCTIONING PARTS

	Selector le	ver position	Possible cause	
	D	R		
	Н	0	Forward clutch	
	0	Н	Reverse brake	
Stall speed	L	L	Engine Torque converter one way clutch	
	Н	н	 Line pressure is low. Primary pulley Secondary pulley Steel belt 	

O: Within the stall speed standard value.

H: Stall speed is higher than the standard value.

L: Stall speed is lower than the standard value.

CVT POSITION

< BASIC INSPECTION >

CVT POSITION

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.
- When selector button is pressed in "P", "R" or "N" position without applying forward/backward force to selector lever, check button operation for sticking.
- 7. Confirm the back-up lamps illuminate only when selector lever is placed in the "R" position. Confirm the back-up lamps do not illuminate when the selector lever is pushed toward the "R" position when in the "P" or "N" position.
- 8. Confirm the engine can only be started with the selector lever in the "P" and "N" positions.
- 9. Make sure transaxle is locked completely in "P" position.
- 10. When selector lever is set to manual shift gate, make sure that manual mode is displayed on combination meter.

Shift selector lever to "+" and "-" sides, and check that set shift position changes.

Adjustment

1. 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. Loosen nut (A) and set manual lever (1) to the "P" position. CAUTION:

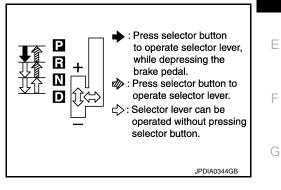
Never apply force to the manual lever.

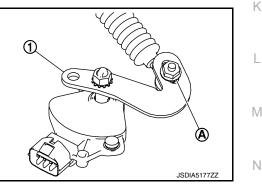
 Tighten the nut to the specified torque. Refer to <u>TM-549</u>, <u>"Exploded View"</u>. CAUTION:

In tightening, fix the manual lever.



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INFOID:000000012201132

CVT FLUID

Replacement

INFOID:000000012201133

[CVT: RE0F10D]

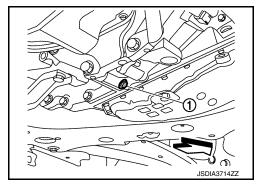
Recommended fluid and fluid capacity : Refer to MA-11, "Fluids and Lubricants".

CAUTION:

- Always use shop paper. Never use shop cloth.
- Replace a drain plug gasket with new ones at the final stage of the operation when installing.
- Use caution when looking into the drain hole as there is a risk of dripping fluid entering the eye.
- After replacement, always perform CVT fluid leakage check.
- 1. Select "Data Monitor" in "TRANSMISSION" using CONSULT.
- 2. Select "FLUID TEMP" and confirm that the CVT fluid temperature is 40°C (104°F) or less.
- 3. Check that the selector lever is in the "P" position, then completely engage the parking brake.
- 4. Lift up the vehicle.
- 5. Remove the drain plug and drain the CVT fluid from the oil pan. Refer to TM-557, "Exploded View".
- 6. Install the drain plug to oil pan. CAUTION:

Drain plug gasket use the old one.

- 7. Remove the overflow plug (1) from converter housing.
 - <□ : Vehicle front



Install the charging pipe set (KV311039S0) (A) into the overflow plug hole.
 CAUTION:

Tighten the charging pipe by hand.

Install the ATF changer hose (B) to the charging pipe.
 CAUTION:
 Pross the ATE changer hose all the way onto the c

Press the ATF changer hose all the way onto the charging pipe until it stops.

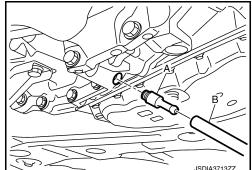
- 10. Fill approximately 3 liter (2-5/8 lmp qt) of the CVT fluid.
- Remove the ATF changer hose and charging pipe, then install the overflow plug.
 NOTE:

Perform this work quickly because CVT fluid leaks.

- 12. Lift down the vehicle.
- 13. Start the engine.
- 14. While depressing the brake pedal, shift the selector lever to the entire position from "P" to "D", and shift it to the "P" position.
 NOTE:

Hold the lever at each position for 5 seconds.

- 15. Check that the CONSULT "Data Monitor" in "FLUID TEMP" is 35°C (95°F) to 45°C (113°F).
- 16. Stop the engine.
- 17. Lift up the vehicle.
- 18. Remove the drain plug, and then drain CVT fluid from oil pan.
- 19. Repeat steps 6 to 18 (one time).



CVT FLUID

< BA	SIC INSPECTION > [CVT: REOF10D]	
20	Tighten the drain plug to the specified torque. Refer to <u>TM-557, "Exploded View"</u> .	
	Remove the overflow plug.	
	Install the charging pipe set (KV311039S0) into the overflow plug hole.	
-	Tighten the charging pipe by hand.	
	install the ATF changer hose to the charging pipe. CAUTION:	
	Press the ATF changer hose all the way onto the charging pipe until it stops. Fill approximately 3 liter (2-5/8 Imp qt) of the CVT fluid.	
	Remove the ATF changer hose and charging pipe, then install the overflow plug.	
I	NOTE:	
	Perform this work quickly because CVT fluid leaks.	l
	Lift down the vehicle.	
	Start the engine. While depressing the brake nodel, shift the selector lower to the entire position from "D" to "D", and shift it	
t	While depressing the brake pedal, shift the selector lever to the entire position from "P" to "D", and shift it to the "P" position. NOTE:	
	Hold the lever at each position for 5 seconds.	
9. (Check that the CONSULT "Data Monitor" in "FLUID TEMP" is 35°C (95°F) to 45°C (113°F).	
	Lift up the vehicle.	
	Remove the overflow plug and confirm that the CVT fluid is drained from the overflow plug hole. CAUTION:	
	Perform this work with the vehicle idling. NOTE:	
I	f the CVT fluid is not drained, refer to "Adjustment" and refill with the CVT fluid.	
5	When the flow of CVT fluid slows to a drip, tighten the overflow plug to the specified torque. Refer to <u>TM-</u> <u>557</u> , "Exploded View".	
	CAUTION: Never reuse O-ring.	
	Lift down the vehicle.	
	Select "Data Monitor" in "TRANSMISSION" using CONSULT.	
	Select "CONFORM CVTF DETERIORTN".	
	Select "Erase".	
	Stop the engine.	
aju	INFOID:000000012201134	
	Recommended fluid and fluid capacity : Refer to MA-11, "Fluids and Lubricants".	
_	TION:	
	ring adjustment of the CVT fluid level, check CONSULT so that the oil temperature may be main- ned from 35 to 45°C (95 to 113°F).	
Ма	intain specified engine idle speed during CVT fluid level adjustment. Refer to EC-1258, "Idle	
	<u>eed"</u> . e caution when looking into the drain hole as there is a risk of dripping fluid entering the eye.	
	Check that the selector lever is in the "P" position, then completely engage the parking brake.	
	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 and check the 'FLUID TEMP' under "TRANSMISSION" in "Data Monitor" while adjusting.	
	While depressing the brake pedal, shift the selector lever to the entire position from "P" to "D", and shift it	
4. N 1	to the "P" position.	
4. \ t		

< BASIC INSPECTION >

- 5. Lift up the vehicle.
- 6. Check that there is no CVT fluid leakage.
- 7. Remove the overflow plug (1) from converter housing.

Install the charging pipe set (KV311039S0) (A) into the overflow plug hole.
 CAUTION:

Tighten the charging pipe by hand.

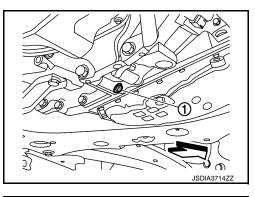
- Install the ATF changer hose (B) to the charging pipe.
 CAUTION:
 Press the ATF changer hose all the way onto the charging pipe until it stops.
- 10. Fill approximately 0.5 liter (1/2 lmp gt) of the CVT fluid.
- 11. Remove the ATF changer hose from the charging pipe, and check that the CVT fluid drains out from the charging pipe. If it does not drain out, perform charging again. CAUTION:

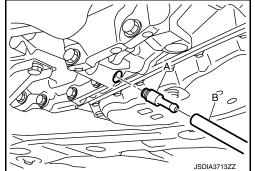
Perform this work with the vehicle idling.

- 12. When the flow of CVT fluid slows to a drip, remove the charging pipe from the converter housing.
- 13. Tighten the overflow plug to the specified torque. Refer to <u>TM-557</u>, "Exploded View". CAUTION:

Never reuse O-ring.

- 14. Lift down the vehicle.
- 15. Stop the engine.





< BASIC INSPECTION >

HOW TO ERASE PERMANENT DTC

Description

Permanent DTC can be erased by driving each driving pattern.

ECM recognizes each driving pattern; it transmits signals to each control module when the driving is complete. Each control module erases permanent DTC based on those signals. For details, refer to <u>EC-779</u>, "<u>Description</u>".

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DTC/CIRCUIT DIAGNOSIS U0073 COMMUNICATION BUS A OFF

DTC Logic

DTC DETECTION LOGIC

INFOID:000000012201136

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
U0073	COMM BUS A OFF (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

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

2. Check the DTC.

Is "U0073" detected?

- YES >> Go to <u>TM-444</u>, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

INFOID:000000012201137

U0100 LOST COMMUNICATION (ECM A)

< DTC/CIRCUIT DIAGNOSIS >

U0100 LOST COMMUNICATION (ECM A)

DTC Logic

[CVT: RE0F10D]

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DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
U0100	LOST COMM (ECM A) (Lost Communication With ECM/PCM A)	When the ignition switch is ON, TCM is un- able to receive the CAN communications signal from ECM continuously for 2 sec- onds or more.	 ECM Harness or connector (CAN communication line is open or shorted)
отс со	NFIRMATION PROCED	URE	
1.PREP	ARATION BEFORE WORK		
		ROCEDURE" occurs just before, turr	n ignition switch OFF and wait for at
least 10 s	econds, then perform the r	next test.	
:	>> GO TO 2.		
2.PERF	ORM DTC CONFIRMATIO	N PROCEDURE	
	the engine and wait for at I	east 5 seconds.	
	k the DTC.)" detected?		
<u>Is "U0100</u> YES	<u>)" detected?</u> >> Go to <u>TM-445, "Diagnos</u>		
<u>Is "U0100</u> YES	<u>)" detected?</u>		
<u>Is "U0100</u> YES NO	<u>)" detected?</u> >> Go to <u>TM-445, "Diagnos</u>		INFOID:000000012201139
Is "U0100 YES NO Diagnos	<u>" detected?</u> >> Go to <u>TM-445, "Diagnos</u> >> INSPECTION END sis Procedure		
Is "U0100 YES NO Diagnos	<u>" detected?</u> >> Go to <u>TM-445, "Diagnos</u> >> INSPECTION END sis Procedure	sis Procedure".	
Is "U0100 YES NO Diagnos	<u>" detected?</u> >> Go to <u>TM-445, "Diagnos</u> >> INSPECTION END sis Procedure	sis Procedure".	

U0102 LOST COMMUNICATION (TRANSFER)

< DTC/CIRCUIT DIAGNOSIS >

U0102 LOST COMMUNICATION (TRANSFER)

DTC Logic

INFOID:000000012201140

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
U0102	LOST COMM (TRANSFER) (Lost Communication With Transfer Case Control Mod- ule)	When the ignition switch is ON, TCM is unable to receive the CAN communications signal from 4WD control unit continuously for 2 sec- onds or more.	 4WD control unit Harness or connector (CAN communication line is open or shorted)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is "U0102" detected?

YES >> Go to <u>TM-446, "Diagnosis Procedure"</u>. NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000012201141

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

U0140 LOST COMMUNICATION (BCM)

< DTC/CIRCUIT DIAGNOSIS >

U0140 LOST COMMUNICATION (BCM)

DTC Logic

[CVT: RE0F10D]

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INFOID:000000012201142

DTC DETECTION LOGIC В CONSULT screen terms DTC DTC detection condition Possible causes (Trouble diagnosis content) BCM LOST COMM (BCM) When the ignition switch is ON, TCM is unable Harness or connector U0140 (Lost Communication With to receive the CAN communications signal (CAN communication line is open or Body Control Module) from BCM continuously for 2 seconds or more. ТΜ shorted) DTC CONFIRMATION PROCEDURE **1.**PREPARATION BEFORE WORK Ε If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 10 seconds, then perform the next test. F >> GO TO 2. 2.PERFORM DTC CONFIRMATION PROCEDURE (P)With CONSULT Start the engine and wait for at least 5 seconds. 1. Н 2. Check the DTC. Is "U0140" detected? YES >> Go to TM-447, "Diagnosis Procedure". >> INSPECTION END NO **Diagnosis** Procedure INFOID:000000012201143 For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart". Κ L Μ Ν Ο

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U0141 LOST COMMUNICATION (BCM A)

< DTC/CIRCUIT DIAGNOSIS >

U0141 LOST COMMUNICATION (BCM A)

DTC Logic

INFOID:000000012201144

[CVT: RE0F10D]

DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

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

Is "U0141" detected?

YES >> Go to <u>TM-448, "Diagnosis Procedure"</u>. NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000012201145

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

U0155 LOST COMMUNICATION (IPC)

< DTC/CIRCUIT DIAGNOSIS >

U0155 LOST COMMUNICATION (IPC)

DTC Logic

[CVT: RE0F10D]

INFOID:000000012201146

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DTC	CONSULT screen terms [Trouble diagnosis content]	DTC detection condition	Possible causes	
U0155	LOST COMM (IPC) [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.	 Combination meter Harness or connector (CAN communication line is open or shorted) 	
	NFIRMATION PROCED			
			institute off and weit for a	
	seconds, then perform the	ROCEDURE" occurs just before, turn next test.	ignition switch OFF and wait for al	
~	>> GO TO 2. ORM DTC CONFIRMATIO			
	ONSULT	NTROOLDORL		
1. Start	the engine and wait for at	least 5 seconds.		
2. Check the DTC. Is "U0155" detected?				
<u>s 00155</u>				
YES :	>> Go to TM-449, "Diagno:	sis Procedure".		
YES NO	>> Go to <u>TM-449, "Diagnos</u> >> INSPECTION END	sis Procedure".		
YES NO Diagno	>> Go to <u>TM-449, "Diagnos</u> >> INSPECTION END sis Procedure		INFOID:000000012201147	
YES NO Diagno	>> Go to <u>TM-449, "Diagnos</u> >> INSPECTION END sis Procedure	sis Procedure". D <u>LAN-17. "Trouble Diagnosis Flow Cha</u>		
YES NO Diagno	>> Go to <u>TM-449, "Diagnos</u> >> INSPECTION END sis Procedure			
YES NO Diagno	>> Go to <u>TM-449, "Diagnos</u> >> INSPECTION END sis Procedure			
YES NO Diagno	>> Go to <u>TM-449, "Diagnos</u> >> INSPECTION END sis Procedure			
YES NO Diagno	>> Go to <u>TM-449, "Diagnos</u> >> INSPECTION END sis Procedure			
YES NO Diagno	>> Go to <u>TM-449, "Diagnos</u> >> INSPECTION END sis Procedure			

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U0164 LOST COMMUNICATION (HVAC)

< DTC/CIRCUIT DIAGNOSIS >

U0164 LOST COMMUNICATION (HVAC)

DTC Logic

INFOID:000000012201148

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
U0164	LOST COMM (HVAC) (Lost Communication With HVAC Control Module)	When the ignition switch is ON, TCM is unable to receive the CAN communications signal from A/C auto amp. continuously for 2 sec- onds or more.	 A/C auto amp. Harness or connector (CAN communication line is open or shorted)

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

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

Is "U0164" detected?

- YES >> Go to <u>TM-450</u>, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

INFOID:000000012201149

U0300 CAN COMMUNICATION DATA

< DTC/CIRCUIT DIAGNOSIS >

U0300 CAN COMMUNICATION DATA

DTC Logic

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[CVT: RE0F10D]

INFOID:000000012201150

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
U0300	CAN COMM DATA (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 status continues for 2 seconds or more.	Control unit other than TCM
	NFIRMATION PROCED		
	ARATION BEFORE WORK		
	r "DTC CONFIRMATION F seconds, then perform the	PROCEDURE" occurs just before, turn next test.	ignition switch OFF and wait for at
-	>> GO TO 2. K DTC DETECTION		
1. Start	CONSULT the engine and wait for 5 s	seconds or more.	
	ck the DTC. <u>)" detected?</u>		
	> Go to <u>TM-451, "Diagno</u> "	sis Procedure".	
	>> INSPECTION END	<u></u> .	
Diagno	sis Procedure		INFOID:000000012201151
1.сомт	ROL UNIT CHECK		
Check th	e number of control units re	eplaced before "U0300" is detected.	
	ntrol unit replaced?		
YES	specification of the specification.	e control unit replaced may be incorrec	ct. Check the part number and the
~	>> GO TO 2.		
	ROL UNIT CHECK		
Z.CONT			
With C	CONSULT	replaced	
(B)With (1. Rem	ove one of the control unit		
With C 1. Rem 2. Asse 3. Turn	ove one of the control unit mble the old control unit be ignition switch ON, and wa	efore replacement. ait for 2 seconds or more.	
With (1. Rem 2. Asse 3. Turn 4. Sele	ove one of the control unit mble the old control unit be	efore replacement. ait for 2 seconds or more.	

U1000 CAN COMM CIRCUIT

Description

INFOID:000000012201152

[CVT: RE0F10D]

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:000000012201153

DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT

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

Is "U1000" detected?

- YES >> Go to TM-452, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000012201154

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

U1117 LOST COMMUNICATION (ABS)

< DTC/CIRCUIT DIAGNOSIS >

DTC DETECTION LOGIC

U1117 LOST COMMUNICATION (ABS)

DTC Logic

[CVT: RE0F10D]

INFOID:000000012201155

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INFOID:000000012201156

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

1.PREPARATION BEFORE WORK

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

>> GO TO 2. 2.PERFORM DTC CONFIRMATION PROCEDURE Image: Second structure Image: Second structure

NO >> INSPECTION END

Diagnosis Procedure

For the diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Flow Chart".

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< DTC/CIRCUIT DIAGNOSIS >

P062F EEPROM

Description

INFOID:000000012201157

[CVT: RE0F10D]

TCM compares the calculated value stored in the flash ROM with the value stored in TCM. If the calculated value does not agree with the stored value, TCM judges this as a malfunction.

DTC Logic

INFOID:000000012201158

DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

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

Is "P062F" detected?

- YES >> Go to TM-454, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1.CHECK INTERMITTENT INCIDNT

Refer to GI-45. "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace the TCM. Refer to TM-554, "Removal and Installation".
- NO >> Repair or replace malfunctioning parts.

INFOID:000000012201159

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

P0705 TRANSMISSION RANGE SENSOR A

DTC Logic

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INFOID:000000012201160

[CVT: RE0F10D]

	910			INFOID.00000012201160
DTC DET	FECTION LOGIC			
DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detect	ion condition	Possible causes
P0705	T/M RANGE SENSOR A [Transmission Range Sensor A Circuit (PRNDL Input)]	 fied and this state is m Two or more range stay ON continuous 	ng conditions are satis- aintained for 2 seconds: signals simultaneously ly voltage: More than 11 V	 Harness or connector (Short circuit between transmission range switch and TCM) Transmission range switch
DTC CO	NFIRMATION PROCED	URE		
1.PREPA	ARATION BEFORE WORI	<		
	"DTC CONFIRMATION F econds, then perform the		urs just before, turn	ignition switch OFF and wait for at
•	>> GO TO 2.			
	K DTC DETECTION			
2. Shift t 5 sec 3. Check Is "P0705" YES >	onds or more.) k the first trip DTC. <u>" detected?</u> -> Go to <u>TM-455, "Diagno</u>		n "P" to "D". (Hold th	e selector lever at each position for
	> INSPECTION END			
Diagnos	sis Procedure			INFOID:000000012201161
1. CHECK	K TCM INPUT SIGNALS			
(P)With C				
 Turn i Selec Selec 	gnition switch ON. t "Data Monitor" in "TRAN t "D POSITION SW", "N F	OSITION SW", "R		d "P POSITION SW". ck ON/OFF of each monitor item.
Monitor	item Condition	Condition		
	Selector lever: "D" po	sition On		
D POSITIC	ON SW Other than the above	Off		
N POSITIC	Selector lever: "N" po	sition On		
IN PUSITIC				

Selector lever: "N" position On Other than the above Off R POSITION SW Selector lever: "R" position On Other than the above Off Other than the above Off P POSITION SW Selector lever: "P" position On Other than the above Off Other than the above Off Other than the above Off Other than the above Off

Without CONSULT

- 1. Turn ignition switch OFF.
- 2. Disconnect TCM connector.
- 3. Turn ignition switch ON.
- 4. Shift the selector lever from "P" to "D" and check voltage between TCM harness connector terminals and ground.

Revision: November 2015

TM-455

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P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

+ TCM		_	Condition	Voltage
Connector	Terminal			
	4		Selector lever: "D" position	10 – 16 V
	4	Ground	Other than the above	Approx. 0 V
	5		Selector lever: "N" position	10 – 16 V
F83			Other than the above	Approx. 0 V
FOJ	6		Selector lever: "R" position	10 – 16 V
			Other than the above	Approx. 0 V
	7		Selector lever: "P" position	10 – 16 V
	7		Other than the above	Approx. 0 V

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO-1 ["D POSITION SW" is "ON" when selector is not in "D" position. (Or connector terminal 4 is at power voltage.)]>>GO TO 2.

NO-2 ["N POSITION SW" is "ON" when selector is not in "N" position. (Or connector terminal 5 is at power voltage.)]>>GO TO 4.

NO-3 ["R POSITION SW" is "ON" when selector is not in "R" position. (Or connector terminal 6 is at power voltage.)]>>GO TO 8.

NO-4 ["P POSITION SW" is "ON" when selector is not in "P" position. (Or connector terminal 7 is at power voltage.)]>>GO TO 6.

2.CHECK D POSITION SW CIRCUIT (PART 1)

1. Turn ignition switch OFF.

2. Disconnect TCM connector.

3. Check continuity between TCM harness connector terminals.

	TCM		Continuity
Connector	Terr	minal	Continuity
		2	
F83	4	5	Not existed
гоз		6	NOL EXISTED
		7	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3.CHECK D POSITION SW CIRCUIT (PART 2)

1. Disconnect transmission range switch connector.

2. Turn ignition switch ON.

3. Check voltage between TCM harness connector terminal and ground.

	+		
T	CM	_	Voltage (Approx.)
Connector	Terminal		(II)
F83	4	Ground	0 V

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace malfunctioning parts.

4.CHECK N POSITION SW CIRCUIT (PART 1)

P0705 TRANSMISSION RANGE SENSOR A [CVT: RE0F10D] < DTC/CIRCUIT DIAGNOSIS > Turn ignition switch OFF. Disconnect TCM connector. Check continuity between TCM harness connector terminals. тсм Continuit

	1 CIVI		Continuity	
Connector	Terr	minal	Continuity	
		2		
500	-	4		
F83	5	6	Not existed	
		7		т
s the inspe	ection resu	It normal?		
	- GO TO 5			
	-	-	Ifunctioning par	
D. CHECK	N POSITI	ON SW CIR	CUIT (PART 2)	
			ge switch conne	ctor.
	nition swite		harnaaa aanna	
3. Check	vollage be		namess conne	ctor terminal and ground.
	+			
	ТСМ		Voltage	
Connector	Termina	al	(Approx.)	
F83	5	Groun	d 0V	
s the inspe				
	> GO TO 1			
			Ifunctioning par	ts.
3. снеск	P POSITI	ON SW CIR	CUIT (PART 1)	
	nition swit			
		connector.		
3. Check	continuity	between IC	CM harness con	nector terminals.
	ТСМ			
Connector		ninal	Continuity	
CONNECTOR	Ien	2		
F83	7	4	Not existed	
		5		
		6		
s the inspe				
	> GO TO 7 > Repair or		Ifunctioning par	ts
_	•		CUIT (PART 2)	
	nect trans		ge switch conne	
			harness conne	ctor terminal and ground.
	-			

T	+ CM	_	Voltage (Approx.)	
Connector	Terminal		X FF - 7	
F83	7	Ground	0 V	

1.

2.

3.

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P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace malfunctioning parts.

8.CHECK R POSITION SW CIRCUIT (PART1)

- 1. Turn ignition switch OFF.
- 2. Disconnect TCM connector.

3. Check continuity between TCM harness connector terminals.

	TCM		Continuity
Connector	Terr	minal	Continuity
		2	
F83	6	4	Not existed
105		5	NOT EXISTED
		7	

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace malfunctioning parts.

9. CHECK R POSITION SW CIRCUIT (PART 2)

1. Disconnect transmission range switch connector.

2. Turn ignition switch ON.

3. Check voltage between TCM harness connector terminal and ground.

T(+ CM	_	Voltage (Approx.)	
Connector	Terminal		(
F83	6	Ground	0 V	

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace malfunctioning parts.

10.CHECK TRANSMISSION RANGE SWITCH

Check transmission range switch. Refer to TM-458, "Component Inspection".

Is the check result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:000000012201162

1. CHECK TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch connector terminals.

Transmission range switch	Condition	Continuity	
Terminal	Condition		
1-2	Manual lever: "P" and "N" positions	Existed	
1-2	Other than the above	Not existed	
3-4	Manual lever: "P" position	Existed	
5-4	Other than the above	Not existed	
3-5	Manual lever: "R" position	Existed	
5-5	Other than the above	Not existed	

P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

Transmission range switch	Condition	Continuity	
Terminal	Condition		
3-6	Manual lever: "N position	Existed	
0 - 0	Other than the above	Not existed	
3 – 7	Manual lever: "D" position	Existed	
5-7	Other than the above	Not existed	

Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of transmission range switch. Replace transaxle assembly. Refer to <u>TM-577</u>, "Removal and Installation".

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[CVT: RE0F10D]

P0706 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

P0706 TRANSMISSION RANGE SENSOR A

DTC Logic

INFOID:000000012201163

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0706	T/M RANGE SENSOR A (Transmission Range Sensor A Circuit Range/Performance)	 When all of the following conditions are satisfied and this state is maintained for 30 seconds: All range signals stay OFF TCM power supply voltage: More than 11 V 	 Harness or connector (Open circuit between ignition switch and transmission range switch/open circuit between transmission range switch and TCM) Transmission range switch Control cable

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2 . PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- Shift the selector lever through entire positions from "P" to "D". (Hold the selector lever at each position for 2. 40 seconds or more.)
- 3. Check the first trip DTC.

Is "P0706" detected?

- YES >> Go to TM-460, "Diagnosis Procedure".
- >> INSPECTION END NO

Diagnosis Procedure

1.ADJUSTMENT OF CONTROL CABLE

Adjust control cable. Refer to TM-439, "Adjustment".

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

(P)With CONSULT

- Turn ignition switch ON. 1.
- 2. Select "Self Diagnostic Results" in "TRANSMISSION".
- 3. Touch "Erase".
- Perform "DTC CONFIRMATION PROCEDURE". Refer to TM-460, "DTC Logic". 4
- Is "P0706" detected?

YES >> GO TO 3.

NO >> INSPECTION END

3. CHECK POWER CIRCUIT

1. Turn ignition switch OFF.

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

[CVT: RE0F10D]

INFOID:000000012201164

P0706 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10D]

	+			
Transmissior	n range switch	-	Voltage	
Connector	Terminal			
F30	3	Ground	10 – 16 V	
s the inspec	ction result n	ormal?		
	GO TO 4.			
4	GO TO 7.			
			RANSMISSI	ON RANGE SWITCH AND TCM (PART 1)
 Disconr Check of 	nition switch nect TCM co continuity be erminals.	nnector.	mission ran	ge switch harness connector terminals and TCM harness con
Transmission	range switch	T	СМ	Continuity
Connector	Terminal	Connector	Terminal	Continuity
	4		7	
	5		6	
F30	6	F83	5	Existed
	7		4	
	8		2	
	•	•	nctioning pa	
5.снеско	CIRCUIT BE	TWEEN TR	RANSMISSI	arts. ON RANGE SWITCH AND TCM (PART 2) witch harness connector terminals and ground.
5.CHECK	CIRCUIT BE	TWEEN TR	RANSMISSI	ON RANGE SWITCH AND TCM (PART 2)
5.CHECK (Check conti Transmission	CIRCUIT BE nuity betwee	TWEEN TR	RANSMISSI	ON RANGE SWITCH AND TCM (PART 2)
5.CHECK	CIRCUIT BE nuity betwee range switch Terminal	TWEEN TR	RANSMISSIC	ON RANGE SWITCH AND TCM (PART 2)
5.CHECK Check conti	CIRCUIT BE nuity betwee range switch Terminal 4	TWEEN TR	RANSMISSIC	ON RANGE SWITCH AND TCM (PART 2)
5.CHECK (Check conti Transmission Connector	CIRCUIT BE nuity betwee range switch Terminal 4 5	TWEEN TRen transmiss	Continuity	ON RANGE SWITCH AND TCM (PART 2)
5.CHECK (Check conti Transmission	CIRCUIT BE nuity betwee range switch Terminal 4 5 6	TWEEN TR	RANSMISSIC	ON RANGE SWITCH AND TCM (PART 2)
5.CHECK Check conti Transmission Connector	CIRCUIT BE nuity betwee range switch Terminal 4 5 6 7	TWEEN TRen transmiss	Continuity	ON RANGE SWITCH AND TCM (PART 2)
5.CHECK C Check conti Transmission Connector F30	CIRCUIT BE nuity between range switch Terminal 4 5 6 7 8	Ground	Continuity	ON RANGE SWITCH AND TCM (PART 2)
5.CHECK C Check conti Transmission Connector F30	CIRCUIT BE nuity betwee range switch Terminal 4 5 6 7 8 ction result r	Ground	Continuity	ON RANGE SWITCH AND TCM (PART 2)
5.CHECK Check conti Transmission Connector F30 Is the inspec YES >>	CIRCUIT BE nuity betweet range switch Terminal 4 5 6 7 8 ction result n GO TO 6.	Ground	Continuity	ON RANGE SWITCH AND TCM (PART 2) witch harness connector terminals and ground.
5.CHECK (Check conti Transmission Connector F30	CIRCUIT BE nuity betweet range switch Terminal 4 5 6 7 8 ction result n GO TO 6. Repair or re	Ground	ANSMISSIC sion range su Continuity Not existed	ON RANGE SWITCH AND TCM (PART 2) witch harness connector terminals and ground.
5.CHECK Check conti Transmission Connector F30 Is the inspec YES >> NO >> 6.CHECK	CIRCUIT BE nuity betweet range switch Terminal 4 5 6 7 8 ction result r GO TO 6. Repair or re TRANSMISS	Ground Dormal?	ANSMISSIC sion range su Continuity Not existed nctioning pa	ON RANGE SWITCH AND TCM (PART 2) witch harness connector terminals and ground.
5.CHECK (Check conti Transmission Connector F30 Is the insper YES >> NO >> 6.CHECK	CIRCUIT BE nuity betweet range switch Terminal 4 5 6 7 8 Ction result r GO TO 6. Repair or re TRANSMISS	Ground Cormal? place malfu SION RANG ge switch. R	ANSMISSIC sion range su Continuity Not existed nctioning pa	ON RANGE SWITCH AND TCM (PART 2) witch harness connector terminals and ground.
5.CHECK (Check conti Transmission Connector F30 Is the inspec YES >> NO >> 6.CHECK Check trans Is the inspec	CIRCUIT BE nuity betweet range switch Terminal 4 5 6 7 8 Ction result r GO TO 6. Repair or re TRANSMISS mission range	Ground Ground Ormal? DIACE malfu SION RANG ge switch. R DORMANS	ANSMISSIC sion range su Continuity Not existed nctioning pa E SWITCH Refer to TM-4	ON RANGE SWITCH AND TCM (PART 2) witch harness connector terminals and ground. arts.
5.CHECK Check conti Transmission Connector F30 Is the inspec YES >> NO >> 6.CHECK Check trans Is the inspec YES >>	CIRCUIT BE nuity betweet range switch Terminal 4 5 6 7 8 Ction result r GO TO 6. Repair or re TRANSMISS mission range	Ground Ground Dormal? DIACE malfu SION RANG ge switch. R Dormal? mittent incid	ANSMISSIC sion range su Continuity Not existed nctioning pa E SWITCH tefer to TM-4 ent. Refer to	ON RANGE SWITCH AND TCM (PART 2) witch harness connector terminals and ground. arts. 462. "Component Inspection". O GI-45. "Intermittent Incident".
5.CHECK (Check conti Transmission Connector F30 Is the inspec YES >> NO >> 6.CHECK Check trans Is the inspec YES >> NO >>	CIRCUIT BE nuity betweet range switch Terminal 4 5 6 7 8 Ction result r GO TO 6. Repair or re TRANSMISS mission range ction result r Check intern Repair or re	Ground Ground Ormal? Place malfu SION RANG ge switch. R ormal? mittent incid place malfu	ANSMISSIC sion range su Continuity Not existed notioning pa E SWITCH Refer to TM-4 ent. Refer to notioning pa	ON RANGE SWITCH AND TCM (PART 2) witch harness connector terminals and ground. arts. 462. "Component Inspection". O GI-45. "Intermittent Incident".

2. Disconnect IPDM E/R connector.

3. Check continuity between IPDM E/R harness connector terminal and transmission range switch harness connector terminal.

P0706 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10D]	
----------------	--

IPDM E/R		Transmission range switch		Continuity
Connector	Terminal	Connector Terminal		Continuity
E15	57	F30	3	Existed

Is the check result normal?

YES >> GO TO 8.

NO >> Repair or replace malfunctioning parts.

8. DETECT MALFUNCTIONING ITEMS

Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to <u>PG-43</u>, "Wiring Diagram - IGNITION POWER SUPPLY -".
- Short circuit in harness between IPDM E/R harness connector terminal 57 and transmission range switch harness connector terminal 3.
- 10A fuse (No. 55, located in the IPDM E/R). Refer to PG-80, "Fuse, Connector and Terminal Arrangement".

• IPDM E/R

Is the check result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Repair or replace malfunctioning parts.

Component Inspection

INFOID:000000012201165

1.CHECK TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch connector terminals.

Transmission range switch		
Terminal	Condition	Continuity
1-2	Manual lever: "P" and "N" positions	Existed
1-2	Other than the above	Not existed
3-4	Manual lever: "P" position	Existed
5-4	Other than the above	Not existed
3 – 5	Manual lever: "R" position	Existed
	Other than the above	Not existed
3-6	Manual lever: "N position	Existed
5-0	Other than the above	Not existed
3 – 7	Manual lever: "D" position	Existed
	Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of transmission range switch. Replace transaxle assembly. Refer to <u>TM-</u> <u>577, "Removal and Installation"</u>.

< DTC/CIRCUIT DIAGNOSIS >

P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Description

DTC

DTC DETECTION LOGIC

CONSULT screen terms

(Trouble diagnosis content)

А

В

С

J

[CVT: RE0F10D]

n
VT fluid temperature does tain period of time with the ue between – 40°C (–40°F)
/

DTC detection conditio 1. Under the following diagnosis conditions, C

			not rise to 10°C (50°F) after driving for a certain period of time with the TCM-received fluid temperature sensor value between -40 °C (-40 °F) and 9°C (48.2°F).	ТМ
		-	TCM power supply voltage: More than 11 V	
		-	CAN communication is normal	E
		-	Engine speed: 450 rpm or more	
		-	Accelerator pedal position: 3 deg. or more	
		-	Vehicle speed: 10 km/h (7 MPH) or more	
		-	U0100, P0705 and P0706 are not detected.	F
	FLUID TEMP SENSOR A	-	Selector lever: "D" position	
P0711	(Transmission Fluid Temperature Sensor A	2.	When the condition of the final judgment is satisfied after satisfying	
	Circuit Range/Performance)		that of the provisional judgment:	
		-	Provisional judgment: All of the following conditions are satisfied within	G
			2 seconds after the ignition switch is turned ON.	
		•	U0073, U0100, P0712 and P0713 are not detected.	
		•	CAN communication is normal.	
		•	TCM power supply voltage: More than 11 V	H
		•	The difference between CVT fluid temperature and engine coolant	
			temperature is 55°C (131°F) or more, or –27°C (–16°F) or less.	
		-	Final judgment: When all of the following conditions are satisfied and	1
			this state is maintained for 300 seconds:	1
		•	ECM is normal.	
		•	Provisional judgment is satisfied.	

When any of 1 or 2 is satisfied:

POSSIBLE CAUSE

CVT fluid temperature sensor

CVT fluid temperature sensor		
 FAIL-SAFE Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F) 	Κ	
 Start is slow Acceleration is slow Engine coolant temperature when engine start: -35°C (-31°F) ≤ Temp. < 10°C (50°F) Selector shock is large 	L	
 Start is slow Acceleration is slow Engine coolant temperature when engine start: Temp. < -35°C (-31°F) Selector shock is large 	M	
- Start is slow - Acceleration is slow	Ν	
DTC CONFIRMATION PROCEDURE CAUTION: Always drive vehicle at a safe speed. 1.PREPARATION BEFORE WORK	0	
If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at	Ρ	

least 10 seconds, then perform the next test.

>> GO TO 2.

2.INSPECTION START

< DTC/CIRCUIT DIAGNOSIS >

Is it necessary to erase permanent DTC?

YES >> GO TO 3.

NO >> GO TO 7.

3.CHECK DTC (ECM AND TCM)

Check the DTC.

Is any DTC other than "P0711" detected?

YES >> Check DTC detected item. Refer to <u>EC-706, "DTC Index"</u> (ECM), <u>TM-414, "DTC Index"</u> (TCM). NO >> GO TO 4.

4.PERFORM DTC CONFIRMATION PROCEDURE (PART 1)

TESTING CONDITION:

- While performing the following procedure, do not add fuel.
- Before performing the following procedure, check that fuel level is between 1/4 and 4/4.
- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

With CONSULT

1. Move the vehicle to a cool place.

NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

2. Turn ignition switch OFF and leave the vehicle for 12 hours.

CAUTION:

Never turn ignition switch ON during this procedure. NOTE:

The vehicle must be cooled with the food open.

3. Turn ignition switch ON.

CAUTION: Never start the engine.

- 4. Select "Data Monitor" in "TRANSMISSION".
- 5. Select "FLUID TEMP".
- 6. Record CVT fluid temperature.
- 7. Start engine and let it idle for 5 minutes or more. CAUTION:

Never turn ignition switch OFF during idling.

8. Check 1st trip DTC.

With GST

Move the vehicle to a cool place.
 NOTE:

Cool the vehicle in an environment of ambient air temperature between $-10^{\circ}C$ (14°F) and 35°C (95°F). 2. Turn ignition switch OFF and leave the vehicle for 12 hours.

CAUTION: Never turn ignition switch ON during this procedure.

NOTE:

The vehicle must be cooled with the food open.

3. Start engine and let it idle for 5 minutes or more. CAUTION:

Never turn ignition switch OFF during idling.

4. Check 1st trip DTC.

Is "P0711" detected?

YES >> Go to <u>TM-466</u>, "<u>Diagnosis Procedure</u>". NO-1 (With CONSULT)>>GO TO 5. NO-2 (With GST)>>GO TO 6.

${f b}.$ CHECK CVT FLUID TEMPERATURE

With CONSULT

- 1. Select "Data Monitor" in "TRANSMISSION".
- 2. Select "FLUID TEMP".

Is the value of "FLUID TEMP" 10°C (50°F) or more?

- YES >> INSPECTION END
- NO >> GO TO 6.

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10D]

6 .PERFORM DTC CONFIRMA	TION PROCEDURE (PART 2)	_
 With CONSULT Drive the vehicle for the tota tions satisfied. 	I minutes specified in the Driving time column below with the following cond	i-
Selector lever	: "D" position	
Accelerator pedal position	: 1.0/8 or more	
Vehicle speed	: 10 km/h (7 MPH) or more	
CVT fluid temperature before engine	start Driving time	
-40°C (-40°F) − -31°C (-23.8°F)	20 minutes or more	
−30°C (−22°F) − −21°C (−5.8°F)	18 minutes or more	
–20°C (–4°F) – −11°C (–12.2°F)	14 minutes or more	
−10°C (14°F) − −1°C (30.2°F)	10 minutes or more	
0°C (32°F) – 9°C (48.2°F)	7 minutes or more	
. Stop the vehicle. . Check the first trip DTC.		
With GST		
	in the following conditions for 20 minutes or more.	
	in the following conditions for 20 minutes or more. : "D" position	
Drive the vehicle and mainta		
. Drive the vehicle and mainta Selector lever	: "D" position	
 Drive the vehicle and mainta Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. 	: "D" position : 1.0/8 or more	
 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. 	: "D" position : 1.0/8 or more	
 Drive the vehicle and mainta Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. <u>s "P0711" detected?</u> 	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more	
 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. <u>"P0711" detected?</u> YES >> Go to <u>TM-466, "Diac</u> 	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more	
 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. <u>"P0711" detected?</u> YES >> Go to <u>TM-466. "Diac</u> NO-1 >> To check malfunction 	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more	
 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. <u>"P0711" detected?</u> YES >> Go to <u>TM-466. "Diac</u> NO-1 >> To check malfunction NO-2 >> Confirmation after resource 	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more mosis Procedure". n symptom before repair: Refer to <u>GI-45, "Intermittent Incident"</u> . epair: INSPECTION END	
 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. <u>"P0711" detected?</u> YES >> Go to <u>TM-466. "Diac</u> NO-1 >> To check malfunction NO-2 >> Confirmation after reference PERFORM DTC CONFIRMA 	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more mosis Procedure". n symptom before repair: Refer to <u>GI-45, "Intermittent Incident"</u> . epair: INSPECTION END	
 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. "P0711" detected? YES >> Go to <u>TM-466. "Diac</u> NO-1 >> To check malfunction NO-2 >> Confirmation after ref. PERFORM DTC CONFIRMA With CONSULT Turn ignition switch OFF and 	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more mosis Procedure". n symptom before repair: Refer to <u>GI-45. "Intermittent Incident"</u> . epair: INSPECTION END TION PROCEDURE	
 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. "P0711" detected? YES >> Go to <u>TM-466. "Diac</u> NO-1 >> To check malfunction NO-2 >> Confirmation after ref. PERFORM DTC CONFIRMA With CONSULT Turn ignition switch OFF and Turn ignition switch ON. 	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more mosis Procedure". n symptom before repair: Refer to <u>GI-45. "Intermittent Incident"</u> . epair: INSPECTION END TION PROCEDURE	_
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 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. <u>"P0711" detected?</u> YES >> Go to <u>TM-466. "Diac</u> NO-1 >> To check malfunction NO-2 >> Confirmation after ref. PERFORM DTC CONFIRMATION With CONSULT Turn ignition switch OFF and Turn ignition switch ON. CAUTION: Never start the engine. Select "Data Monitor" in "TR 	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more mosis Procedure". n symptom before repair: Refer to <u>GI-45, "Intermittent Incident"</u> . epair: INSPECTION END TION PROCEDURE d cool the engine.	_
 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. "P0711" detected? YES >> Go to <u>TM-466</u>. "Diag NO-1 >> To check malfunction NO-2 >> Confirmation after ref. PERFORM DTC CONFIRMAT With CONSULT Turn ignition switch OFF and Turn ignition switch OFF and CAUTION: Never start the engine. Select "Data Monitor" in "TR Select "FLUID TEMP". 	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more mosis Procedure". n symptom before repair: Refer to <u>GI-45. "Intermittent Incident"</u> . epair: INSPECTION END TION PROCEDURE d cool the engine. ANSMISSION".	_
 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. "P0711" detected? YES >> Go to <u>TM-466</u>. "Diag NO-1 >> To check malfunction NO-2 >> Confirmation after ref. PERFORM DTC CONFIRMAT With CONSULT Turn ignition switch OFF and Turn ignition switch ON. CAUTION: Never start the engine. Select "Data Monitor" in "TR Select "FLUID TEMP". Record CVT fluid temperatu 	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more mosis Procedure". n symptom before repair: Refer to <u>GI-45. "Intermittent Incident"</u> . epair: INSPECTION END TION PROCEDURE d cool the engine. ANSMISSION". re.	_
Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. <u>"P0711" detected?</u> YES >> Go to <u>TM-466</u> . "Diac NO-1 >> To check malfunction NO-2 >> Confirmation after re .PERFORM DTC CONFIRMA With CONSULT Turn ignition switch OFF and Turn ignition switch ON. CAUTION: Never start the engine. Select "Data Monitor" in "TR Select "FLUID TEMP". Record CVT fluid temperatu Start the engine and wait for	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more mosis Procedure". n symptom before repair: Refer to <u>GI-45. "Intermittent Incident"</u> . epair: INSPECTION END TION PROCEDURE d cool the engine. ANSMISSION". re. at least 2 minutes.	— i-
 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. <u>"P0711" detected?</u> YES >> Go to <u>TM-466</u>. "Diag NO-1 >> To check malfunction NO-2 >> Confirmation after ref. PERFORM DTC CONFIRMATION With CONSULT Turn ignition switch OFF and Turn ignition switch ON. CAUTION: Never start the engine. Select "Data Monitor" in "TR Select "FLUID TEMP". Record CVT fluid temperatu Start the engine and wait for 	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more mosis Procedure". n symptom before repair: Refer to <u>GI-45. "Intermittent Incident"</u> . epair: INSPECTION END TION PROCEDURE d cool the engine. ANSMISSION". re.	— i-
 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. "P0711" detected? YES >> Go to <u>TM-466. "Diac</u> NO-1 >> To check malfunction NO-2 >> Confirmation after ref. PERFORM DTC CONFIRMATION With CONSULT Turn ignition switch OFF and Turn ignition switch OFF and Turn ignition switch ON. CAUTION: Never start the engine. Select "Data Monitor" in "TR Select "FLUID TEMP". Record CVT fluid temperatu Start the engine and wait for Drive the vehicle for the total 	: "D" position : 1.0/8 or more : 10 km/h (7 MPH) or more mosis Procedure". n symptom before repair: Refer to <u>GI-45. "Intermittent Incident"</u> . epair: INSPECTION END TION PROCEDURE d cool the engine. ANSMISSION". re. at least 2 minutes.	
 Drive the vehicle and maintal Selector lever Accelerator pedal position Vehicle speed Stop the vehicle. Check the first trip DTC. "P0711" detected? YES >> Go to <u>TM-466</u>. "Diag NO-1 >> To check malfunction NO-2 >> Confirmation after ref. PERFORM DTC CONFIRMAT With CONSULT Turn ignition switch OFF and Turn ignition switch OFF and Select "Data Monitor" in "TR Select "FLUID TEMP". Record CVT fluid temperatu Start the engine and wait for Drive the vehicle for the total tions satisfied. 	 "D" position 1.0/8 or more 10 km/h (7 MPH) or more mosis Procedure". n symptom before repair: Refer to <u>GI-45. "Intermittent Incident"</u>. pair: INSPECTION END TION PROCEDURE d cool the engine. ANSMISSION". re. at least 2 minutes. I minutes specified in the Driving time column below with the following conditional conditiona condit	i-

CVT fluid temperature before engine start	Driving time
–40°C (–40°F) – −31°C (–23.8°F)	20 minutes or more
−30°C (−22°F) − −21°C (−5.8°F)	18 minutes or more
–20°C (–4°F) – –11°C (–12.2°F)	14 minutes or more
−10°C (14°F) − −1°C (30.2°F)	10 minutes or more

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10D]

CVT fluid temperature before engine start	Driving time
0°C (32°F) – 9°C (48.2°F)	7 minutes or more
Other than the above	— (Go to "8.CHECK CVT FLU- ID TEMPERATURE SENSOR")

8. Stop the vehicle.

Check the first trip DTC. 9.

With GST

- 1. Turn ignition switch OFF and cool the engine.
- 2. Start the engine and wait for at least 2 minutes.
- 3. Drive the vehicle and maintain the following conditions for 20 minutes or more.

Selector lever	: "D" position
Accelerator pedal position	: 1.0/8 or more
Vehicle speed	: 10 km/h (7 MPH) or more

4. Stop the vehicle. **CAUTION:** Never turn ignition switch OFF 5. Check the first trip DTC.

Is "P0711" detected?

>> Go to TM-466, "Diagnosis Procedure". YES NO >> GO TO 8.

8.CHECK CVT FLUID TEMPERATURE SENSOR

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

CVT unit	Condition	Resistance
Terminal		(Approx.)
	CVT fluid temperature: 20°C (68°F)	6.5 kΩ
12 – 18	CVT fluid temperature: 50°C (122°F)	2.2 kΩ
	CVT fluid temperature: 80°C (176°F)	0.87 kΩ

Is the inspection result normal?

- YES-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".
- YES-2 >> Confirmation after repair: INSPECTION END
- >> There is a malfunction of CVT fluid temperature sensor. Replace transaxle assembly. Refer to NO TM-577, "Removal and Installation".

Diagnosis Procedure

INFOID:000000012201167

1. CHECK CVT FLUID TEMPERATURE SENSOR

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

CVT unit		Condition	Resistance	
Connector	Terminal	Condition	(Approx.)	
F250	12 – 18	CVT fluid temperature: 20°C (68°F)	6.5 kΩ	
		CVT fluid temperature: 50°C (122°F)	2.2 kΩ	
		CVT fluid temperature: 80°C (176°F)	0.87 kΩ	

Is the inspection result normal?

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

CHECK C	RCUIT BETV	VEEN TCM AI	ND CVT UNIT	CVT FLUID	TEMPERATURE SENSOR) (PART 1)
Disconne	ct the TCM co	onnector.			I CVT unit harness connector terminals.
Т	СМ	CVT	unit		
Connector	Terminal	Connector	Terminal	Continuity	
F83	11	F82	18	Existed	
	12		12	Existed	
	ion result norn	nal?			
	GO TO 3. Repair or repla	ce damaged p	arts.		
	• •	• •		CVT FLUID	TEMPERATURE SENSOR) (PART 2)
	uity between T				
	СМ	_	Continuity		
Connector	Terminal				
F83	11 12	Ground	Not existed		
CHECK D					
	elf Diagnostic				3. "DTC Description".
ES >> T F		7, "Removal a			ensor. Replace the transaxle assembl

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< DTC/CIRCUIT DIAGNOSIS >

P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

INFOID:000000012201168

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0712	FLUID TEMP SENSOR A (Transmission Fluid Tempera- ture Sensor A Circuit Low)	 When all of the following conditions are satisfied and this state is maintained for 5 seconds: TCM power supply voltage: More than 11 V Fluid temperature sensor detection voltage: 0.15 V or less 	 Harness or connector (CVT fluid temperature sensor circuit is shorted to ground) CVT fluid temperature sensor

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine and wait for 10 seconds or more.

2. Check the first trip DTC.

Is "P0712" detected?

YES >> Go to TM-468, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000012201169

1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

тс	CM		Continuity	
Connector	Terminal		Continuity	
F83	12	Ground	Not existed	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning part.

2.CHECK CVT UNIT TERMINAL CODE ASSEMBLY

Check continuity between CVT unit connector terminal and ground.

CV1	unit		Continuity
Connector	Terminal		Continuity
F82	12	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> There is a malfunction of the CVT unit terminal code assembly. Replace the transaxle assembly. Refer to <u>TM-577, "Removal and Installation"</u>.

3.check CVT fluid temperature sensor

P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

Check resistance between CVT unit connector terminals.

CVT unit		Condition	Resistance
Connector	Terminal	Condition	(Approx.)
		CVT fluid temperature: 20°C (68°F)	6.5 kΩ
F250	12 – 18	CVT fluid temperature: 50°C (122°F)	2.2 kΩ
		CVT fluid temperature: 80°C (176°F)	0.87 kΩ

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> There is a malfunction of the CVT fluid temperature sensor. Replace the transaxle assembly. TM Refer to TM-577, "Removal and Installation".

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[CVT: RE0F10D]

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В

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P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

INFOID:000000012201170

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0713	FLUID TEMP SENSOR A (Transmission Fluid Tempera- ture Sensor A Circuit High)	 When all of the following conditions are satisfied and this state is maintained for 5 seconds: TCM power supply voltage: More than 11 V Vehicle speed: More than 10 km/h (7 MPH) Fluid temperature sensor detection voltage: 2.48 V or more 	 Harness or connector (CVT fluid temperature sensor circuit is open or shorted to power supply) CVT fluid temperature 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. 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-470, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

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

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

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F83	11	F82	18	Existed
Fõõ	12	102	12	LABLEU

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

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2.CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (PART 2)
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1. Turn ignition switch ON.

2. Check voltage between TCM harness connector terminal and ground.

P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10D]

	+			
T	CM	_	Voltage (Approx.)	
Connector	Terminal		, II <i>,</i>	
F83	12	Ground	0 V	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

3.CHECK CVT FLUID TEMPERATURE SENSOR

1. Turn ignition switch OFF.

2. Check resistance between CVT unit connector terminals.

CVT unit		Condition	Resistance	
Connector	Terminal	Condition	(Approx.)	
		CVT fluid temperature: 20°C (68°F)	6.5 kΩ	
F250	12 – 18	CVT fluid temperature: 50°C (122°F)	2.2 kΩ	
		CVT fluid temperature: 80°C (176°F)	0.87 kΩ	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> There is a malfunction of the CVT fluid temperature sensor. Replace the transaxle assembly. Refer to <u>TM-577, "Removal and Installation"</u>.

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P0715 INPUT SPEED SENSOR A

DTC Logic

INFOID:000000012201172

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis con- tent)	DTC detection condition	Possible causes
P0715	INPUT SPEED SEN- SOR A (Input/Turbine Speed Sensor A Circuit)	 When 1 is satisfied and any of 2, 3 or 4 is satisfied: When the following conditions are satisfied: TCM power supply voltage: More than 11 V After range change completion, it spends 2 seconds or more. When all of the following conditions are satisfied and this state is maintained for 5 seconds: Primary pulley speed: Less than 150 rpm Secondary pulley speed: 500 rpm or more When all of the following conditions are satisfied and this state is maintained for 0.5 seconds: Primary pulley speed: 500 rpm or more When all of the following conditions are satisfied and this state is maintained for 0.5 seconds: 10-msec-ago primary pulley speed: 1,000 rpm or more Now primary pulley speed: 0 rpm When all of the following conditions are satisfied and this state is maintained for 5 seconds: Range: D Engine speed: 450 rpm or more Input peed: 300 rpm or more Primary pulley speed: 300 rpm or more Differences between engine speed and primary pulley speed: 300 rpm or more Differences between primary pulley speed and input speed: More than 1,000 rpm Differences between engine speed and input speed: More than 1,000 rpm Differences between engine speed and input speed: 1,000 rpm or less Lock-up command is being given (except for slip lock-up) DTC other than the applicable DTC is not detected. 	 Harness or connector (Primary speed sensor circuit is open 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	: "D" POSITION
Engine speed	: 1,200 rpm or more
Vehicle speed	: 40 km/h (25 MPH) or more

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

Is "P0715" detected?

Revision: November 2015

P0715 INPUT SPEED SENSOR A

< DTC/CIR		GNOSIS >	07 10 11			-	[CVT: RE0F10D]	
	Go to <u>TM-</u>	<u>473, "Diagn</u> ION END	iosis Proce	<u>dure"</u> .				А
Diagnosi	s Proced	ure					INFOID:000000012201173	
1.снеск	PRIMARY	SPEED SE	NSOR PO	WER CIRC	UIT			В
 Discon Turn ig 	nition switc	y speed ser h ON.			ess connector termir	nal and groun	d.	С
	+			-				ТΜ
Primary sp	eed sensor	_	Voltage					
Connector	Terminal	-						Е
F55	3	Ground	10 – 16 V	-				
Is the inspe	ection result	normal?		-				
	• GO TO 2. • GO TO 6.							F
2. CHECK	PRIMARY	SPEED SE	NSOR GR	OUND CIR	CUIT			
Check cont	inuity betwe	een primary	speed ser	isor harnes	s connector termina	l and ground.		G
Primary sr	eed sensor			-				Н
Connector	Terminal		Continuity					11
F55	1	Ground	Existed	-				
Is the inspe	ection result	normal?		-				
•	• GO TO 3.							
•	•	replace mal	-	•				I
3.снеск	CIRCUIT E	BETWEEN F	PRIMARY	SPEED SEI	NSOR AND TCM (P	ART 1)		0
2. Discon		connector.	mary speed	l sensor ha	rness connector terr	ninal and TCI	W harness connector	K
								L
	eed sensor	TC		Continuity				
Connector	Terminal	Connector	Terminal	Eviated				M
F55 Is the inspe	2	F83	35	Existed				IVI
YES >> NO >>	 GO TO 4. Repair or □ 	replace mal		•	NSOR AND TCM (P	ART 2)		Ν
Check cont	inuity betwe	een primary	speed ser	isor harnes	s connector terminal	l and ground.		0
Connector	beed sensor Terminal		Continuity	-				Р
F55	2	Ground	Not existed	_				
Is the inspe	ection result	normal?						

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5. CHECK TCM INPUT SIGNALS

P0715 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

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

+ TCM		_	Condition	Frequency (Approx.)
Connector	Terminal			
F83	35	Ground	 Shift position: "M1" position Vehicle speed: 20 km/h (12 MPH) 	700 Hz 1mSec/div 5V/div JSDIA1905GB

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".
- NO >> Replace primary speed sensor. Refer to TM-562, "Removal and Installation".

6.CHECK CIRCUIT BETWEEN IPDM E/R AND PRIMARY SPEED SENSOR

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

IPDM E/R		Primary speed sensor		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
E15	57	F55	3	Existed	

Is the check result normal?

YES >> GO TO 7.

NO >> Repair or replace malfunctioning parts.

7. DETECT MALFUNCTIONING ITEMS

Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to <u>PG-43</u>, "Wiring Diagram - IGNITION POWER SUPPLY -".
- Short circuit in harness between IPDM E/R harness connector terminal 57 and primary speed sensor harness connector terminal 3.
- 10A fuse (No.55, located in the IPDM E/R). Refer to PG-80, "Fuse, Connector and Terminal Arrangement".
- IPDM E/R

Is the check result normal?

- YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".
- NO >> Repair or replace malfunctioning parts.

P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

P0717 INPUT SPEED SENSOR A

DTC Logic

DTC DETECTION LOGIC

INFOID:000000012201174

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P0717 When 1 is satisfied and any of 2. 3 or 4 is satisfied: 1. When 1 is satisfied and any of 2. 3 or 4 is satisfied: 1. When 1 is satisfied and any of 2. 3 or 4 is satisfied: 1. TM 1 TCM power supply voltage: More than 1 V After range change completion, it spends 2 seconds or more. 2. When all of the following conditions are satisfied: 1. F 1 Puthen all of the following conditions are satisfied: 1. Puthen all of the following conditions are satisfied: F 2 When all of the following conditions are satisfied: 1. Puthen all of the following conditions are satisfied: F 1 P0715 is not detected 3. When all of the following conditions are satisfied and this state is maintained for 5 secondas: 1. TM 1 (Input/Turbine Speed Sensor "A" Circuit No Signal) Men all of the following conditions are satisfied and input speed: 300 rpm or more Input speed: 1000 rpm Input speed: 300 rpm or more Input speed: 1000 rpm Input speed: 1000 rpm Input	DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible cause	С
CAUTION: M Always drive vehicle at a safe speed. 1. PREPARATION BEFORE WORK N	P0717	(Input/Turbine Speed Sensor	 When the following conditions are satisfied: TCM power supply voltage: More than 11 V After range change completion, it spends 2 seconds or more. When all of the following conditions are satisfied and this state is maintained for 5 seconds: Primary pulley speed: 500 rpm or more Input speed: Less than 150 rpm Range: Other than P, N P0715 is not detected When all of the following conditions are satisfied and this state is maintained for 0.5 seconds: 10-msec-ago input speed: 1,000 rpm or more Now input speed: 0 rpm When all of the following conditions are satisfied and this state is maintained for 5 seconds: Range: D Engine speed: 450 rpm or more Input peed: 300 rpm or more Primary pulley speed: 300 rpm or more Primary pulley speed: 300 rpm or more Differences between engine speed and primary pulley speed: 1,000 rpm Differences between primary pulley speed and input speed: More than 1,000 rpm Differences between engine speed and input speed: More than 1,000 rpm Differences between engine speed and input speed: More than 1,000 rpm Differences between engine speed and input speed: More than 1,000 rpm Differences between engine speed and input speed: More than 1,000 rpm Differences between engine speed and input speed: More than 1,000 rpm Differences between engine speed and input speed: More than 1,000 rpm Differences between engine speed and input speed: More than 1,000 rpm 	(Input speed sensor circuit is open or shorted.)	E F G H J
N	CAUTION Always c	<mark>N:</mark> drive vehicle at a safe sp	peed.		Μ
If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at				nition switch OFF and wait for at	Ν

>> GO TO 2.

2. CHECK DTC DETECTION

- (B) With CONSULT 1. Start the engine.
- 2. Drive the vehicle.

3. Maintain the following conditions for 10 seconds or more.

> : "D" position Selector lever

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P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

Engine speed: 1,200 rpm or moreVehicle speed: 40 km/h (25 MPH) or more

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

Is "P0717" detected?

YES >> Go to TM-476, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000012201175

[CVT: RE0F10D]

1. CHECK INPUT SPEED SENSOR POWER CIRCUIT

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

	+		
Input spe	ed sensor	_	Voltage
Connector	Terminal		
F77	3	Ground	10 – 16 V

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 6.

2.check input speed sensor ground circuit

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

Input spe	ed sensor		Continuity	
Connector	Terminal		Continuity	
F77	1	Ground	Existed	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

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

1. Turn ignition switch OFF.

- 2. Disconnect TCM connector.
- Check continuity between input speed sensor harness connector terminal and TCM harness connector terminal.

Input speed sensor		ТСМ		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
F77	2	F83	24	Existed	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

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

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

P0717 INPUT SPEED SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10D]

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Input spe	ed sensor		Continuity
Connector	Terminal		
F77	2	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

5. CHECK TCM INPUT SIGNALS

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

тс	+ CM	_	Condition	Frequency (Approx.)	F
Connector	Terminal				F
F83	24	Ground	 Shift position: "M1" position Vehicle speed: 20 km/h (12 MPH) 	880 Hz 1mSec/div 5V/div JSDIA3769GB	G

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace input speed sensor. Refer to TM-560, "Removal and Installation".

6.CHECK CIRCUIT BETWEEN IPDM E/R AND INPUT SPEED SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R connector.
- Check continuity between IPDM E/R harness connector terminal and input speed sensor harness connector terminals.

	IPDM E/R		Input spe	Continuity	
_	Connector	Terminal	Connector	Terminal	Continuity
	E15	57	F77	3	Existed

Is the check result normal?

YES >> GO TO 7.

NO >> Repair or replace malfunctioning parts.

1.DETECT MALFUNCTIONING ITEMS

Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to <u>PG-43</u>, "Wiring Diagram - IGNITION POWER SUPPLY -".
- Short circuit in harness between IPDM E/R harness connector terminal 57 and input speed sensor harness connector terminal 3.
- 10A fuse (No.55, located in the IPDM E/R). Refer to <u>PG-81, "Fuse and Fusible Link Arrangement"</u>.
- IPDM E/R

Is the check result normal?

- YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".
- NO >> Repair or replace malfunctioning parts.

P0740 TORQUE CONVERTER

DTC Logic

INFOID:000000012201176

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0740	TORQUE CONVERTER (Torque Converter Clutch Cir- cuit/Open)	 When all of the following conditions are satisfied and this state is maintained for 5 seconds: TCM power supply voltage: More than 11 V P0743 is not detected. TCM judges that solenoid valve circuit is open. 	(Iorque converter clutch solenoid valve

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. PREPARATION BEFORE OPERATION

With CONSULT

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

FLUID TEMP : 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:

NO

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.

>> 1. Warm the transaxle.2. GO TO 3.

3. CHECK DTC DETECTION

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

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

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

Is "P0740" detected?

- YES >> Go to TM-479, "Diagnosis Procedure".
- NO >> INSPECTION END

P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10D]

Diagnosis Procedure INFOID:0000000012201177 А 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT 1. Turn ignition switch OFF. В 2. Disconnect TCM connector and CVT unit connector. 3. Check continuity between TCM harness connector terminal and CVT unit harness connector terminal. TCM CVT unit Continuity Connector Terminal Connector Terminal F83 38 F82 5 Existed ТΜ Is the inspection result normal? YES >> GO TO 2. NO >> Repair or replace malfunctioning parts. Ε 2.check circuit between CVT unit and ground Check resistance between CVT unit harness connector terminal and ground. F CVT unit Condition Resistance Connector Terminal CVT fluid temperature: 20°C (68°F) $5.5 - 7.0 \Omega$ F250 CVT fluid temperature: 50°C (122°F) 5 Ground 6.0 – 8.0 Ω Н CVT fluid temperature: 80°C (176°F) $6.5 - 8.5 \Omega$ Is the inspection result normal? YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident". NO >> There is malfunction of torgue converter clutch solenoid valve. Replace transaxle assembly. Refer to TM-577, "Removal and Installation". J Κ L Μ Ν Ρ

P0743 TORQUE CONVERTER

DTC Logic

INFOID:000000012201178

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0743	TORQUE CONVERTER (Torque Converter Clutch Cir- cuit Electrical)	 When all of the following conditions are satisfied and this state is maintained for 0.48 seconds: TCM power supply voltage: More than 11 V TCM judges that solenoid valve circuit is shorted to ground. 	 Harness or connector (Torque converter clutch solenoid valve circuit is shorted to ground) Torque converter clutch solenoid valve

DTC CONFIRMATION PROCEDURE CAUTION:

Be careful of the driving speed.

1.PREPARATION BEFORE 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. PREPARATION BEFORE OPERATION

With CONSULT

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

FLUID TEMP : 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:

NO

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.

- >> 1. Warm the transaxle.
 - 2. GO TO 3.

3.check dtc detection

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

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

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

Is "P0743" detected?

- YES >> Go to TM-481, "Diagnosis Procedure".
- NO >> INSPECTION END

P0743 TORQUE CONVERTER

[CVT: RE0F10D]

TC/CIRC		NOSIS >		[CVT: RE0F1	0D]
agnosis	Procedu	re		INFOID:0000000	12201179
CHECK (CIRCUIT BE	TWEEN TC	M AND CVT UNIT		
	ition switch				
			CVT unit connector.		
Check c	continuity be	tween TCM	harness connector terminal and gro	bund.	
т	СМ		Continuity		
Connector	Terminal		Continuity		
F83	38	Ground	Not existed		
the inspec	ction result n	ormal?			
	GO TO 2.				
	•		nctioning parts.		
CHECK (CIRCUIT BE	TWEEN CV	T UNIT AND GROUND		
eck resist	ance betwee	en CVT unit	harness connector terminal and gro	bund.	
CV1	Γ unit		Condition	Resistance	
Connector	Terminal				
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F250	5	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	6.5 – 8.5 Ω	
	to <u>TM-577, '</u>	<u>'Removal ar</u>	nd Installation".		

P0744 TORQUE CONVERTER

DTC Logic

INFOID:000000012201180

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0744	TORQUE CONVERTER (Torque converter clutch cir- cuit intermittent)	 When all of the following conditions are satisfied and this state is maintained for 30 seconds: TCM power supply voltage: More than 11 V P0717 is not detected. CAN communication is normal Torque converter slip speed: (40+vihicle speed/2) rpm LU pressure: More than 0.2 MPa 	 Torque converter clutch solenoid valve Control valve assembly Torque converter

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. PREPARATION BEFORE OPERATION

With CONSULT

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

FLUID TEMP : 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:

NO

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.
 - >> 1. Warm the transaxle.
 - 2. GO TO 3.

3. CHECK DTC DETECTION

- 1. Drive the vehicle.
- 2. Maintain the following conditions for 30 seconds or more.

Selector lever	: "D" position
Accelerator pedal position	: 0.5/8 or more
Vehicle speed	: 40 km/h (25 MPH) or more

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

Is "P0744" detected?

YES >> Go to TM-483, "Diagnosis Procedure".

Revision: November 2015

P0744 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >	[CVT: RE0F10D]
NO >> INSPECTION END	
Diagnosis Procedure	INFOID:000000012201181
1.CHECK INTERMITTENT INCIDNT	
Refer to GI-45, "Intermittent Incident".	
Is the inspection result normal?	
 YES >> Replace transaxle assembly. Refer to <u>TM-577, "Removal and Installation"</u>. NO >> Repair or replace the malfunction items. 	

P0746 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

P0746 PRESSURE CONTROL SOLENOID A

DTC Logic

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0746	PC SOLENOID A (Pressure Control Solenoid A Performance/Stuck Off)	 The detecting condition A or detection condition B is detected twice or more (1 second or more later after detection of the first) in the same DC under the following diagnosis conditions: Diagnosis conditions Engine speed: More than 600 rpm Primary pulley speed: More than 450 rpm Idle is not being detected. Acceleration/deceleration speed: -0.49 m/ s² (-0.05 G) or more The primary pulley speed experienced 300 rpm or more and the secondary pulley speed experienced 250 rpm or more at least once. Secondary pulley speed: More than 150 rpm TCM power supply voltage: More than 11 V Detection condition A Status with the shifting ratio of the primary pulley speed/secondary pulley ratio exceeding 2.981 is 0.2 sec. or more continuously. Detection condition B Status with the shifting ratio of the primary pulley speed/secondary pulley ratio exceeding 3.781 is 0.1 sec. or more continuously. 	 Line pressure solenoid valve Control valve assembly

NOTE:

DC stands for "DRIVING CYCLE" and indicates a series of driving cycle of "Ignition switch OFF \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	: 0.5/8 or more
Vehicle speed	: 40 km/h (25 MPH) or more

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

Is "P0746" detected?

YES >> Go to TM-485, "Diagnosis Procedure".

Revision: November 2015

[CVT: RE0F10D]

P0746 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >	[CVT: RE0F10D]	
NO >> INSPECTION END		
Diagnosis Procedure	INFOID:000000012201183	А
1.CHECK INTERMITTENT INCIDNT		В
Refer to GI-45, "Intermittent Incident".		D
Is the inspection result normal?		
 YES >> Replace transaxle assembly. Refer to <u>TM-577, "Removal and Installation"</u>. NO >> Repair or replace the malfunction items. 		С
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		F
		G

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P0776 PRESSURE CONTROL SOLENOID B

DTC Logic

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible cause
P0776	PC SOLENOID B (Pressure Control Solenoid "B" Performance/Stuck Off)	 When any of 1 or 2 is satisfied and this state is maintained for 10 seconds: 1. When all of the following conditions are satisfied: DTC other than the applicable DTC is not detected. Engine speed: More than 625 rpm Selector lever: Other than P/N position CVT fluid temperature: More than - 20°C (-4°F) TCM power supply: More than 11 V The difference between instruction pressure of secondary pressure and 10-msec-ago instruction secondary pressure is 0 MPa or more Instruction pressure of secondary pressure - secondary pressure: More than 1.2 MPa When all of the following conditions are satisfied and this state is maintained for 1.52 seconds: DTC other than the applicable DTC is not detected. CVT fluid temperature: More than - 20°C (-4°F) Selector lever: Other than P/N position Instruction pressure of secondary pressure - secondary pressure: 0.25 MPa or more DTC other than the applicable DTC is not detected. CVT fluid temperature: More than - 20°C (-4°F) Selector lever: Other than P/N position Instruction pressure of secondary pressure - secondary pressure - 0.25 MPa or more When all of the following conditions are satisfied: DTC other than the applicable DTC is not detected. CVT fluid temperature: More than - 20°C (-4°F) Selector lever: Other than P/N position TCM power supply: More than 11 V When all of the following conditions are satisfied and this state is maintained for 5.5 seconds: DTC other than the applicable DTC is not detected. CVT fluid temperature: More than - 20°C (-4°F) Selector lever: Other than P/N position TCM power supply: More than 11 V When all of the following conditions are satisfied and this state is maintained for 5.5 seconds: DTC other than the applicable DTC is not detected. CVT fluid temperature: More than - 20°C (Secondary pressure solenoid valve

P0776 PRESSURE CONTROL SOLENOID B

PUTTO PRESSURE CONTROL SOLENOID B	
< DTC/CIRCUIT DIAGNOSIS > [CVT: R	RE0F10D]
DTC CONFIRMATION PROCEDURE	
CAUTION: Always drive vehicle at a safe speed.	
1.PREPARATION BEFORE WORK	
If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and least 10 seconds, then perform the next test.	wait for a
>> GO TO 2.	
2. CHECK DTC DETECTION	
1. Start the engine.	
 Drive the vehicle. Maintain the following condition for 20 seconds or more. 	
g i i i i i i i i i i i i i i i i i i i	
Selector lever : "D" position	
Vehicle speed : 40 km/h (25 MPH) or more Accelerator pedal position : 1.0/8 or more	
4. Stop the vehicle.	
5. Check the first trip DTC.	
Is "P0776" detected?	
YES >> Go to <u>TM-487, "Diagnosis Procedure"</u> . NO >> INSPECTION END	
Diagnosis Procedure	D:000000001220118
1.CHECK INTERMITTENT INCIDNT	
Refer to GI-45, "Intermittent Incident".	
Is the inspection result normal?	
 YES >> Replace transaxle assembly. Refer to <u>TM-577, "Removal and Installation"</u>. NO >> Repair or replace the malfunction items. 	

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P0778 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

P0778 PRESSURE CONTROL SOLENOID B

DTC Logic

INFOID:000000012201186

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible cause
P0778	PC SOLENOID B	 When all of the following conditions are satisfied	 Harness or connectors
	(Pressure Control Solenoid	and this state is maintained for 0.48 seconds: TCM power supply voltage: More than 11 V TCM judges that solenoid valve circuit is short-	(Secondary pressure solenoid valve
	"B" Electrical)	ed to ground.	circuit is shorted to ground.) Secondary pressure solenoid valve

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

- 1. Start the engine and wait for 5 seconds or more.
- 2. Check the first trip DTC.

Is "P0778" detected?

YES >> Go to TM-488. "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000012201187

1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

Т	CM		Continuity	
Connector Terminal			Continuity	
F83	39	Ground	Not existed	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2.CHECK CIRCUIT BETWEEN CVT UNIT AND GROUND

Check continuity between CVT unit harness connector terminal and ground.

CVT unit		- Condition		Resistance	
Connector Terminal			Condition	Resistance	
	3 Groun		CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F250		Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	6.5 – 8.5 Ω	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> There is malfunction of secondary pressure solenoid valve. Replace transaxle assembly. Refer to TM-577, "Removal and Installation".

P0779 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

P0779 PRESSURE CONTROL SOLENOID B

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis	s name	DTC det	tection condition	Possible causes
P0779	Pressure control sol Intermittent	enoid B • T • F	and this state i ds: CM power supp 20778 is not det CM judges that	owing conditions are satis- s maintained for 0.2 sec- oly voltage: More than 11 V ected solenoid valve circuit is to power supply.	 Harness or connector (Secondary pressure solenoid valve circuit open or shorted to power supply) Secondary pressure solenoid valve
отс со	NFIRMATION P	ROCEDUR	E		
CAUTIO					
4	ul of the driving s ARATION BEFOR				
		-		agura juat hafara turn	ignition outtoh OFF and wait for at
	seconds, then per			ccurs just before, turn	ignition switch OFF and wait for at
	<i>,</i> ,				
~	>> GO TO 2.				
Z.CHEC	K DTC DETECTI	NC			
	the engine.				
	the vehicle. tain the following	conditions fo	r 5 seconds o	or more.	
	-				
		position			
	thicle speed : 40 k the vehicle.	m/h (25 MPH)	or more		
	k the first trip DT	D.			
	<u>" detected?</u>				
	>> Go to <u>TM-489,</u> >> INSPECTION		Procedure".		
-					
Diagno	sis Procedure				INFOID:000000012201189
1. снес	K CIRCUIT BETV	VEEN TCM	AND CVT UN	IIT	
	ignition switch OF				
2. Disco	onnect TCM connect	ector and C∖			init hornood connector termine!
3. Cheo			ness connec		unit harness connector terminal.
	ТСМ	CV	Гunit		
Connec	or Terminal	Connector	Terminal	- Continuity	
F83	39	F82	3	Existed	
<u>Is the ins</u>	pection result norr	mal?		<u> </u>	
	>> GO TO 2.				
	> Repair or repla	ce damageo	l parts.		
NO	K CIRCUIT BETV				

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P0779 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

CVT unit		- Condition		Resistance	
Connector	nnector Terminal		Condition	Resistance	
				CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω
F250	3	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	6.5 – 8.5 Ω	

Is the inspection result normal?

YES

>> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.
>> There is malfunction of secondary pressure solenoid valve. Replace transaxle assembly. Refer to NO TM-577, "Removal and Installation".

P0826 UP AND DOWN SHIFT SW

DTC Logic

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes	
P0826	Up and Down Shift Switch Cir- cuit	 TCM monitors manual mode, non-manual mode, up or down switch signal, and detects as irregular when impossible input pattern occurs 1 second or more. When shift up/down signal of paddle shifter continuously remains ON for 60 seconds. 	 Manual mode switch Combination meter Harness or connectors (Manual mode switch circuit are open or shorted.) (Paddle shifter switch circuit are open or shorted.) (CAN communication line is open or shorted.) Paddle shifter 	C TM E
DTC CO	NFIRMATION PROCED	URE		F
1 .PREP	ARATION BEFORE WOR	ĸ		
	r "DTC CONFIRMATION F seconds, then perform the	PROCEDURE" occurs just before, turn next test.	ignition switch OFF and wait for at	G
	>> GO TO 2.			
2. CHEC	K DTC DETECTION (PAR	RT 1)		Η
1. Start 2. Shift		osition and wait for 60 second or more.		I
<u>ls "P0826</u> YES	ct "Self Diagnostic Results" <u>5" detected?</u> >> Go to <u>TM-492, "Diagno</u>			J
•	>> GO TO 3. K DTC DETECTION (PAF	27 21		K
	CONSULT	(1 2)		
1. Shift 2. Sele	the selector lever to manu ct "Self Diagnostic Results	al shift gate and wait for 1 second or main "TRANSMISSION".	ore.	L
	<u>5" detected?</u> >> Go to TM-492, "Diagno	sis Procedure"		
	>> GO TO 4.	<u>sis i rocedure</u> .		M
4.CHEC	K DTC DETECTION (PAR	RT 3)		
1. Shift	CONSULT the selector lever to "UP s ct "Self Diagnostic Results"	ide (+ side)" and wait for 1 second or m " in "TRANSMISSION".	ore.	Ν
	<u>S" detected?</u>			0
	>> Go to <u>TM-492, "Diagno</u> >> GO TO 5.	<u>SIS Procedure"</u> .		
5. CHEC	K DTC DETECTION (PAR	RT 4)		Ρ
 Shift Selection Selection 	CONSULT the selector lever to "DOW ct "Self Diagnostic Results <u>5" detected?</u> >> Go to <u>TM-492, "Diagno</u>		or more.	
	>> INSPECTION END	<u></u> .		

>> INSPECTION END

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Diagnosis Procedure

[CVT: RE0F10D]

1. CHECK DTC (COMBINATION METER)

With CONSULT

1. Turn ignition switch ON.

2. Select "Self Diagnostic Results" in "METER/M&A".

Is any DTC detected?

YES >> Check DTC detected item. Refer to <u>MWI-33, "DTC Index"</u>.

NO >> GO TO 2.

2. CHECK MANUAL MODE SWITCH SIGNALS

With CONSULT

1. Turn ignition switch ON.

2. Select "Data Monitor" in "TRANSMISSION".

3. Check the On/Off operations of each monitor item.

Item name	Monitor item	Condition	Status
	MMODE	Manual shift gate position	On
	MMODE	Other than the above	Off
	NONMADO	Manual shift gate position	Off
Manual manda avritati	NONMMODE	Other than the above	On
Manual mode switch		Selector lever: UP (+ side)	On
	UPLVR	Other than the above	Off
	DOWNLVR	Selector lever: DOWN (- side)	On
	DOWNLVR	Other than the above	Off
		Pressed paddle shifter (shift-down)	On
Paddle shifter*	STRDWNSW	Released paddle shifter	Off
	STRUPSW	Pressed paddle shifter (shift-up)	On
	SIRUFSW	Released paddle shifter	Off

*: With paddle shifter

Without CONSULT

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 and paddle shifter* are shifted to the "+ (up)" or "– (down)" side [1st \Leftrightarrow 7th gear].

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO-1 (Manual mode switch is abnormal)>>GO TO 3.

NO-2 (Paddle shifter is abnormal)>>GO TO 8.

3.CHECK MANUAL MODE SWITCH POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.

- 2. Disconnect CVT shift selector connector.
- 3. Turn ignition switch ON.

4. Check voltage between CVT shift selector harness connector terminal and ground.

P0826 UP AND DOWN SHIFT SW

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10D]

	F				\/alta
CVT shif	t selector	_	Condition	n l	Voltage (Approx.)
Connector	Terminal				(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	7		Ignition switch:	ON	12 V
	7		Ignition switch:	OFF	0 V
	8		Ignition switch:	ON	12 V
8	8		Ignition switch:	OFF	0 V
M57		Ground	Ignition switch:	ON	12 V
	9		Ignition switch:	OFF	0 V
			Ignition switch:	ON	12 V
	11		Ignition switch:	OFF	0 V
4.CHECK M 1. Turn igni 2. Check m <u>Is the inspect</u> YES >> C _NO >> F	<u>ion result no</u> GO TO 7. Repair or repl	FF. switch. Refer <u>mal?</u> ace damagec	•		
 Disconne Check co 	tion switch O ect combinat entinuity betw	FF. ion meter cor			
 Turn igni Disconne Check co connecto 	tion switch O	FF. ion meter cor een CVT shif	nector.	ness conr	nector te
 Turn igni Disconne Check co connecto 	tion switch O ect combinat ontinuity betw r terminals.	FF. ion meter cor een CVT shif	nector. t selector harr		nector te
 Turn igni Disconne Check cc connecto CVT shift 	tion switch O ect combinat ontinuity betw r terminals. t selector	FF. ion meter cor reen CVT shif Combina	nector. t selector harr	ness conr	nector te
 Turn igni Disconne Check co connecto CVT shif Connector 	tion switch O ect combinat ontinuity betw r terminals. t selector Terminal	FF. ion meter cor een CVT shif Combina	nector. t selector harr ation meter Terminal	ness conr Continu	ity
 Turn igni Disconne Check cc connecto CVT shift 	tion switch O ect combinat ontinuity betw r terminals. t selector Terminal 7	FF. ion meter cor reen CVT shif Combina	nector. t selector harr ation meter Terminal 36	ness conr	ity
 Turn igni Disconne Check co connecto CVT shif Connector 	tion switch O ect combinat ontinuity betw r terminals. t selector Terminal 7 8	FF. ion meter cor een CVT shif Combina	ation meter Terminal 16	ness conr Continu	ity
1. Turn igni 2. Disconne 3. Check co connector CVT shif Connector M57 Is the inspect YES >> C NO >> F	tion switch O ect combinat ontinuity betw r terminals. t selector Terminal 7 8 9 11 ion result no GO TO 6. Repair or repl	FF. ion meter cor een CVT shif Connector M34 <u>mal?</u> ace damageo	ation meter Terminal 36 16 14 37	Continu Existe	ity
1. Turn igni 2. Disconne 3. Check co connector CVT shif Connector M57 Is the inspect YES >> C NO >> F 6.CHECK C	tion switch O ect combinat ontinuity betw r terminals. t selector Terminal 7 8 9 11 ion result no GO TO 6. Repair or repl IRCUIT BET	FF. ion meter cor een CVT shif Connector M34 <u>mal?</u> ace damaged	ation meter Terminal 36 16 14 37	Continu Existe	nector ter ity d
 Turn igni Disconne Check co connector CVT shif Connector M57 Is the inspect YES >> 0 NO >> F CHECK C Check contin 	tion switch O ect combinat ontinuity betw r terminals. t selector Terminal 7 8 9 11 ion result no GO TO 6. Repair or repl IRCUIT BET uity between	FF. ion meter cor een CVT shif Connector M34 <u>mal?</u> ace damaged	ation meter Terminal 36 16 14 37 d parts. SHIFT SELEC	Continu Existe	nector ter ity d
1. Turn igni 2. Disconne 3. Check co connector CVT shif Connector M57 Is the inspect YES >> C NO >> F 6.CHECK C Check contin CVT shif	tion switch O ect combinat ontinuity betw r terminals. t selector Terminal 7 8 9 11 ion result no 60 TO 6. Repair or repl IRCUIT BET uity between t selector	FF. ion meter cor een CVT shif Connector M34 <u>mal?</u> ace damaged	ation meter Terminal 36 16 14 37 d parts. SHIFT SELEC	Continu Existe	nector ter ity d
 Turn igni Disconne Check co connector CVT shif Connector M57 Is the inspect YES >> 0 NO >> F CHECK C Check contin 	tion switch O ect combinat ontinuity betw r terminals. t selector Terminal 7 8 9 11 ion result no 60 TO 6. Repair or repl IRCUIT BET uity between t selector Terminal	FF. ion meter cor een CVT shif Connector M34 <u>mal?</u> ace damaged	ation meter Terminal 36 16 14 37 4 parts. SHIFT SELEC ector harness	Continu Existe	nector ter ity d
1. Turn igni 2. Disconne 3. Check co connector CVT shif Connector M57 Is the inspect YES >> C NO >> F 6.CHECK C Check contin	tion switch O ect combinat ontinuity betw r terminals. t selector Terminal 7 8 9 11 ion result no 60 TO 6. Repair or repl IRCUIT BET uity between t selector	FF. ion meter cor een CVT shif Connector M34 <u>mal?</u> ace damaged	ation meter Terminal 36 16 14 37 4 parts. SHIFT SELEC ector harness	Continu Existe	nector ter ity d

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

P0826 UP AND DOWN SHIFT SW

< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace damaged parts.

7.CHECK GROUND CIRCUIT

Check continuity between CVT shift selector harness connector terminal and ground.

CVT shif	t selector		Continuity
Connector	Terminal		Continuity
M57	10	Ground	Existed

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace damaged parts.

8. CHECK PADDLE SHIFTER

1. Turn ignition switch OFF.

2. Disconnect paddle shifter connector.

3. Turn ignition switch ON.

4. Check voltage between paddle shifter side harness connector terminals.

	Paddle shifter				
Connector	Terr	minal	Voltage (Approx.)		
M96	3	1	Battery voltage		
M97	3	1	Ballery voltage		

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 11.

9.CHECK PADDLE SHIFTER

Check paddle shifter. Refer to TM-496, "Component Inspection (Paddle Shifter)".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace damaged parts.

10.CHECK GROUND CIRCUIT

Check continuity between paddle shifter vehicle side harness connector terminal and ground.

Paddle	e shifter		Continuity
Connector	Terminal	Ground	Continuity
M96	1	Gibunu	Existed
M97	1		LAISted

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace damaged parts.

11. CHECK POWER SOURCE CIRCUIT

Check voltage between paddle shifter vehicle side harness connector terminal and ground.

Paddle	e shifter	Ground	Voltago (Approx.)	
Connector	Terminal		Voltage (Approx.)	
M96	3		0 V	
M97	3		υv	

Is the inspection result normal?

YES >> GO TO 12.

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P0826 UP AND DOWN SHIFT SW < DTC/CIRCUIT DIAGNOSIS > NO >> Repair or replace damaged parts. 12. CHECK HARNESS BETWEEN PADDLE SHIFTER AND COMBINATION METER (PART 1) 1. Disconnect combination meter connector. Check continuity between paddle shifter vehicle side harness connector terminals and combination meter 2. vehicle side harness connector terminals. Paddle shifter Combination meter Continuity Connector Terminal Connector Terminal M96 3 26 M34 Existed M97 3 5 Is the inspection result normal? YES >> GO TO 13. >> Repair or replace damaged parts. NO 13. CHECK HARNESS BETWEEN PADDLE SHIFTER AND COMBINATION METER (PART 2) Check continuity between paddle shifter vehicle side harness connector terminals and ground. Paddle shifter Continuity Connector Terminal Ground M96 3 Not existed M97 3 Is the inspection result normal? YES >> GO TO 14. NO >> Repair or replace damaged parts. 14.DETECT MALFUNCTIONING ITEMS Check TCM connector pin terminals for damage or loose connection with harness connector. Is the inspection result normal? YES >> Replace TCM. Refer to TM-554, "Exploded View". NO >> Repair or replace damaged parts. Component Inspection (Manual Mode Switch) **1**.MANUAL MODE SWITCH Check continuity between CVT shift selector connector terminals. CVT shift selector Condition Continuity Terminal Manual shift gate position (neutral) Existed 7 - 10Not existed Other than the above Selector lever: DOWN (- side) Existed 8 – 10

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INFOID-000000012201192

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Is the inspection result normal?

9 - 10

10 - 11

YES >> INSPECTION END

Other than the above

Other than the above

Other than the above

Selector lever: UP (+ side)

Manual shift gate position

Not existed

Existed

Not existed

Not existed

Existed

>> Replace the CVT shift selector assembly due to malfunction in manual mode switch. Refer to TM-NO 546, "Removal and Installation".

Component Inspection (Paddle Shifter)

1.CHECK PADDLE SHIFTER

Check continuity between paddle shifter connector terminals.

Paddle	e shifter	Condition	Continuity	
Terr	ninal	Condition		
1	3	Pressed paddle shifter (shift-up)	Existed	
	5	Released paddle shifter	Not existed	
1	3	Pressed paddle shifter (shift-down)	Existed	
	5	Released paddle shifter	Not existed	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace damaged parts.

INFOID:000000012201193

[CVT: RE0F10D]

P0841 TRANSMISSION FLUID PRESSURE SEN/SW A DIAGNOSIS > [CVT: RE0F10D]

< DTC/CIRCUIT DIAGNOSIS >

P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

DTC Logic

INFOID:000000012201194

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible cause
P0841	FLUID PRESS SEN/SW A (Transmission Fluid Pres- sure Sensor/Switch "A" Cir- cuit Range/Performance)	 When all of the following conditions are satisfied and this state is maintained for 5 seconds: TCM power supply voltage: More than 11 V DTC other than the applicable DTC is not detected. Primary pulley speed: 300 rpm or more Secondary pulley speed: 250 rpm or more Target speed for shifting: Less than 0.1 seconds Primary pulley pressure is outside the specified value. 	 Harness or connectors (Secondary pressure sensor circuit is open or shorted.) Harness or connectors (Primary pressure sensor circuit is open or shorted.) Secondary pressure sensor
гс со	NFIRMATION PROCE	DURE	
	<mark>\</mark> : Irive vehicle at a safe sp	hood	
-	ARATION BEFORE WOR		
		PROCEDURE" occurs just before, tu	rn ignition switch OEE and wait for
	seconds, then perform the		in gnition switch OFF and wait for a
		e next test.	
	seconds, then perform the	e next lest.	
	>> GO TO 2.	next lest.	
		next lest.	
CHEC	>> GO TO 2. K DTC DETECTION the engine.		
CHEC . Start . Drive	>> GO TO 2. K DTC DETECTION the engine. the vehicle.		
CHEC Start Drive	>> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition	n for 10 seconds or more.	
CHEC . Start . Drive . Main Se	>> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition elector lever : "D" position	n for 10 seconds or more.	
2.CHEC Start Drive Main Se Ve	>> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition elector lever : "D" position whicle speed : Constant spec		
CHEC Start Drive Main Se Ve CAU Also	>> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition elector lever : "D" position thicle speed : Constant spee TION: keep the accelerator pe	n for 10 seconds or more. ed of 40 km/h (25 MPH)	
2.CHEC Start Drive Main Se Ve CAU Also	>> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition elector lever : "D" position thicle speed : Constant spee TION: keep the accelerator per the vehicle.	n for 10 seconds or more. ed of 40 km/h (25 MPH)	
2.CHEC 5. Start 2. Drive 3. Main Se Ve CAU Also 5. Chec	>> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition elector lever : "D" position whicle speed : Constant speed TION: keep the accelerator peetthe vehicle. kk the first trip DTC.	n for 10 seconds or more. ed of 40 km/h (25 MPH)	
CHEC Start Drive Main Se Ve CAU Also Stop Stop Stop Stop Stop	>> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition elector lever : "D" position ehicle speed : Constant speed TION: keep the accelerator pe the vehicle. ek the first trip DTC. <u>" detected?</u> >> Go to <u>TM-497. "Diagnore</u>	n for 10 seconds or more. ed of 40 km/h (25 MPH) edal position constant.	
CHEC Start Drive Main Se Ve CAU Also Stop Stop Chec Stop YES	>> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition elector lever : "D" position thicle speed : Constant speed TION: keep the accelerator pe the vehicle. the first trip DTC. <u>" detected?</u>	n for 10 seconds or more. ed of 40 km/h (25 MPH) edal position constant.	
CHEC Start Drive Main Se Ve CAU Also Stop Stop Stop YES NO	>> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition elector lever : "D" position ehicle speed : Constant speed TION: keep the accelerator pe the vehicle. ek the first trip DTC. <u>" detected?</u> >> Go to <u>TM-497. "Diagnore</u>	n for 10 seconds or more. ed of 40 km/h (25 MPH) edal position constant.	INFOID:000000012201:
2.CHEC Start Drive Main Se Ve CAU Also Stop Chec s "P0841 YES NO Diagno	>> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition elector lever : "D" position whicle speed : Constant speed TION: keep the accelerator peethe vehicle. kk the first trip DTC. " detected? >> Go to TM-497. "Diagnose of the second secon	n for 10 seconds or more. ed of 40 km/h (25 MPH) edal position constant.	INFOID:0000000122011
2.CHEC Start Drive Main Se Ve CAU Also Stop Schec s "P0841 YES NO Diagno	>> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition elector lever : "D" position thicle speed : Constant speed the vehicle. the vehicle. the vehicle. the vehicle. the first trip DTC. <u>" detected?</u> >> Go to <u>TM-497. "Diagno</u> >> INSPECTION END sis Procedure	n for 10 seconds or more. ed of 40 km/h (25 MPH) edal position constant.	INFOID:0000000122011
2.CHEC 5. Start 2. Drive 3. Main Se Ve CAU Also 5. Chec <u>s "P0841</u> YES NO Diagno 1.CHEC Refer to <u>C</u>	>> GO TO 2. K DTC DETECTION the engine. the vehicle. tain the following condition elector lever : "D" position elector lever : "D	n for 10 seconds or more. ed of 40 km/h (25 MPH) edal position constant.	INFOID:0000000122011

NO >> Repair or replace damaged parts.

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P0847 TRANSMISSION FLUID PRESSURE SEN/SW B

< DTC/CIRCUIT DIAGNOSIS >

P0847 TRANSMISSION FLUID PRESSURE SEN/SW B

DTC Logic

INFOID:000000012201196

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0847	FLUID PRESS SEN/SW B (Transmission Fluid Pressure Sensor/Switch B Circuit Low)	 When all of the following conditions are satisfied and this state is maintained for 5 seconds: CVT fluid temperature: More than -20°C (-4°F) TCM power supply voltage: 11 V or more Secondary pressure sensor voltage: 0.09 V or less 	 Harness or connector (Secondary pressure sensor circuit is open or shorted to ground) Secondary pressure sensor Control valve assembly

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

(B) With CONSULT

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "FLUID TEMP".
- 4. Maintain the following conditions for 10 seconds or more.

FLUID TEMP : -20°C (-4°F)

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 less than $-20^{\circ}C$ ($-4^{\circ}F$) 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-498, "Diagnosis Procedure"</u>. NO >> INSPECTION END

Diagnosis Procedure

1.CHECK TCM INPUT SIGNALS

- 1. Turn ignition switch OFF.
- 2. Start the engine.
- 3. Check voltage between TCM harness connector terminals.

+ TCM		_	Condition	Voltage
Connector	Terminal			
F83	16	Ground	 After engine warm up Selector lever: "N" position At idle 	1.2 – 1.3 V

Is the inspection result normal?

Revision: November 2015

< DTC/CIR	-	-	NSMISSI	ON FLUID PRESSURE SEN/SW B [CVT: RE0F10D]	
YES >>		ermittent inc	ident. Refer	to <u>GI-45. "Intermittent Incident"</u> .	А
2. снеск	CIRCUIT I	BETWEEN T	CM AND C	VT UNIT (PART 1)	
1. Turn ig 2. Discon	nition swite	ch OFF. connector ar	nd CVT unit		В
тс	M	CVT	unit	Continuity	С
Connector	Terminal	Connector	Terminal	Continuity	
	11		13		ТΜ
F83	16	F82	14	Existed	
	26		22		Е
<u>Is the inspe</u> YES >>	 GO TO 3. 				
		replace mal	functioning	parts.	_
3. снеск	CIRCUIT I	BETWEEN T	CM AND C	VT UNIT (PART 2)	F
Check cont	inuity betw	een TCM ha	irness conn	ector terminals and ground.	G
	CM		Continuity		
Connector	Terminal				Н
F83	16 26	Ground	Not existed		
Is the inspe			<i>.</i> .		
YES >>	There is 577, "Rer	malfunction	of secondar stallation".	ry pressure sensor. Replace transaxle assembly. Refer to \underline{TM} -	
NO >>		replace mal		parts.	J
					IZ.
					Κ
					L
					M
					NI
					Ν
					0
					Ρ

P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

< DTC/CIRCUIT DIAGNOSIS >

P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

DTC Logic

INFOID:000000012201198

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0848	FLUID PRESS SEN/SW B (Transmission Fluid Pressure Sensor/Switch B Circuit Low)	 When all of the following conditions are satisfied and this state is maintained for 5 seconds: CVT fluid temperature: More than -20°C (-4°F) TCM power supply voltage: More than 11 V Instruction secondary pressure: 5.7 MPa or less Secondary pressure sensor voltage: 4.7 V or more 	 Harness or connector (Secondary pressure sensor circuit is shorted to power supply) Secondary pressure sensor Control valve assembly

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

With CONSULT

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "FLUID TEMP".
- 4. Maintain the following conditions for 10 seconds or more.

FLUID TEMP : More than -20°C (-4°F)

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 less than $-20^{\circ}C$ ($-4^{\circ}F$) 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-500, "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000012201199

1.CHECK TCM INPUT SIGNALS

- 1. Turn ignition switch OFF.
- 2. Start the engine.
- 3. Check voltage between TCM harness connector terminals.

P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10D]

+ - Condition Voltage $\overline{Connector}$ Terminal - Condition Voltage $\overline{Connector}$ Terminal - After engine warm up . $\overline{F83}$ 16 Ground • After engine warm up . $\overline{F83}$ 16 Ground • Selector lever: "N" position 1.2 – 1.3 V Is the inspection result normal? . YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident". NO >> GO TO 2. . . 2.CHECK SECONDARY PRESSURE SENSOR POWER CIRCUIT . 1. Turn ignition switch OFF. . . 2. Connect TCM connector. . . 3. Disconnect CVT unit connector. . . 4. Turn ignition switch ON. . . 5. Check voltage between CVT unit harness connector terminal and ground. . $\overline{CVT unit}$ - Voltage (Approx.)	
Connector Terminal • After engine warm up F83 16 Ground • After engine warm up • Selector lever: "N" position 1.2 – 1.3 V s the inspection result normal? YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident". NO >> GO TO 2. 2.CHECK SECONDARY PRESSURE SENSOR POWER CIRCUIT 1. Turn ignition switch OFF. 2. Connect TCM connector. 3. Disconnect CVT unit connector. 4. Turn ignition switch ON. 5. Check voltage between CVT unit harness connector terminal and ground.	
F83 16 Ground • After engine warm up • Selector lever: "N" position 1.2 – 1.3 V s the inspection result normal? YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident". NO >> GO TO 2. 2.CHECK SECONDARY PRESSURE SENSOR POWER CIRCUIT 1. Turn ignition switch OFF. 2. Connect TCM connector. 3. Disconnect CVT unit connector. 4. Turn ignition switch ON. 5. Check voltage between CVT unit harness connector terminal and ground. + Voltage (Approx.)	
s the inspection result normal? YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident". NO >> GO TO 2. 2.CHECK SECONDARY PRESSURE SENSOR POWER CIRCUIT 1. Turn ignition switch OFF. 2. Connect TCM connector. 3. Disconnect CVT unit connector. 4. Turn ignition switch ON. 5. Check voltage between CVT unit harness connector terminal and ground.	
YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident". NO >> GO TO 2. 2.CHECK SECONDARY PRESSURE SENSOR POWER CIRCUIT 1. Turn ignition switch OFF. 2. Connect TCM connector. 3. Disconnect CVT unit connector. 4. Turn ignition switch ON. 5. Check voltage between CVT unit harness connector terminal and ground. + Voltage (Approx.)	
NO >> GO TO 2. 2.CHECK SECONDARY PRESSURE SENSOR POWER CIRCUIT 1. Turn ignition switch OFF. 2. Connect TCM connector. 3. Disconnect CVT unit connector. 4. Turn ignition switch ON. 5. Check voltage between CVT unit harness connector terminal and ground. + Voltage (Approx.)	
 Turn ignition switch OFF. Connect TCM connector. Disconnect CVT unit connector. Turn ignition switch ON. Check voltage between CVT unit harness connector terminal and ground. 	
 Turn ignition switch OFF. Connect TCM connector. Disconnect CVT unit connector. Turn ignition switch ON. Check voltage between CVT unit harness connector terminal and ground. 	
 Disconnect CVT unit connector. Turn ignition switch ON. Check voltage between CVT unit harness connector terminal and ground. 	
Turn ignition switch ON. Check voltage between CVT unit harness connector terminal and ground.	
+ Voltage (Approx.)	
CVT unit Voltage (Approx.)	
CVT unit Voltage (Approx.)	
(Approx.)	
Connector Terminal	
F82 22 Ground 5.0 V	
s the inspection result normal?	
YES >> GO TO 3.	
NO >> Repair or replace malfunctioning parts.	
3.CHECK SECONDARY PRESSURE SENSOR SIGNAL CIRCUIT	
Check voltage between CVT unit harness connector terminal and ground.	
+	
CVT upit – Voltage	
Connector Terminal (Approx.)	
F82 14 Ground 0 V	
s the inspection result normal?	
YES >> There is malfunction of secondary pressure sensor. Replace transaxle assembly. Refer	to TM-
577, "Removal and Installation".	to <u>1111</u>
NO >> Repair or replace malfunctioning parts.	

P084C TRANSMISSION FLUID PRESSURE SEN/SW H

< DTC/CIRCUIT DIAGNOSIS >

P084C TRANSMISSION FLUID PRESSURE SEN/SW H

DTC Logic

INFOID:000000012201200

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P084C	FLUID PRESS SEN/SW H (Transmission Fluid Pressure Sensor/Switch H Circuit Low)	 When all of the following conditions are satisfied and this state is maintained for 5 seconds: CVT fluid temperature: More than -20°C (-4°F) TCM power supply voltage: More than 11 V Primary pressure sensor voltage: 0.09 V or less 	(Primary pressure sensor circuit is open or shorted to ground)

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

(B) With CONSULT

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "FLUID TEMP".
- 4. Maintain the following conditions for 10 seconds or more.

FLUID TEMP : More than -20°C (-4°F)

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 less than $-20^{\circ}C$ ($-4^{\circ}F$) and the engine is cold, warm up the engine for approximately 5 minutes.

2. Check the first trip DTC.

Is "P084C"detected?

YES >> Go to <u>TM-502</u>, "Diagnosis Procedure". NO >> INSPECTION END

Diagnosis Procedure

1.CHECK TCM INPUT SIGNALS

- 1. Turn ignition switch OFF.
- 2. Start the engine.
- 3. Check voltage between TCM harness connector terminals.

+ TCM		- Condition	Voltage	
Connector	Terminal			
F83	17	Ground	 After engine warm up Selector lever: "N" position At idle 	0.7 – 0.85 V

Is the inspection result normal?

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< DTC/CIR			NSMISSI	ON FLUID PRESSURE SEN/SW H [CVT: RE0F10D]
			ident. Refer	to GI-45, "Intermittent Incident".
NO >>	• GO TO 2			
2. CHECK	CIRCUIT	BETWEEN	TCM AND C	VT UNIT (PART 1)
2. Discon		connector a	nd CVT unit M harness o	connector. connector terminals and CVT unit harness connector terminals.
тс	CM	CV	Гunit	
Connector	Terminal	Connector	Terminal	- Continuity
	11		18	
F83	17	F82	13	Existed
Ť	26		22	
Is the inspe	ection resul	t normal?		
	GO TO 3		.	
•	•	•	functioning	•
				SVT UNIT (PART 2)
Check cont	inuity betw	een TCM ha	arness conn	ector terminals and ground.
	CM		Continuity	
Connector	Terminal			
F83	17	Ground	Not existed	
	26			
Is the inspe			c	
YES >>		and Installa		pressure sensor. Replace transaxle assembly. Refer to TM-577.
NO >>			functioning	parts.

P084D TRANSMISSION FLUID PRESSURE SEN/SW H

< DTC/CIRCUIT DIAGNOSIS >

P084D TRANSMISSION FLUID PRESSURE SEN/SW H

DTC Logic

INFOID:000000012201202

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P084D	FLUID PRESS SEN/SW H (Transmission Fluid Pressure Sensor/Switch "H" Circuit High)	 When all of the following conditions are satisfied and this state is maintained for 5 seconds: CVT fluid temperature: More than -20°C (-4°F) TCM power supply voltage: More than 11 V Primary pressure sensor voltage: 4.7 V or more 	 Harness or connector (Primary pressure sensor circuit is open or shorted to ground) Primary pressure sensor Control valve assembly

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

(B) With CONSULT

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "FLUID TEMP".
- 4. Maintain the following conditions for 10 seconds or more.

FLUID TEMP : More than -20°C (-4°F)

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 less than $-20^{\circ}C$ ($-4^{\circ}F$) and the engine is cold, warm up the engine for approximately 5 minutes.

2. Check the first trip DTC.

Is "P084D" detected?

YES >> Go to <u>TM-504</u>, "Diagnosis Procedure". NO >> INSPECTION END

Diagnosis Procedure

1.CHECK TCM INPUT SIGNALS

- 1. Turn ignition switch OFF.
- 2. Start the engine.
- 3. Check voltage between TCM harness connector terminals.

+ TCM		_	Condition	Voltage
Connector	Terminal			
F83	17	Ground	 After engine warm up Selector lever: "N" position At idle 	0.7 – 0.85 V

Is the inspection result normal?

< DTC/CIRC			NISSION	FLUID PRESSURE SEN/SW H [CVT: RE0F10D]	
YES >> C	heck intermi		. Refer to <u>GI</u>	-45, "Intermittent Incident".	
NO >> G 2.CHECK PI	GO TO 2. RIMARY PRE	-SSURF SF	NSOR POW	ER CIRCUIT	A
 Turn ignit Connect Disconne Turn ignit 	tion switch O TCM connec ect CVT unit c tion switch O	FF. tor. connector. N.		ector terminal and ground.	B
+ CVT Connector	r unit Terminal	_	Voltage (Approx.)		ТМ
F82	22	Ground	5.0 V		Е
	GO TO 3. Repair or repla	ace malfunct	• •	AL CIRCUIT	F
Check voltage	e between C	VT unit harne	ess connecto	r terminal and ground.	G
	+				
CVT		_	Voltage (Approx.)		Н
Connector F82	Terminal 13	Ground	0 V		
Is the inspect	ion result nor	mal?			I
<u>"</u> [here is malfu Removal and Repair or repla	Installation"		re sensor. Replace transaxle assembly. Refer to <u>TM-577.</u>	J
					K
					L
					M
					Ν
					0

Ρ

P0863 TCM COMMUNICATION

< DTC/CIRCUIT DIAGNOSIS >

P0863 TCM COMMUNICATION

DTC Logic

INFOID:000000012201204

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0863	CONTROL UNIT (CAN) (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

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

Is "P0863" detected?

YES >> Go to <u>TM-506</u>, "Diagnosis Procedure". NO >> INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDNT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace TCM. Refer to <u>TM-554, "Removal and Installation"</u>.
- NO >> Repair or replace malfunctioning parts.

< DTC/CIRCUIT DIAGNOSIS > P0890 TCM

DTC Logic

[CVT: RE0F10D]

Α

В

INFOID:000000012201206

DTC DETECTION LOG	IC
-------------------	----

	CONSULT screen terr (Trouble diagnosis cont	-	DTC detection condition	Possible causes
P0890	TCM (Transmission Control Mo Power Relay Sense Circ Low)	odule uit fied and onds: • TCM	I of the following conditions are satis- this state is maintained for 0.2 sec- power supply voltage: More than 11 V y voltage: Less than 8.4 V	 Harness or connector (TCM power supply (back-up) circuit is open or shorted.) TCM
	NFIRMATION PRO ARATION BEFORE V			
anothe		ON PROCED		ignition switch OFF and wait for at
	>> GO TO 2. K DTC DETECTION			
. Chec	the engine and wait for the DTC.	or 5 seconds	or more.	
YES :	>> Go to <u>TM-507, "Dia</u> >> INSPECTION END		edure".	
Diagno	sis Procedure			INFOID:000000012201207
1				
	K TCM POWER SUP	PLY (BACK-	UP) CIRCUIT	
. Turn . Disco	ignition switch OFF. onnect TCM connecto k voltage between TC	pr.	UP) CIRCUIT	
. Turn . Disco	ignition switch OFF. onnect TCM connecto k voltage between TC +	pr.	connector terminals and ground	
. Turn . Disco	ignition switch OFF. onnect TCM connecto k voltage between TC + TCM	pr.		
. Turn . Disco . Chec	ignition switch OFF. onnect TCM connecto k voltage between TC + TCM	pr.	connector terminals and ground	
. Turn Disco Connec F83 Sthe ins YES NO	ignition switch OFF. onnect TCM connecto sk voltage between TC + TCM tor Terminal 45	or. CM harness of Ground	connector terminals and ground	

TM-507

Refer to <u>GI-45. "Intermittent Incident"</u>.

Is the inspection result normal?

- YES >> Replace TCM. Refer to <u>TM-554, "Removal and Installation"</u>.
- NO >> Repair or replace malfunctioning parts.

P0962 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

P0962 PRESSURE CONTROL SOLENOID A

DTC Logic

А

INFOID:000000012201208

[CVT: RE0F10D]

	CONSULT scree	en terms			–
DTC	(Trouble diagnosis		DTC detection condi	tion	Possible causes
P0962	PC SOLENOID A (Pressure Control S Control Circuit Low	Solenoid A	When all of the following condit ied and this state is maintained onds: TCM power supply voltage: N TCM judges that solenoid val shorted to ground.	for 0.2 sec- lore than 11 V	 Harness or connector (Line pressure solenoid valve circuit is shorted to ground) Line pressure solenoid valve
тс со	NFIRMATION F	ROCEDU	RE		
.PREP	ARATION BEFOR	RE WORK			
				before, turn	gnition switch OFF and wait for a
east 10 s	econds, then per	torm the ne	ext test.		
;	>> GO TO 2.				
2.CHEC	K DTC DETECT	ON			
	the engine and w		conds or more.		
	k the first trip DT <u>" detected?</u>	С.			
	> Go to <u>TM-509</u>	, "Diagnosi	s Procedure".		
NO >	>> INSPECTION	END			
Diagnos	sis Procedure	;			INFOID:00000001220120
І.снес	K CIRCUIT BET	WEEN TCM	I AND CVT UNIT		
	ignition switch O				
			CVT unit connector. arness connector termina	al and groups	1
. 01100					•
	ТСМ	_	Continuity		
Connect					
	30	Ground	Not existed		
F83	a a atta a a tra U				
s the insp	Dection result nor	mal?			
s the insp YES	oection result nor >> GO TO 2. >> Repair or repla		ed parts.		
s the insp YES NO	>> GO TO 2. >> Repair or repla	ace damag	ed parts. UNIT AND GROUND		
s the insp YES NO CHEC	>> GO TO 2. >> Repair or repla K CIRCUIT BET\	ace damage VEEN CVT		I and ground	
s the insp YES NO CHEC	>> GO TO 2. >> Repair or repla K CIRCUIT BET\ ntinuity between	ace damage VEEN CVT	UNIT AND GROUND	I and ground	
s the ins YES NO CHEC Check co	> GO TO 2. > Repair or replace K CIRCUIT BET ntinuity between CVT unit	ace damage VEEN CVT	UNIT AND GROUND	Il and ground	Resistance
s the insp YES NO CHEC	> GO TO 2. > Repair or replace K CIRCUIT BET ntinuity between CVT unit	ace damage VEEN CVT	UNIT AND GROUND		

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

TM-509

CVT fluid temperature: 80°C (176°F)

6.5 – 8.5 Ω

P0962 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

NO >> There is malfunction of line pressure solenoid valve. Replace transaxle assembly. Refer to <u>TM-</u> <u>577, "Removal and Installation"</u>.

P0963 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

P0963 PRESSURE CONTROL SOLENOID A

DTC Logic

[CVT: RE0F10D]

INFOID:000000012201210

А

TC DET	ECTION LOGI	С				
DTC	CONSULT scree (Trouble diagnosis		DTC det	ection condition	Possible causes	
P0963	PC SOLENOID A (Pressure Control S Control Circuit High	solenoid A)	d and this state is ds: TCM power supp P0962 is not dete	owing conditions are sat s maintained for 0.2 sec ly voltage: More than 11 ected solenoid valve circuit is	Harness or connector (Line pressure solepoid va	supply)
	NFIRMATION F		RE			
1.PREP/	ARATION BEFOR	RE WORK				
				ccurs just before, tu	rn ignition switch OFF and	wait for at
	econds, then per		l lest.			
>	> GO TO 2.					
2. снесі	K DTC DETECTI	ON				
	the engine and w		onds or more.			
	k the first trip DT	С.				
	<u>" detected?</u> ·> Go to <u>TM-511</u> ,	"Diagnosis I	Procedure"			
NO >	> INSPECTION	END	<u>-locedule</u> .			
Diagnos	sis Procedure	9			INFOI	D:0000000012201211
1. CHEC	K CIRCUIT BET	VEEN TCM	AND CVT UN	IT		
	gnition switch Of					
	nnect TCM conn			ctor. tor terminal and gro	und	
	ТСМ	CV	T unit	Continuity		
Connecto	or Terminal	Connector	Terminal	Continuity		
F83	30	F82	1	Existed		
	ection result nor	mal?				
	> GO TO 2. > Repair or replay	ace damager	1 narts			
~	Kepall of Tepla CIRCUIT BET\	-	-	ROUND		
				or terminal and gro	ind	
	CVT unit			Condition	Resistance	
Connecto	or Terminal	_		Jonallion	Resistance	

CVTUIII			Condition	Resistance	
Connector	Terminal		Condition	Resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F250	1	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	6.5 – 8.5 Ω	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

P0963 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

NO >> There is malfunction of line pressure solenoid valve. Replace transaxle assembly. Refer to <u>TM-</u> <u>577, "Removal and Installation"</u>.

P0965 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

P0965 PRESSURE CONTROL SOLENOID B

DTC Logic

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes	C
P0965	PC SOLENOID B (Pressure Control Solenoid B Control Circuit Range Perfor- mance)	 When any of 1 or 2 is satisfied and this state is maintained for 10 seconds: When all of the following conditions are satisfied: DTC other than the applicable DTC is not detected. Engine speed: More than 625 rpm Selector lever: Other than P/N position CVT fluid temperature: More than -20°C (4°F) TCM power supply: More than 11 V The difference between instruction pressure of primary pressure and 10-msecago instruction primary pressure is 0 MPa or more Instruction pressure of primary pressure: 0.86 MPa or more Instruction pressure of primary pressure - primary pressure: More than 1.2 MPa When all of the following conditions are satisfied and this state is maintained for 1 second: DTC other than the applicable DTC is not detected. CVT fluid temperature: More than -20°C (4°F) Selector lever: Other than P/N position Engine speed: More than 625 rpm Instruction pressure of primary pressure: More than 20°C (4°F) Selector lever: Other than P/N position Engine speed: More than 625 rpm Instruction pressure of primary pressure: More than 2 MPa Primary pressure: 0.4 MPa or less When all of the following conditions are satisfied: DTC other than the applicable DTC is not detected. CVT fluid temperature: More than -20°C (4°F) Selector lever: Other than P/N position TCM power supply: More than 11 V When all of the following conditions are satisfied and this state is maintained for 5.5 seconds: DTC other than the applicable DTC is not detected. CVT fluid temperature: More than -20°C (4°F) Selector lever: Other than P/N position TCM power supply: More than 11 V When all of the following conditions are satisfied and this state is maintained for 5.5 seconds: DTC other than the applicable DTC is not detected. CVT fluid temperature: More than	 Harness or connector (Primary pressure solenoid valve circuit is open or shorted.) Primary pressure solenoid valve 	E F G H H H H K N F F

DTC CONFIRMATION PROCEDURE

[CVT: RE0F10D]

A

В

P0965 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10D]

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 20 seconds or more.

Vehicle speed : 40 km/h (25 MPH) or more

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

Is "P0965" detected?

YES >> Go to <u>TM-514</u>, "Diagnosis Procedure". NO >> INSPECTION END

Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

Is the inspection result normal?

- YES >> Replace transaxle assembly. Refer to TM-577, "Removal and Installation".
- NO >> Repair or replace malfunctioning parts.

P0966 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

P0966 PRESSURE CONTROL SOLENOID B

DTC Logic

INFOID:000000012201214

[CVT: RE0F10D]

DTC DET	ECTION LOGI	IC			
DTC	CONSULT scree (Trouble diagnosis		DTC detection condition	Possible ca	auses
P0966	PC SOLENOID B (Pressure Control S Control Circuit Low	Solenoid B)	hen all of the following conditions are satis d and this state is maintained for 0.48 sec- ds: TCM power supply voltage: More than 11 V TCM judges that solenoid valve circuit is shorted to ground.	Harness or connector (Primary pressure so	lenoid valve cir-
DTC CON	NFIRMATION F	PROCEDUR	RE		
1. PREPA	RATION BEFOR	RE WORK			
	"DTC CONFIRM econds, then per		OCEDURE" occurs just before, tur tt test.	n ignition switch OFF	and wait for at
~	> GO TO 2.				
	K DTC DETECT				
	the engine and w the first trip DT		onds or more.		
	<u>detected?</u>	0.			
	> Go to <u>TM-515</u> > INSPECTION		Procedure".		
	sis Procedure				INFOID:000000012201215
1.CHECH	K CIRCUIT BET	WEEN TCM	AND CVT UNIT		
2. Disco		ector and C	/T unit connector. rness connector terminal and grou	nd.	
	ТСМ				
Connecto			Continuity		
F83	40	Ground	Not existed		
Is the insp	ection result nor	mal?	<u> </u>		
	> GO TO 2.				
~	Repair or replaced and the second	-	•		
			UNIT AND GROUND		
Check cor	ntinuity between	CVT unit har	rness connector terminal and grou	าน.	
	CVT unit		Condition	Desister	
Connecto	or Terminal	1 —	Condition	Resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	

Is the inspection result normal?

2

F250

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

Ground

TM-515

CVT fluid temperature: 50°C (122°F)

CVT fluid temperature: 80°C (176°F)

2016 JUKE

 $6.0-8.0~\Omega$

6.5 – 8.5 Ω

P0966 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

NO >> There is malfunction of primary pressure solenoid valve. Replace transaxle assembly. Refer to <u>TM-577, "Removal and Installation"</u>.

P0967 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

P0967 PRESSURE CONTROL SOLENOID B

DTC Logic

[CVT: RE0F10D]

INFOID:000000012201216

DTC	CONSULT scree (Trouble diagnosis		DTC det	ection condition	Possible causes
P0967	PC SOLENOID B (Pressure Control S Control Circuit High	Solenoid B • I • I	d and this state is ds: TCM power supp P0966 is not dete	owing conditions are satis s maintained for 0.2 sec- oly voltage: More than 11 v ected solenoid valve circuit is	Harness or connector (Primary pressure solepoid valve cir
4	NFIRMATION F		E		
	"DTC CONFIRM econds, then per			ccurs just before, tur	n ignition switch OFF and wait for a
	econus, then per		l lesi.		
_	•> GO TO 2.				
2.CHECK	K DTC DETECTI	ON			
2. Check <u>ls "P0967"</u> YES >	the engine and w the first trip DT <u>detected?</u> So to <u>TM-517</u> NSPECTION	C. , "Diagnosis I			
	sis Procedure				INFOID:00000001220121
- 1. снеси	K CIRCUIT BET	VEEN TCM	AND CVT UN	IT	
2. Disco	gnition switch Ol nnect TCM conn < continuity betw	ector and C\		ctor. tor terminal and grou	nd.
	ТСМ	CV	T unit	Continuity	
Connecto		Connector	Terminal	-	
F83	40	F82	2	Existed	
YES > NO >	ection result nor → GO TO 2. → Repair or repla < CIRCUIT BET\	ace damageo	•	ROUND	
				or terminal and grou	nd.
	CVT unit				
Connecto		_	(Condition	Resistance

Is the inspection result normal?

F250

2

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

Ground

CVT fluid temperature: 20°C (68°F)

CVT fluid temperature: 50°C (122°F)

CVT fluid temperature: 80°C (176°F)

5.5 – 7.0 Ω

 $6.0 - 8.0 \Omega$

 $6.5 - 8.5 \Omega$

P0967 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

NO >> There is malfunction of primary pressure solenoid valve. Replace transaxle assembly. Refer to <u>TM-577, "Removal and Installation"</u>.

P17F0 CVT JUDDER (T/M INSPECTION)

< DTC/CIRCUIT DIAGNOSIS >

P17F0 CVT JUDDER (T/M INSPECTION)

DTC Description

[CVT: RE0F10D]

INFOID:000000013014558

А

DTC DETECTION LOGIC В CONSULT screen terms DTC DTC detection condition (Trouble diagnosis content) **Diagnosis** condition ____ Signal **CVT JUDDER (T/M INSPECTION)** P17F0 ТΜ [CVT Judder (Transmission inspection)] Threshold Malfunction in chain belt and pulley Diagnosis delay time POSSIBLE CAUSE Ε Transmission assembly FAIL-SAFE Not changed from normal driving DTC CONFIRMATION PROCEDURE CAUTION: TM-519, "Diagnosis Procedure" must be performed before starting "DTC CONFIRMATION PROCE-DURE". Always drive vehicle at a safe speed. Н **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. With the throttle position 1/8, accelerate the vehicle from 0 km/h (0 MPH) to 50 km/h (31 MPH). Drive the vehicle at 50 km/h (31 MPH) constant speed for 15 seconds. 2. Κ Stop the vehicle with a brake force which allows the vehicle to stop in 10 to 20 seconds. 3. Repeat steps 1 to 3 above 5 times. 4. Is "P17F0" detected? L YES >> Go to TM-519, "Diagnosis Procedure". >> INSPECTION END NO **Diagnosis** Procedure INFOID:000000013014559 M **1**.REPLACE TRANSAXLE ASSEMBLY Replace the transaxle assembly. Refer to TM-577, "Removal and Installation". Ν >> END

Ρ

P17F1 CVT JUDDER (C/V INSPECTION)

< DTC/CIRCUIT DIAGNOSIS >

P17F1 CVT JUDDER (C/V INSPECTION)

DTC Description

DTC DETECTION LOGIC

CAUTION:

If DTC P17F1 is displayed with DTC P17F0, perform only trouble diagnosis of DTC P17F0. Refer to <u>TM-519, "DTC Description"</u>.

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC	C detection condition
		Diagnosis condition	_
P17F1	CVT JUDDER (C/V INSPECTION)	Signal	_
PI/FI	[CVT judder (Control Valve Inspection)]	Threshold	Malfunction in control valve
		Diagnosis delay time	_

POSSIBLE CAUSE

Control valve

FAIL-SAFE

Not changed from normal driving

DTC CONFIRMATION PROCEDURE

- CAUTION:
- <u>TM-520, "Diagnosis Procedure"</u> must be performed before starting "DTC CONFIRMATION PROCE-DURE".

• Always drive vehicle at a safe 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. With the throttle position 1/8, accelerate the vehicle from 0 km/h (0 MPH) to 50 km/h (31 MPH).
- 2. Drive the vehicle at 50 km/h (31 MPH) constant speed for 15 seconds.
- 3. Stop the vehicle with a brake force which allows the vehicle to stop in 10 to 20 seconds.
- 4. Repeat steps 1 to 3 above 5 times.

Is "P17F1" detected?

YES >> Go to <u>TM-520, "Diagnosis Procedure"</u>. NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000013014561

1.REPLACE TRANSAXLE ASSEMBLY

There is malfunction of control valve. Replace the transaxle assembly. Refer to <u>TM-577, "Removal and Instal-</u> lation".

>> END

P17F2 CVT JUDDER (T/C INSPECTION)

< DTC/CIRCUIT DIAGNOSIS >

P17F2 CVT JUDDER (T/C INSPECTION)

DTC Description

[CVT: RE0F10D]

INFOID:000000013014562

А

DTC DETECTION LOGIC В CONSULT screen terms DTC DTC detection condition (Trouble diagnosis content) **Diagnosis** condition ____ CVT JUDDER (T/C INSPECTION) Signal P17F2 [CVT judder (Torque Converter Inspec-ТΜ Threshold Malufunction in torque converter tion)] Diagnosis delay time POSSIBLE CAUSE Ε Torque converter FAIL-SAFE Not changed from normal driving DTC CONFIRMATION PROCEDURE CAUTION: TM-521, "Diagnosis Procedure" must be performed before starting "DTC CONFIRMATION PROCE-DURE". Always drive vehicle at a safe speed. Н **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. With the throttle position 1/8, accelerate the vehicle from 0 km/h (0 MPH) to 50 km/h (31 MPH). Drive the vehicle at 50 km/h (31 MPH) constant speed for 15 seconds. 2. Κ Stop the vehicle with a brake force which allows the vehicle to stop in 10 to 20 seconds. 3. Repeat steps 1 to 3 above 5 times. 4. Is "P17F2" detected? L YES >> Go to TM-521, "Diagnosis Procedure". >> INSPECTION END NO **Diagnosis** Procedure INFOID:000000013014563 M **1**.REPLACE TORQUE CONVERTER Replace the torque converter. Refer to TM-581, "Disassembly". Ν >> END Ρ

P2765 INPUT SPEED SENSOR B

DTC Logic

INFOID:000000012201218

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2765	INPUT SPEED SENSOR B (Input/Turbine Speed Sensor B Circuit)	 When 1 is satisfied and any of 2, 3 or 4 is satisfied and this state is maintained for 5 seconds: 1. When all of the following conditions are satisfied: TCM power supply voltage: More than 11 V After range change completion, it spends 2 seconds or more. 2. When all of the following conditions are satisfied and this state is maintained for 5 seconds: Secondary pulley speed: Less than 149 rpm Primary pulley speed: 1,000 rpm or more 3. When all of the following conditions are satisfied and this state is maintained for 0.5 seconds: Secondary pulley speed: 1,000 rpm or more 3. When all of the following conditions are satisfied and this state is maintained for 0.5 seconds: 10-msec-ago secondary pulley speed: 1000 rpm or more Now secondary pulley speed: 0 rpm 4. When all of the following conditions are satisfied and this state is maintained for 5 seconds: Range: D Engine speed: 450 rpm or more Primary pulley speed: 300 rpm or more Secondary pulley speed: 300 rpm or more Input speed: 300 rpm or more The difference between engine speed and primary pulley speed is 1,000 rpm or less The difference between engine speed and input speed is 1,000 rpm or less The difference between primary pulley speed and input speed is 1,000 rpm or less The difference between primary pulley speed and input speed is 1,000 rpm or less The difference between primary pulley speed and input speed is 1,000 rpm or less The difference between primary pulley speed and input speed is 1,000 rpm or less The difference between primary pulley speed and input speed is 1,000 rpm or less The difference between primary pulley speed: More than 2.9 Primary pulley speed/secondary pulley speed: Less than 0.3 	 Harness or connector (Output speed sensor circuit is open or shorted) Output 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.

P2765 INPUT SPEED SENSOR B

< DTC/CIRCUIT DIAGNOSIS >

>> 2.снеск	GO TO 2. DTC DETE	CTION			A
2. Drive th	e engine. ne vehicle. n the follow	ving conditio	ons for 10 s	econds or more.	В
Engir	ne speed	: "D" position : 1,200 rpm or : 55 km/h (34			С
4. Stop the 5. Check to <u>Is "P2765" o</u>	e vehicle. the first trip detected?	DTC.			TM E
	INSPECTI	<u>523, "Diagr</u> ON END	IOSIS PIOCE	<u>uure</u> .	
Diagnosis	s Proced	ure		INFOID:000000012201219	F
1.снеск	OUTPUT S	PEED SEN	ISOR POW	/ER CIRCUIT	
	nition switcl	h OFF. speed sens	sor connec	or	G
3. Turn igi	nition switcl	h ON.		nsor harness connector terminal and ground.	Н
	F			-	
Output spe Connector	eed sensor Terminal	_	Voltage		I
F22	3	Ground	10 – 16 V	-	
NO >>	GO TO 2. GO TO 6.		ISOR GRC	UND CIRCUIT	J
Check conti	inuity betwe	en output s	speed sens	or harness connector terminal and ground.	L
Output spe Connector	eed sensor Terminal		Continuity	-	M
F22	1	Ground	Existed		IVI
NO >>	GO TO 3. Repair or r	eplace mal	•	parts. PEED SENSOR AND TCM (PART 1)	Ν
 Turn igi Disconi 	nition switcl nect TCM c continuity b	h OFF. connector. petween out		sensor harness connector terminal and TCM harness connector	O P

	Output sp	eed sensor	TCM		Continuity	
	Connector Terminal C		Connector	Terminal	Continuity	
_	F22	2	F83	34	Existed	
			10			

Is the inspection result normal?

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

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

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

Output sp	eed sensor		Continuity
Connector Terminal			Continuity
F22	2	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

- **5.**CHECK TCM INPUT SIGNALS
- 1. Connect all of disconnected connectors.
- 2. Lift the vehicle.
- 3. Start the engine.
- 4. Check frequency of output speed sensor.

+ TCM		_	Condition	Frequency (Approx.)
Connector	Terminal			
F83	34	Ground	 Shift position: "M1" position Vehicle speed: 20 km/h (12 MPH) 	200 Hz 2.5mSec/div 5V/div JSDIA1904GB

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Replace output speed sensor. Refer to <u>TM-564</u>, "<u>Removal and Installation</u>".

6.CHECK CIRCUIT BETWEEN IPDM E/R AND OUTPUT SPEED SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R connector.
- Check continuity between IPDM E/R harness connector terminal and output speed sensor harness connector terminals.

IPDN	/I E/R	Output sp	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
E15	57	F22	3	Existed

Is the check result normal?

YES >> GO TO 7.

- NO >> Repair or replace malfunctioning parts.
- 7. DETECT MALFUNCTIONING ITEMS

Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to <u>PG-43</u>, "Wiring Diagram - IGNITION POWER SUPPLY -".
- Short circuit in harness between IPDM E/R harness connector terminal 57 and output speed sensor harness connector terminal 3.
- 10A fuse (No.55, located in the IPDM E/R). Refer to <u>PG-80, "Fuse, Connector and Terminal Arrangement"</u>.

IPDM E/R

	PZ/03 INPUT SPEED SENSOR B	
< DTC	/CIRCUIT DIAGNOSIS >	[CVT: RE0F10D]
Is the c	check result normal?	
YES NO	>> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u> . >> Repair or replace malfunctioning parts.	A
		В
		_
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		P

P2813 SELECT SOLENOID

DTC Logic

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2813	SELECT SOLENOID (Select solenoid)	 When any of 1, or 2 is satisfied: 1. When all the following conditions are established three times in 1DC Precondition DTC other than the applicable DTC is not detected. Throttle position: More than 6.27 deg. Vehicle speed: Less than 3 km/h (1 MPH) CVT fluid temperature: More than 20°C (68°F) Selector lever: Other than P, N Turbine speed when performed N → D, N (P) → R: More than 500 rpm TCM power supply voltage: More than 11 V Detection time N → D: 0.4 seconds N → R: 0.3 seconds P → R: 0.3 seconds P → R: 0.3 seconds Ithe counting of time continues while all of the following conditions are satisfied and this state is maintained for 30 seconds: The counting of time continues while all of the following conditions are satisfied and stops when the conditions become unsatisfied (the count is maintained). When accumulated time reaches 30 seconds (Clutch is judged as engaged and the count is reset.) Selector lever: Other than P, N Vehicle speed: Less than 3 km/h (1 MPH) Differences between primary pulley speed and secondary speed: Less than 120 rpm Clutch instructions pressure: 0.95 MPa or more Differences between turbine speed and input speed: Less than 200 rpm Turbine speed – speed: More than 450 rpm DTC other than the applicable DTC is not detected. TCM power supply voltage: More than 11 V 	Select solenoid valve

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

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.

042 CELECT COLENOID

P2813 SELECT SOLENOID	
< DTC/CIRCUIT DIAGNOSIS >	[CVT: RE0F10D]
>> GO TO 2.	
2.CHECK DTC DETECTION 1	
 Start the engine. Maintain the following conditions. (Keep 30 seconds or more after the selector leve 	r shifted.)
Selector lever : $N \rightarrow D, N \rightarrow R, P \rightarrow R$	
3. Check the first trip DTC.	
Is "P2813"detected?	
YES >> Go to <u>TM-527, "Diagnosis Procedure"</u> . NO >> INSPECTION END	
Diagnosis Procedure	INFOID:000000012201221
1.CHECK INTERMITTENT INCIDENT	
Refer to GI-45, "Intermittent Incident".	
Is the inspection result normal?	
YES >> Replace transaxle assembly. Refer to <u>TM-577, "Removal and Installation"</u> .	
NO >> Repair or replace malfunctioning parts.	

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P2814 SELECT SOLENOID

DTC Logic

INFOID:000000012201222

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2814	SELECT SOLENOID (Select solenoid)	 When all of the following conditions are satisfied and this state is maintained for 0.48 seconds: TCM power supply voltage: 11 V or more TCM judges that solenoid valve circuit is shorted to ground. 	 Harness or connector (Select solenoid valve circuit shorted to ground) Select solenoid valve

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

- 1. Start the engine.
- 2. Maintain the following conditions. (Keep 5 seconds or more after the selector lever shifted.)

 $\label{eq:selector} \text{Selector lever} \qquad : \mathsf{N} \to \mathsf{D}, \, \mathsf{N} \to \mathsf{R}, \, \mathsf{P} \to \mathsf{R}$

3. Check the first trip DTC.

Is "P2814" detected?

- YES >> Go to TM-528. "Diagnosis Procedure".
- NO >> INSPECTION END

Diagnosis Procedure

1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

T	СМ		Continuity
Connector	Terminal		Continuity
F83	37	Ground	Not existed

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2.CHECK CIRCUIT BETWEEN CVT UNIT AND GROUND

Check continuity between CVT unit harness connector terminal and ground.

CVT unit			Condition	Resistance
Connector	Terminal		Condition	Resistance
	4		CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω
F250		4 Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω
			CVT fluid temperature: 80°C (176°F)	6.5 – 8.5 Ω

Revision: November 2015

ls	the	inspec	tion r	<u>esult</u>	<u>normal'?</u>	, _
						-

- YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.
- NO >> There is malfunction of select solenoid valve. Replace transaxle assembly. Refer to <u>TM-577</u>, <u>"Removal and Installation"</u>.

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P2815 SELECT SOLENOID

DTC Logic

INFOID:000000012201224

[CVT: RE0F10D]

DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2815	SELECT SOLENOID (Select solenoid)	 When all of the following conditions are satisfied and this state is maintained for 0.2 seconds: TCM power supply voltage: More than 11 V TCM judges that solenoid valve circuit is open. P2814 is not detected. 	 Harness or connector (Select solenoid valve circuit open or shorted to power supply) Select solenoid valve

DTC CONFIRMATION PROCEDURE

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

2. CHECK DTC DETECTION

- 1. Start the engine.
- 2. Maintain the following conditions. (Keep 5 seconds or more after the selector lever shifted.)

Selector lever $: N \to D, N \to R, P \to R$

3. Check the first trip DTC.

Is "P2815" detected?

YES >> Go to TM-530. "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

ТСМ		CVT	Continuity		
Connector	Terminal	Connector Terminal		Continuity	
F83	37	F82	4	Existed	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2.CHECK CIRCUIT BETWEEN CVT UNIT AND GROUND

Check continuity between CVT unit harness connector terminal and ground.

Revision: November 2015

P2815 SELECT SOLENOID

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10D]

CVT unit			Condition	Resistance
Connector	Terminal	_	Condition	Resistance
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω
F250	4	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω
			CVT fluid temperature: 80°C (176°F)	6.5 – 8.5 Ω

Is the inspection result normal?

YES

>> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.
>> There is malfunction of select solenoid valve. Replace transaxle assembly. Refer to <u>TM-577</u>, NO "Removal and Installation". ТΜ

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MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

MAIN POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

1.CHECK TCM POWER CIRCUIT (PART 1)

1. Turn ignition switch OFF.

- 2. Disconnect TCM connector.
- 3. Check voltage between TCM harness connector terminals and ground.

	+			
т	СМ	_	Voltage	
Connector	Terminal			
F83	45	Ground	10 – 16 V	
105	46	Ground	10 – 10 v	

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

2.CHECK TCM POWER CIRCUIT (PART 2)

Check voltage between TCM harness connector terminals and ground.

+				
TCM		-	Condition	Voltage
Connector	Terminal			
	47	Ground	Ignition switch ON	10 – 16 V
F83			Ignition switch OFF	Approx. 0 V
FOJ			Ignition switch ON	10 – 16 V
			Ignition switch OFF	Approx. 0 V

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 5.

3.check tcm ground circuit

Check continuity between TCM harness connector terminals and ground.

ТС	CM		Continuity	
Connector	Terminal			
F83	41	Ground	Existed	
FOJ	42	Ground	Existed	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Repair or replace malfunctioning parts.

4. DETECT MALFUNCTION ITEMS (PART 1)

Check the following items:

- Open circuit or short circuit in harness between battery positive terminal and TCM connector terminal 45, and 46.
- 10A fuse (No.23, located in the fuse holder). Refer to <u>PG-81, "Fuse and Fusible Link Arrangement"</u>.
- 10A fuse (No.33, located in the fuse holder). Refer to <u>PG-81, "Fuse and Fusible Link Arrangement"</u>.

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Repair or replace malfunctioning parts.

TM-532

MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10D]

5. CHECK CIRCUIT BETWEEN IPDM E/R AND TCM А 1. Turn ignition switch OFF. 2. Disconnect IPDM E/R connector. 3. Check continuity between IPDM E/R harness connector terminal and TCM harness connector terminals. В IPDM E/R TCM Continuity Connector Terminal Connector Terminal 47 E15 57 F83 Existed 48 ТΜ Is the check result normal? YES >> GO TO 6. NO >> Repair or replace malfunctioning parts. Е **O**.DETECT MALFUNCTIONING ITEMS (PART 2) Check the following items: Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to PG-43, "Wiring Dia-F gram - IGNITION POWER SUPPLY -" Short circuit in harness between IPDM E/R harness connector terminal 57 and TCM harness connector terminals 47, and 48. 10A fuse (No.55, located in the IPDM E/R). Refer to PG-80, "Fuse, Connector and Terminal Arrangement". IPDM E/R Is the check result normal? Н YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident". NO >> Repair or replace malfunctioning parts. Κ L Μ Ν

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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-534, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:000000012201228

INFOID:000000012201227

1.CHECK TCM INPUT/OUTPUT SIGNAL

- 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 CONSULT screen, and shift position indicator display on combination meter are identical.

Is the check result normal?

YES >> INSPECTION END

- NO-1 ("RANGE" is changed but is not displayed on 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 shift position indicator.)>>Check "Self Diagnostic Result" in "METER/M&A".

< DTC/CIRCUIT DIAGNOSIS >				[CVT: RE0F10D]
SHIFT LOCK SYSTEM	1			
Component Function Che	eck			INFOID:000000012201229
1.CHECK SHIFT LOCK OPER/	ATION (PAR	Т 1)		
 Turn ignition ON. Shift the selector lever to "P' Attempt to shift the selector Can the selector lever be shifted YES >> Go to TM-535, "Diag NO >> GO TO 2. CHECK SHIFT LOCK OPER/ Attempt to shift the selector lever Can the selector lever be shifted 	lever to any o to any other mosis Proce ATION (PAR r to any othe	<u>position?</u> dure". T 2) r than position wit		
YES >> INSPECTION END				
NO >> Go to <u>TM-535</u> , "Diag Diagnosis Procedure		<u>uure</u> .		INFOID:000000012201230
1.CHECK POWER SOURCE (F	PART 1)			5.5.500000072207200
 Turn ignition switch OFF. Disconnect stop lamp switch Turn ignition switch ON. Check the voltage between the setward setwa		o switch harness o	connector terminal and	d ground.
+				
Stop lamp switch	-	Voltage		
Connector Terminal		.		
E102 3	Ground	Battery voltage		
Is the inspection result normal? YES >> GO TO 2. NO >> GO TO 8.				
2.CHECK STOP LAMP SWITC				
Check stop lamp switch. Refer to Is the inspection result normal? YES >> GO TO 3. NO >> GO TO 9.	o <u>IM-536, "C</u>	omponent Inspec	tion (Stop Lamp Switc	<u>:n)"</u> .
3. CHECK CIRCUIT BETWEEN	STOP LAM	P SWITCH AND (OVT SHIFT SELECTO	R
 Disconnect CVT shift selector Check the continuity between harness connector terminal. 	or connector			
Stop lamp switch	CVT	shift selector	Continuity	
	Connector	Terminal	- Continuity	
Connector Terminal	Connector			

NO >> Repair or replace the malfunctioning parts.

4. CHCK GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

Check the continuity between the CVT shift selector harness connector terminal and ground.

CVT shif	t selector		Continuity
Connector	Terminal		Continuity
M57	4	Ground	Existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace the malfunctioning parts.

5.CHECK PART POSITION SWITCH

1. Disconnect park position switch connector.

2. Check park position switch. Refer to TM-537, "Component Inspection (Park Position Switch)".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace the malfunctioning parts.

6.CHECK SHIFT LOCK SOLENOID

1. Disconnect shift lock solenoid connector.

2. Check shift lock solenoid. Refer to TM-537, "Component Inspection (Shift Lock Solenoid)".

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace the malfunctioning parts.

7.CHECK CVT SHIFT SELECTOR HARNESS

Check CVT shift selector harness. Refer to <u>TM-537</u>, "Component Inspection (CVT Shift Selector Harness)". Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace the malfunctioning parts.

8.DETECT MALFUNCTIONING ITEM

Check the following items:

Open circuit or short circuit in harness between ignition switch and stop lamp switch connector. Refer to <u>PG-43</u>, "Wiring Diagram - IGNITION POWER SUPPLY -".

Ignition switch

• 10A fuse [No.3, fuse block (J/B)]. Refer to PG-80, "Fuse, Connector and Terminal Arrangement".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace the malfunctioning parts.

9. CHECK INSTALLATION POSITION OF STOP LAMP SWITCH

Adjust stop lamp switch position. Refer to BR-9. "Inspection and Adjustment".

>> GO TO 10.

10.CHECK STOP LAMP SWITCH (PART 2)

Check stop lamp switch. Refer to TM-536, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace the malfunctioning parts.

Component Inspection (Stop Lamp Switch)

1.CHECK STOP LAMP SWITCH

Check continuity between the stop lamp switch connector terminals.

< DTC/CIRCUIT DIAGNOSIS >

Stop lamp switch			-			А
Terminal	Condition	Continuity				
	Depressed brake pedal	Yes	_			В
3 – 4	Released brake pedal	No	_			
	<u>esult normal?</u> ECTION END ce stop lamp switch. F	Refer to <u>BR-20</u>	- . "Exploded Viev	<u>v"</u> .		C
Component In	spection (Park Po	osition Swit	ch)		INFOID:000000012201232	т٨
1.CHECK PARK	POSITION SWITCH					ΤN
	etween park position	switch connec	tor terminals.			E
• Connect the fus	se between the termi	nals when an	nlving the volta			
	orting between term		plying the volta	ige.		
						F
Park position switch	n Conditio	วท	Continuity			
Terminal						(
1 – 2	Shift selector lever to "	P" position.	Existed			
Other than above Not existed						
Is the inspection re	esult normal?					F
	ECTION END					
•	ce park position switcl			bly and Assembly.		
Component In	spection (Shift Lo	ock Solenoi	d)		INFOID:000000012201233	
1. CHECK SHIFT	LOCK SOLENOID					
		alonoid oonno	tor and aboat th	at shift look solonoi	d is activated	U
CAUTION:	erminals of shift lock so				u is activated.	
Connect the fus	se between the termi		plying the volta	ige.		k
 Never cause sh 	orting between term	inals.				Г
	1					
Shift lock soler		:*:	Otatua			L
+ (fuse)	– Cond	ition	Status			
Terminal						Ν
1	2 Apply battery tween termina		nift lock solenoid oper	rates		Ν
Is the inspection re	esult normal?					
· · · · · · · · · · · · · · · · · · ·	ECTION END					N
NO >> Repla	ce shift lock unit. Refe	er to <u>TM-547, "</u>	Disassembly and	<u>d Assembly"</u> .		
Component In	spection (CVT St	nift Selector	Harness)		INFOID:000000012201234	
						(
I.CHECK CVT S	HIFT SELECTOR HA	RNESS (PAR	Г 1)			
Check continuity b nector terminal.	etween CVT shift sele	ector harness	connector termin	al and shift lock sol	lenoid harness con-	F

CVT shi	CVT shift selector Shift lock so		c solenoid	Continuity	
Connector	Terminal	Connector Terminal		Continuity	
M324	3	M326	1	Existed	

Is the inspection result normal?

< DTC/CIRCUIT DIAGNOSIS >

YES >> GO TO 2.

NO >> Replace CVT shift selector assembly. Refer to <u>TM-546, "Removal and Installation"</u>.

2.CHECK CVT SHIFT SELECTOR HARNESS (PART 2)

Check continuity between shift lock solenoid harness connector terminal and park position switch harness connector terminal.

Shift lock solenoid		Park posi	Continuity		
Connector	Terminal	Connector Terminal		Continuity	
M326	2	M325	1	Existed	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace CVT shift selector assembly. Refer to <u>TM-546, "Removal and Installation"</u>.

3.CHECK CVT SHIFT SELECTOR HARNESS (PART 3)

Check continuity between park switch harness connector terminal and CVT shift selector harness connector terminal.

Park	switch	CVT shi	Continuity			
Connector	Terminal	Connector	Connector Terminal			
M325	2	M324	4	Existed		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace CVT shift selector harness. Refer to <u>TM-546</u>, "Removal and Installation".

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 CVT shift selector assembly. Refer to <u>TM-546</u>, "Removal and Installation".

SYMPTOM DIAGNOSIS **CVT CONTROL SYSTEM**

Symptom Table

• The diagnosis item number indicates the order of check. Start checking in the order from 1.

• Perform diagnoses of symptom table 1 before symptom table 2.

Symptom Table 1

	Symptom	Engine system	CAN communication line	Transmission range switch (P0705, P0706)	Input speed sensor (P0717)	Primary speed sensor (P0715)	Output speed sensor (P2765)	CVT fluid temperature sensor (P0712, P0713)	Primary pressure sensor (P084C, P084D)	Secondary pressure sensor (P0841, P0847, P0848)	Torque converter clutch solenoid valve (P0740, P0743, P0744)	Manual mode switch	Stall test	CVT position	Power supply	Control valve	CVT fluid level and state	Ignition switch and starter	TM E F G H
		EC-743					TM	<u>-414</u>					TM-438	TM-439	TM-532	TM-557	TM-441	PG-43, STR-18(With GR8-1200 NI), STR-21 (Without GR8-1200 NI)	J K L M
Shift	Large shock (N \rightarrow D position)	1	4	7				3			6			2		8	5		NI
Shift Shock	Large shock (N \rightarrow R position)Shock is too large for lock-up.	1	4	7	<u> </u>			3			6 6			2		8 5	5 4	<u> </u>	Ν
			<u> </u>	<u> </u>	<u> </u>	<u> </u>	1			1		1		1	1		L	<u> </u>	

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CVT CONTROL SYSTEM

< SYMPTOM DIAGNOSIS >

[CVT: RE0F10D]

Symptom		Engine system	CAN communication line	Transmission range switch (P0705, P0706)	Input speed sensor (P0717)	Primary speed sensor (P0715)	Output speed sensor (P2765)	CVT fluid temperature sensor (P0712, P0713)	Primary pressure sensor (P084C, P084D)	Secondary pressure sensor (P0841, P0847, P0848)	Torque converter clutch solenoid valve (P0740, P0743, P0744)	Manual mode switch	Stall test	CVT position	Power supply	Control valve	CVT fluid level and state	Ignition switch and starter
							TM	<u>-414</u>					<u>TM-438</u>	TM-439	<u>TM-532</u>	<u>TM-557</u>	<u>TM-441</u>	PG-43, STR-18(With GR8-1200 NI), STR-21 (Without GR8-1200 NI)
	Vehicle cannot be started from D position.	8	3		5	6	7	9	10	11			4	2	12	13	1	
	Vehicle cannot be started from R position.	8	3		5	6	7	9	10	11			4	2	12	13	1	
	Does not lock-up.	2	6	8	3	4	10	9	11	12	5		7			13	1	
Slips/ Will Not	Does not hold lock-up condition.	2	6	8	3	4	10	9	11	12	5		7			13	1	
Engage	Lock-up is not released.	2	6		3	4					5		7			8	1	
	With selector lever in D position, acceleration is extremely poor.	3	4	5	7	8	9	12	10	11			2	6	13	14	1	
	With selector lever in R position, acceleration is extremely poor.	3	4	5	7	8	9	12	10	11			2	6	13	14	1	
	Slips at lock-up.	2	6	8	3	4	10	9	11	12	5		7			13	1	

< SYMPTOM DIAGNOSIS >

[CVT: RE0F10D]

								3)		P0848)	40, P0743, P0744)								A
	Symptom	Engine system	CAN communication line	Transmission range switch (P0705, P0706)	Input speed sensor (P0717)	Primary speed sensor (P0715)	Output speed sensor (P2765)	CVT fluid temperature sensor (P0712, P0713)	Primary pressure sensor (P084C, P084D)	Secondary pressure sensor (P0841, P0847, P0848)	Torque converter clutch solenoid valve (P0740, P0743, P0744)	Manual mode switch	Stall test	CVT position	Power supply	Control valve	CVT fluid level and state	Ignition switch and starter	C TM E F
		Ш	õ	T		Pr	ō	ΰ	Pr	Š	To	M	ŭ	ΰ	Pc	CC	C		G
		EC-743					<u>TM</u>	<u>-414</u>					TM-438	<u>TM-439</u>	<u>TM-532</u>	<u>TM-557</u>	<u>TM-441</u>	PG-43, STR-18(With GR8-1200 NI), STR-21 (Without GR8-1200 NI)	H I J
	No creep at all.	2	4	3	7	8	9	10	11	12			5	6	13	14	1		
	Vehicle cannot run in any position.	8	-	2	5	6	7	9	10	11			3	4	12	13	1		K
	With selector lever in D position, driv- ing is not possible.	8		2	5	6	7	9	10	11			3	4	12	13	1		1.4
	With selector lever in R position, driv- ing is not possible.	8		2	5	6	7	9	10	11			3	4	12	13	1		L
	Judder occurs during lock-up.	2	6		3	4	5				7					8	1		
	Strange noise in D position.	2	3													4	1		Μ
	Strange noise in R position.	2	3 3													4	1		
	Strange noise in N position. Vehicle does not decelerate by engine															4	I		Ν
Other	brake.	7	3		4	5	6							2		8	1		
	Maximum speed low.	2	3		5	6	7		8	9	11		4			10	1		\cap
	With selector lever in P position, vehi- cle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled.			1										2					P
	Vehicle runs with CVT in P position.			1										3		4	2		
	Vehicle runs with CVT in N position.			1										3		4	2		
	Engine stall.	2	6		3	4			8	9	5		7			10	1		
	Engine stalls when selector lever shifted N \rightarrow D or R.	2	6		3	4					5					7	1		
	Engine speed does not return to idle.	2	4				3									5	1		

Revision: November 2015

< SYMPTOM DIAGNOSIS >

[CVT: RE0F10D]

	Symptom	EC-743 Engine system	CAN communication line	Transmission range switch (P0705, P0706)	Input speed sensor (P0717)	Primary speed sensor (P0715)	Output speed sensor (P2765)	CVT fluid temperature sensor (P0712, P0713)	Primary pressure sensor (P084C, P084D)	Secondary pressure sensor (P0841, P0847, P0848)	Torque converter clutch solenoid valve (P0740, P0743, P0744)	Manual mode switch	TM-438 Stall test	TM-439 CVT position	TM-532 Power supply	TM-557 Control valve	TM-441 CVT fluid level and state	PG-43, <u>STR-18</u> (With GR8-1200 NI), Ignition switch and starter <u>STR-21</u> (Without GR8-1200 NI)
		B											I	T	T	TM	TM	<u>PG-43, STR-18</u> (V <u>STR-21</u> (Witho
	Engine does not start in N or P posi- tion.			3										2				1
Other	Does not shift.	3	4		5	6	7							2		8	1	
Other	Cannot be changed to manual mode.		4	2		6	6					1		3	5			
	Engine starts in positions other than N or P.			3										2				1

< SYMPTOM DIAGNOSIS >

Symptom Table 2

													А
	Symptom	Torque converter	Transmission range switch	Oil pump	Forward clutch	Reverse brake	Planetary gear	Bearings	Parking mechanism	Stop lamp switch	Shift lock solenoid	CVT shift selector	B
		TM-581		1	1	TM-577	7		1	TM-536	TM-537	TM-546	ТМ
								Ę					
	Large shock (N \rightarrow D position)		2		1								E
Shift Shock	Large shock (N→R position)		2			1							-
	Shock is too large for lock-up.	1											F
	Vehicle cannot be started from D position.		3	1	2								
	Vehicle cannot be started from R position.		4	1		2			3				G
	Does not lock-up.	1	3	2									-
Slips/Will	Does not hold lock-up condition.	1	3	2									Н
Not Engage	Lock-up is not released.	1		2									-
-	With selector lever in D position, acceleration is extremely poor.	1	3		2								
	With selector lever in R position, acceleration is extremely poor.	1	4	2		3							-
	Slips at lock-up.	1		2									J

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< SYMPTOM DIAGNOSIS >

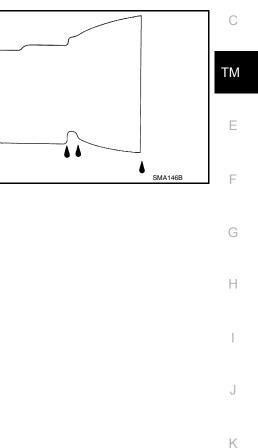
-												
Symptom		Torque converter	Transmission range switch	Oil pump	Forward clutch	Reverse brake	Planetary gear	Bearings	Parking mechanism	Stop lamp switch	Shift lock solenoid	CVT shift selector
		TM-581		1	1	<u>TM-577</u>	7			TM-536	TM-537	TM-546
	No creep at all.	1	6	2	4	5	3					
	Vehicle cannot run in all posi- tions.	1		2	4	5	3		6			
	With selector lever in D position, driving is not possible.	1		2	4		3		5			
	With selector lever in R position, driving is not possible.	1		2		4	3		5			
	Judder occurs during lock-up.	1										
	Strange noise in D position.	1		2	4		3	5				
	Strange noise in R position.	1		2		4	3					
	Strange noise in N position.	1		2			3					
	Maximum speed low.	1	5	2	4		3					
Other	With selector lever in P position, vehicle does not enter parking condition or, with selector lever in another position, parking condi- tion is not cancelled.								1			
Other	Vehicle runs with CVT in P position.						2		1			
	Vehicle runs with CVT in N position.				2	3	1					
	Engine stall.	1										
	Engine stalls when selector lever shifted N \rightarrow D or R.	1										
	Does not shift.			1								
	Cannot be changed to manual mode.											1
	When brake pedal is depressed with ignition switch ON, selector lever cannot be shifted from P po- sition to other position.									1	2	3
	When brake pedal is not de- pressed with ignition switch ON, selector lever can be shifted from P position to other position.									1	2	3

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-441</u>, "Adjustment".



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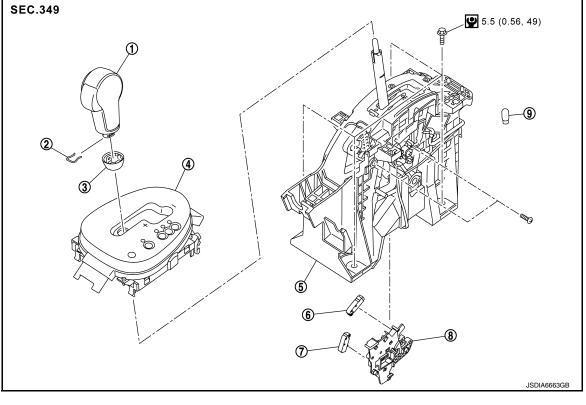
< REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION

CVT SHIFT SELECTOR

Exploded View

INFOID:000000012201237

[CVT: RE0F10D]



- 1. Selector lever knob
- 4. Position indication panel
- 7. Park position switch
- :N·m (kg-m, in-lb)

Removal and Installation

2. Lock pin

Shift lock unit

- 5. CVT shift selector assembly
- 3. Knob cover
- 6. Detent switch
- 9. Position indicator bulb

INFOID:000000012201238

REMOVAL

CAUTION:

Always apply the parking brake before performing removal and installation.

8.

- 1. Disconnect battery cable from negative terminal. Refer to PG-105, "Removal and Installation".
- 2. Shift the selector lever to "N" position.
- 3. Remove the center console. Refer to IP-24, "Removal and Installation".
- 4. Disconnect the CVT shift selector connector.
- 5. Shift the selector lever to "P" position.

CVT SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

- 6. Disconnect the tip (A) of control cable and remove socket (B) from the CVT shift selector assembly.
- 7. Remove the CVT shift selector assembly mounting bolts.
- 8. Remove the CVT shift selector assembly from the vehicle.



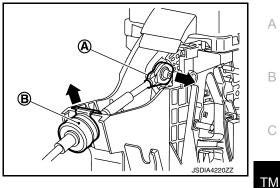
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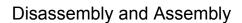
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INSTALLATION

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

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



DISASSEMBLY

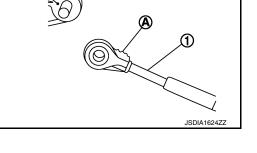
CAUTION:

Confirm the installation condition of wiring before disassembly.

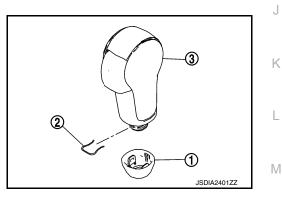
1. Slide the selector lever knob cover (1) down. CAUTION: Never damage the knob cover.

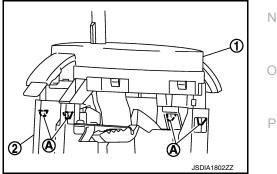
- 2. Pull out the lock pin (2).
- 3. Pull the selector lever knob (3) and knob cover upwards to remove them.
- Remove the position lamp.
- Disengage the hooks (A) (4 locations), and lift up the position 5. indication panel (1) to separate it from the CVT shift selector assembly (2). **CAUTION:**

Never damage the CVT shift selector assembly.



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INFOID:000000012201239

CVT SHIFT SELECTOR

< REMOVAL AND INSTALLATION >

Remove shift lock unit mounting screws (6.

INSPECTION AFTER INSTALLATION

9. lock unit. **CAUTION:** Never damage pawls.

Remove the shift lock unit (1) from the CVT shift selector assem-

8. Disconnect shift lock solenoid harness connector, park position switch harness connector, and detent switch harness connector.

ASSEMBLY

7.

bly.

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

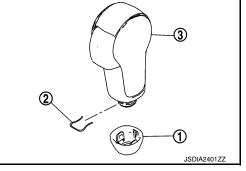
• Follow the procedure below and place the selector knob onto the CVT shift selector.

- 1. Install the lock pin (2) onto the selector lever knob (3).
- Install the knob cover (1) onto the selector lever knob. 2.
- 3. Press the selector lever knob onto the selector lever until it clicks.

CAUTION:

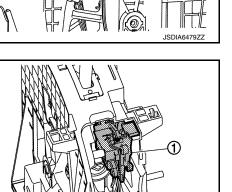
Inspection

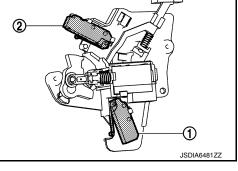
- When pressing the selector lever knob onto the selector lever, never press the selector lever knob button.
- Never strike the selector lever knob to press it into place.

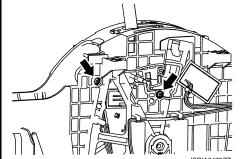


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Remove park position switch (1) and detent switch (2) from shift 2







[CVT: RE0F10D]

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-439, "Adjustment".

CONTROL CABLE

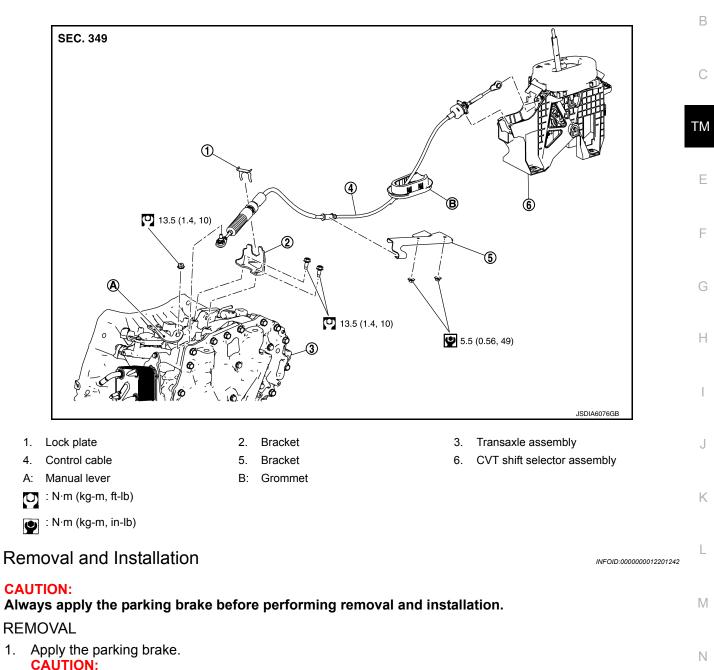
< REMOVAL AND INSTALLATION >

Exploded View

CONTROL CABLE

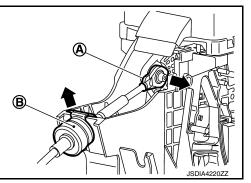
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Make sure the vehicle cannot move with the parking brake applied.

- 2. Remove the center console. Refer to IP-24, "Removal and Installation".
- 3. Disconnect the tip (A) of control cable and remove socket (B) from the CVT shift selector assembly.



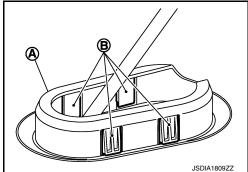
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CONTROL CABLE

< REMOVAL AND INSTALLATION >

- 4. Disengage the pawls (B) of the grommet (A), and pull downwards to remove.
- 5. Remove the battery and battery mounting bracket assembly. Refer to <u>PG-105</u>, "Removal and Installation".

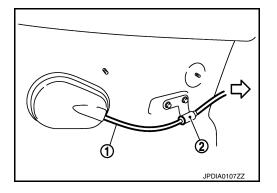


- Remove the control cable nut (+) and remove the control cable (1) from the manual lever (2).

- 7. Remove the lock plate (1) and remove the control cable (2) from bracket (3).
- 8. Remove center muffler from the mounting rubber and lower the center muffler downward. Refer to <u>EX-5</u>, "<u>Exploded View</u>".
- 9. Remove heat plate.
- 10. Remove the control cable (1) from the bracket (2).
- 11. Remove the control cable from the vehicle.

JSDIA51B4ZZ

JSDIA6039ZZ



INSTALLATION

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

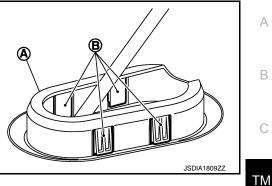
• After installing control cable, adjust it. Refer to TM-551, "Inspection and Adjustment".

CONTROL CABLE

< REMOVAL AND INSTALLATION >

- 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.

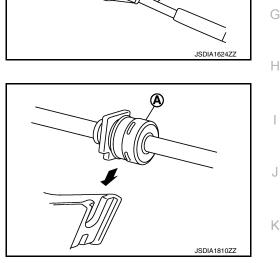
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• Pay attention to the following when connecting the control cable to the CVT shift selector.

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

- 2. Install the socket (A) onto the CVT shift selector. CAUTION:
 - Place the socket onto the CVT shift lever, then fasten it in place from above.
 - Check that the pulling on the socket does not disconnect it.



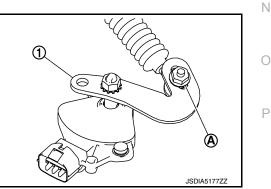
Inspection and Adjustment

ADJUSTMENT OF CONTROL CABLE

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.

- Loosen nut (A) and set manual lever (1) to the "P" position.
 CAUTION: Never apply force to the manual lever.
- Tighten the nut to the specified torque. Refer to <u>TM-549</u>. <u>"Exploded View"</u>. CAUTION: In tightening, fix the manual lever.



INSPECTION AFTER INSTALLATION Check the CVT position. Refer to <u>TM-439</u>, "Inspection". M

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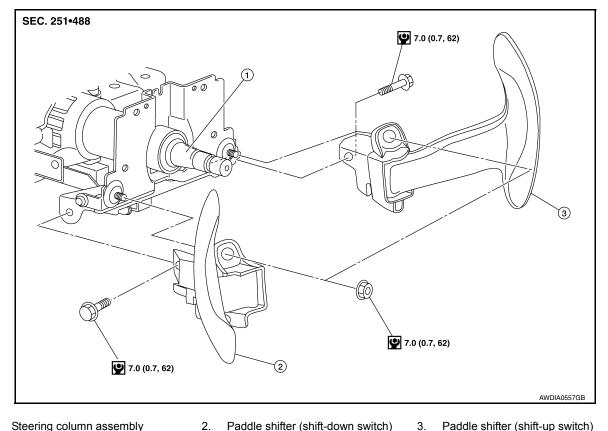
PADDLE SHIFTER

< REMOVAL AND INSTALLATION >

PADDLE SHIFTER

Exploded View

INFOID:000000012201244



- Steering column assembly 1.
- Paddle shifter (shift-down switch) 3. Paddle shifter (shift-up switch)

: N·m (kg-m, in-lb) U

Removal and Installation

REMOVAL

- 1. Park the vehicle on a level surface.
- 2. Remove the driver air bag module. Refer to <u>SR-12, "Removal and Installation"</u>.
- 3. Remove the steering wheel. Refer to ST-9, "Removal and Installation".
- 4. Remove the column cover. Refer to IP-13, "Removal and Installation".

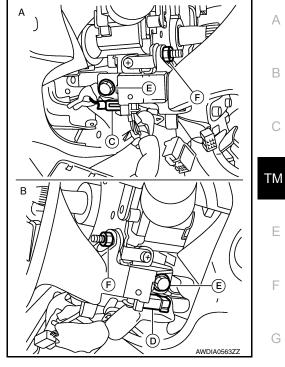
INFOID:000000012201245

PADDLE SHIFTER

< REMOVAL AND INSTALLATION >

[CVT: RE0F10D]

- 5. Remove the paddle shifter connector (C) and (D) from paddle shifter.
 - А : Side of paddle shifter (shift-down switch)
 - В : Side of paddle shifter (shift-up switch)
- 6. Remove the paddle shifter mounting bolts (E) and nuts (F).
- 7. Remove the paddle shifter from the steering column assembly.



INSTALLATION Installation is in the reverse order of removal.



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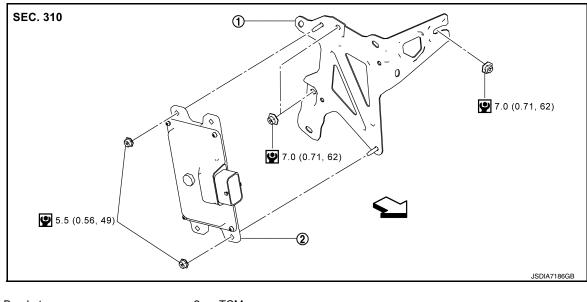
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TCM

Exploded View

INFOID:000000012201246



TCM

Bracket 1.

2. TCM

C :Vehicle front

: N·m (kg-m, in-lb) U

Removal and Installation

INFOID:000000012201247

CAUTION:

- Never impact on TCM when removing or installing TCM.
- · When replacing TCM, note the "CVTF DETERIORATION DATE" value displayed on CONSULT "CON-FORM CVTF DETERIORTN" in MAINTENANCE BOOKLET, before start the operation.
- When replacing TCM and transaxle assembly simultaneously, replace transaxle assembly first and then replace TCM.
- Before replacing TCM, perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to TM-429, "Work Procedure".

REMOVAL

- 1. Remove the battery. Refer to PG-105. "Removal and Installation".
- 2. Remove air duct (inlet) and air cleaner case. Refer to EM-192, "Removal and Installation".
- 3. Disconnect the TCM connector.
- 4. Remove the TCM.
- Remove the bracket. 5.

INSTALLATION

Installation is in the reverse order of removal.

Adjustment

INFOID:000000012201248

ADJUSTMENT AFTER INSTALLATION

When replaced TCM, perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to TM-429, "Work Procedure".

AIR BREATHER HOSE

< REMOVAL AND INSTALLATION >

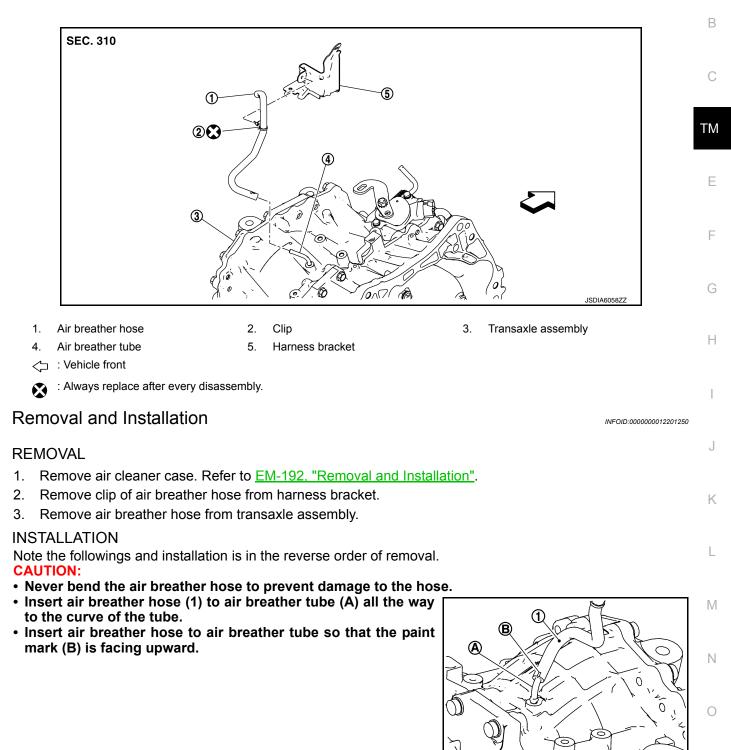
AIR BREATHER HOSE

Exploded View

INFOID:000000012201249

А

[CVT: RE0F10D]



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AIR BREATHER HOSE

< REMOVAL AND INSTALLATION >

- Never reuse clip (A).
 Securely install the clip to the harness bracket.

A JSDIA2458ZZ

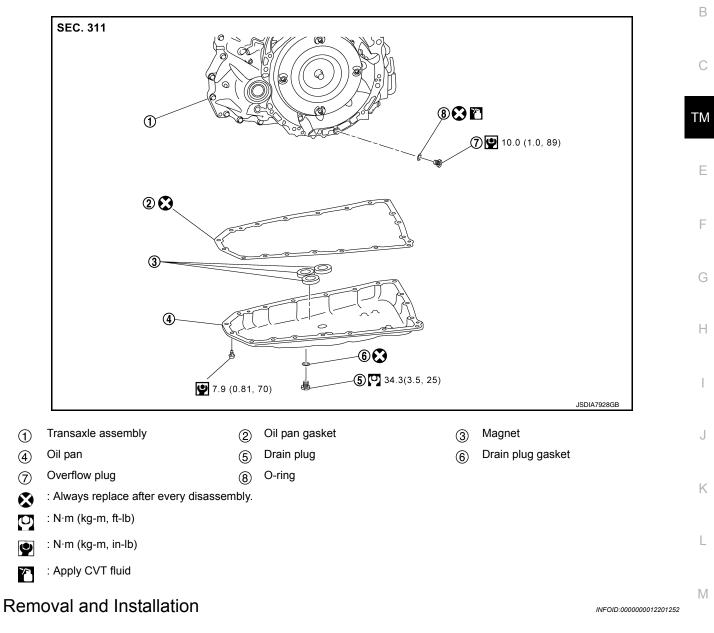
[CVT: RE0F10D]

OIL PAN

Exploded View

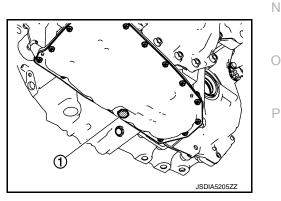
INFOID:000000012201251

А



REMOVAL

1. Remove drain plug ① from oil pan and then drain the CVT fluid.



< REMOVAL AND INSTALLATION >

2. Remove drain plug gasket ①.

- 3. Remove oil pan bolts (\leftarrow).
- 4. Remove oil pan from transaxle case.

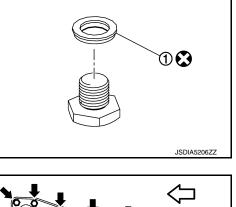
5. Remove oil pan gasket ① from oil pan.

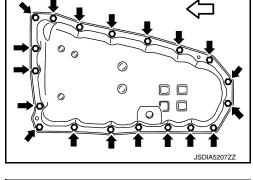
6. Remove magnets ① from oil pan.

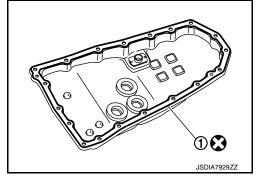
INSTALLATION

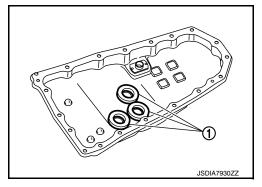
Note the followings and installation is in the reverse order of removal. **CAUTION:**

- Never reuse oil pan gasket.
- Never reuse drain plug gasket.
- Never reuse O-ring.
- Completely clean the iron powder from the magnet area of oil pan and the magnets.
- Install the oil pan to the transaxle case with the following procedure.
- 1. Install the oil pan gasket to the oil pan. CAUTION:









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[CVT: RE0F10D]

OIL PAN

< REMOVAL AND INSTALLATION >

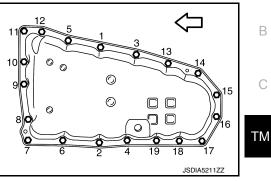
[CVT: RE0F10D]

Completely wipe out any moisture, oil, and old gasket from the oil pan gasket surface and bolt hole of oil pan and transaxle case.

- 2. Install the oil pan assembly to the transaxle case, and then temporarily tighten the oil pan bolt.
- 3. Tighten the oil pan bolts in the order shown to the specified torque.

 \triangleleft : Vehicle front

- 4. Tighten the oil pan bolts again clockwise from (1) shown to the specified torque.
- Fill with CVT fluid after installation. Refer to TM-440, "Replacement".



INFOID:000000012201253

INSPECTION AFTER REMOVAL

Inspection

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

Start the engine and check visually that there is no leakage of CVT fluid.

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< REMOVAL AND INSTALLATION >

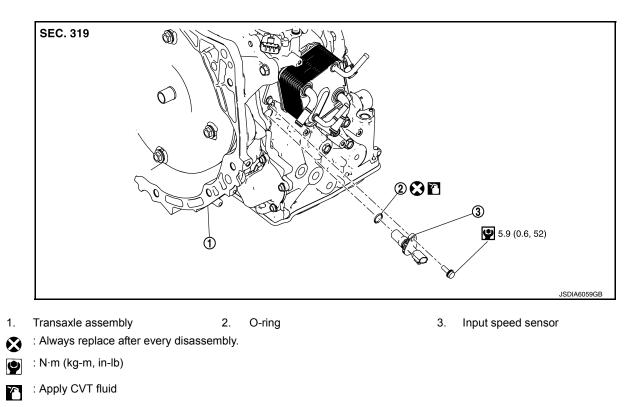
INPUT SPEED SENSOR

Exploded View

INFOID:000000012201254

INFOID:000000012201255

[CVT: RE0F10D]



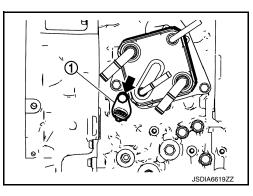
Removal and Installation

REMOVAL

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

- 1. Turn ignition switch OFF.
- 2. Remove battery and battery support. Refer to PG-105, "Removal and Installation".
- 3. Remove ECM and bracket as a set. Refer to EC-1256. "Removal and Installation".
- 4. Disconnect input speed sensor connector.
- 5. Remove mounting bolt (←) and remove input speed sensor (1) from transaxle assembly.

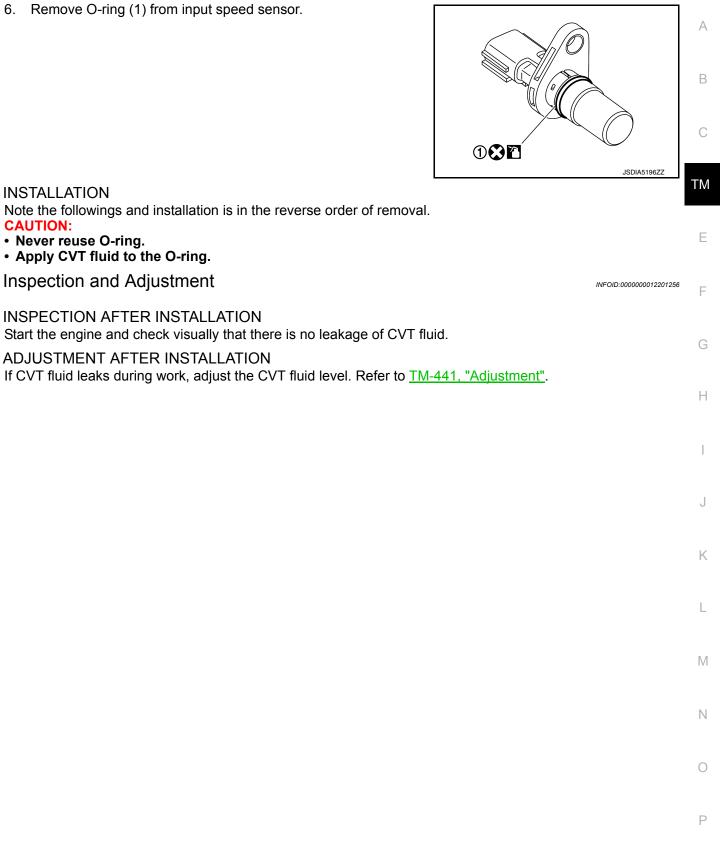


INPUT SPEED SENSOR

< REMOVAL AND INSTALLATION >

6.

[CVT: RE0F10D]



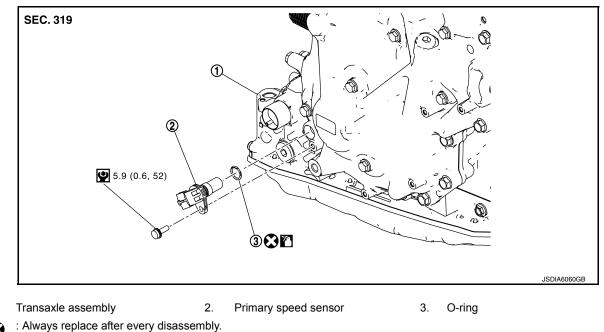
PRIMARY SPEED SENSOR

< REMOVAL AND INSTALLATION >

PRIMARY SPEED SENSOR

Exploded View

INFOID:000000012201257



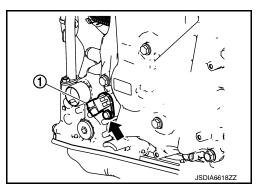
- Always replace after every disa
- . N·m (kg-m, in-lb) ⊇
- : Apply CVT fluid

Removal and Installation

REMOVAL

1.

- 1. Turn ignition switch OFF.
- 2. Remove fender protector (LH). Refer to EXT-31, "Removal and Installation".
- 3. Disconnect primary speed sensor.
- Remove mounting bolt (+) and remove primary speed sensor (1) from transaxle assembly.



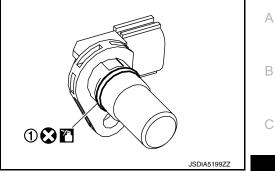
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PRIMARY SPEED SENSOR

< REMOVAL AND INSTALLATION >

5. Remove O-ring (1) from primary speed sensor.

[CVT: RE0F10D]



	JSDIA5199ZZ	
INSTALLATION Note the followings and installation is in the reverse order of removal. CAUTION: • Never reuse O-ring.		ΓM
Apply CVT fluid to the O-ring. Inspection and Adjustment	INFOID:000000012201259	F
INSPECTION AFTER INSTALLATION Start the engine and check visually that there is no leakage of CVT flu ADJUSTMENT AFTER INSTALLATION		G
If CVT fluid leaks during work, adjust the CVT fluid level. Refer to TM	<u>-441, "Adjustment"</u> .	Н

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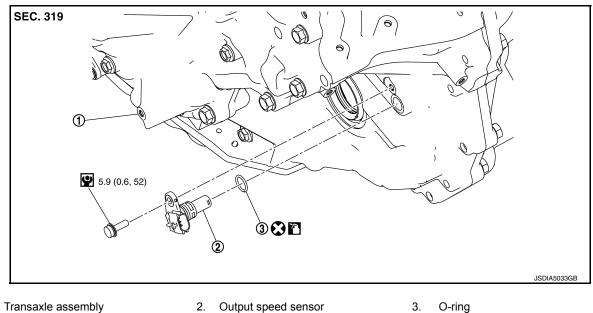
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< REMOVAL AND INSTALLATION >

OUTPUT SPEED SENSOR

INFOID:000000012201260

[CVT: RE0F10D]



- 1. Transaxle assembly
 2.

 Image: Construction of the system of
- ► N·m (kg-m, in-lb)
- N·m (kg-m, in-lb)
- : Apply CVT fluid

Removal and Installation

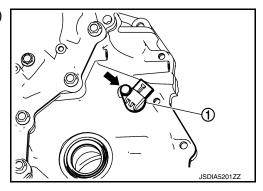
REMOVAL

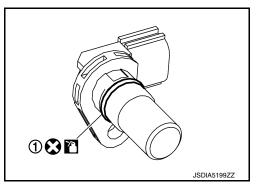
4.

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

Remove O-ring (1) from output speed sensor.

3. Remove mounting bolt (←) and remove output speed sensor (1) from transaxle assembly.





INFOID:000000012201261

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OUTPUT SPEED SENSOR

< REMOVAL AND INSTALLATION >	[CVT: RE0F10D]	
INSTALLATION Note the followings and installation is in the reverse order of removal. CAUTION: • Never reuse O-ring. • Apply CVT fluid to the O-ring.		A
Inspection and Adjustment	INFOID:000000012201262	В
INSPECTION AFTER INSTALLATION Start the engine and check visually that there is no leakage of CVT fluid.		С
ADJUSTMENT AFTER INSTALLATION If CVT fluid leaks during work, adjust the CVT fluid level. Refer to <u>TM-441, "Adjustment"</u> .		ТМ

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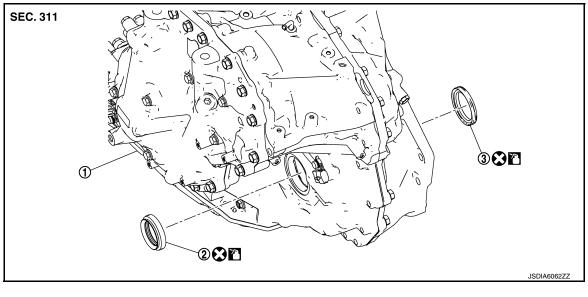
< REMOVAL AND INSTALLATION >

DIFFERENTIAL SIDE OIL SEAL

Exploded View

INFOID:000000012201263

INFOID:000000012201264



- 1. Transaxle assembly
- 2. Differential side oil seal (transaxle case side)
- Differential side oil seal (converter housing side)

- Always replace after every disassembly.
- : Apply CVT fluid

Removal and Installation

NOTE:

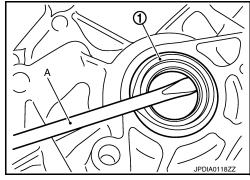
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

Differential Side Oil Seal (Left Side)

- 1. Remove front drive shaft (left side). Refer to <u>FAX-83, "2WD : Removal and Installation"</u> (2WD), <u>FAX-97,</u> <u>"AWD : Removal and Installation"</u> (AWD).
- Remove differential side oil seal (1) using an oil seal remover (commercial service tool) (A).
 CAUTION:

Be careful not to scratch transaxle case and converter housing.



Differential Side Oil Seal (Right Side)

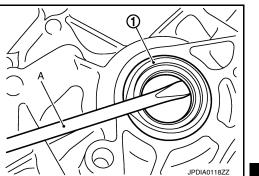
1. Remove transfer assembly. Refer to <u>FAX-83</u>, "2WD : Removal and Installation" (2WD), <u>FAX-97</u>, "AWD : <u>Removal and Installation</u>" (AWD).

DIFFERENTIAL SIDE OIL SEAL

< REMOVAL AND INSTALLATION >

 Remove differential side oil seal (1) using an oil seal remover (commercial service tool) (A).
 CAUTION:

Be careful not to scratch transaxle case and converter housing.



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[CVT: RE0F10D]

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INSTALLATION

Note the followings and installation is in the reverse order of removal.

Differential Side Oil Seal (Transaxle Case Side)

CAUTION:

When inserting the drive shaft, be sure to use protector (SST: KV38107900).

- 1. Measure height (A) of seal lip. Calculate protrusion (C) of oil seal lip according to measured height (A) of seal lip and reference value (B) of side oil insertion.
 - (1) : Differential side oil seal
 - (2) : Transaxle case

Lip protrusion (C) : C=A–B Differential side oil seal insertion : 1.8 mm (0.071 in) reference value (B)

CAUTION:

- Never reuse differential side oil seal.
- Put a mark on the measurement area and measure height of seal lip at four points diagonally using suitable tool.

NOTICE:

Since seal lips have a tolerance of \pm 0.3 mm (\pm 0.012 in) at maximum due to manufacturing tolerances or packing conditions, it is necessary to measure the seal lip height beforehand to clarify the tolerance.

- As an indicator of the parallelism and insertion depth, cut a masking tape (1) to specified width [add 1 mm (0.04 in) to the value calculated from the tip of differential side oil seal lip] and affix to the differential side oil seal.
- Install the differential side oil seal using a drift [outer diameter: 53 mm (2.09 in), inner diameter: 50 mm (1.97 in)] according to the guide of the masking tape. CAUTION:
 - If differential side oil seal is inserted deeper than the reference value, use a new differential side oil seal and perform the steps again.
 - Apply ATF to the differential side oil seal lip and around the oil seal.

NOTE:

A hub cap (Part No. 43234 1HA0A) can be used as a substitute for drift. To use a hub cap, be sure to prepare a new one specifically for patting seal.

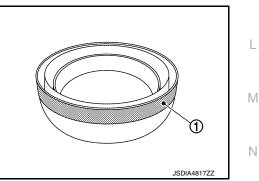
4. Remove masking tape.

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5. Adjust as instructed below to optimize the protrusion size and parallelism. **CAUTION:**

If differential side oil seal is inserted deeper than the reference value, use a new differential side oil seal and perform the steps again.

TM-567

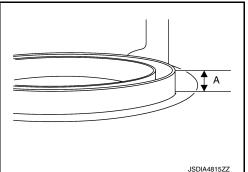


DIFFERENTIAL SIDE OIL SEAL

< REMOVAL AND INSTALLATION >

Protrusion size (A) CAUTION: Protrusion must fall within ± 0.5mm (0.020 in) of calculated size.

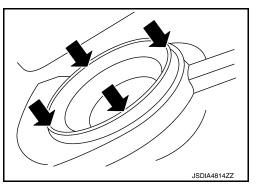




 Parallelism at four diagonal points (➡) CAUTION: The difference among four diagonal points must be within 0.3 mm (0.012 in).

NOTE: If differential side oil seal is uneven while installing, tilt suitable tool.

6. Check that the protrusion size and parallelism are adequate.



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Differential Side Oil Seal (Converter housing Side) (2WD Models) CAUTION:

When inserting the drive shaft, be sure to use protector (SST: KV38107900).

- 1. Measure height (A) of seal lip. Calculate protrusion (C) of oil seal lip according to measured height (A) of seal lip and reference value (B) of side oil insertion.
 - (1) : Differential side oil seal
 - (2) : Transaxle case

Lip protrusion (C) : C=A–B Differential side oil seal insertion : 2.2 mm (0.087 in) reference value (B)

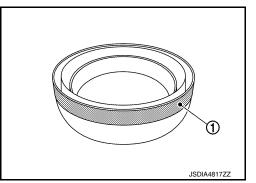
CAUTION:

- Never reuse differential side oil seal.
- Put a mark on the measurement area and measure height of seal lip at four points diagonally using suitable tool.

NOTICE:

Since seal lips have a tolerance of \pm 0.3 mm (\pm 0.012 in) at maximum due to manufacturing tolerances or packing conditions, it is necessary to measure the seal lip height beforehand to clarify the tolerance.

- 2. As an indicator of the parallelism and insertion depth, cut a masking tape (1) to specified width [add 1 mm (0.04 in) to the value calculated from the tip of differential side oil seal lip] and affix to the differential side oil seal.
- Install the differential side oil seal using a drift [outer diameter: 53 mm (2.09 in), inner diameter: 50 mm (1.97 in)] according to the guide of the masking tape. CAUTION:
 - If differential side oil seal is inserted deeper than the reference value, use a new differential side oil seal and perform the steps again.
 - Apply ATF to the differential side oil seal lip and around the oil seal.
 NOTE:



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Revision: November 2015

DIFFERENTIAL SIDE OIL SEAL

< REMOVAL AND INSTALLATION >

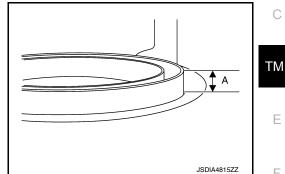
A hub cap (Part No. 43234 1HA0A) can be used as a substitute for drift. To use a hub cap, be sure to prepare a new one specifically for patting seal.

- 4. Remove masking tape.
- 5. Adjust as instructed below to optimize the protrusion size and parallelism. **CAUTION:**

If differential side oil seal is inserted deeper than the reference value, use a new differential side oil seal and perform the steps again.

 Protrusion size (A) CAUTION:

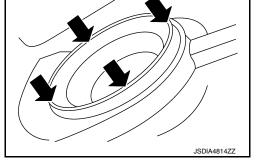
Protrusion must fall within \pm 0.5mm (0.020 in) of calculated size.



 Parallelism at four diagonal points (➡) CAUTION: The difference among four diagonal points must be within 0.3 mm (0.012 in). NOTE:

If differential side oil seal is uneven while installing, tilt suitable tool.

6. Check that the protrusion size and parallelism are adequate.



Differential Side Oil Seal (Converter housing Side) (AWD Models) CAUTION:

Never reuse differential side oil seal.

• Apply ATF to the differential side oil seal lip and around the oil seal.

Install differential side oil seal evenly using a drift [outer diameter: 60 mm (2.36 in)] so that differential side oil seal protrudes by the dimension (A) respectfully.

Dimension (A) : Height difference from case end surface is within 1.0 \pm 0.5 mm (0.039 \pm 0.020 in).

NOTE:

The reference is the installation direction of the differential side oil seal.

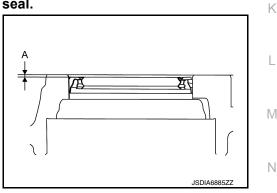
Inspection and Adjustment

INSPECTION AFTER INSTALLATION

Drive the vehicle and check visually that there is no leakage of CVT fluid.

ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level. Refer to TM-441, "Adjustment".



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[CVT: RE0F10D]

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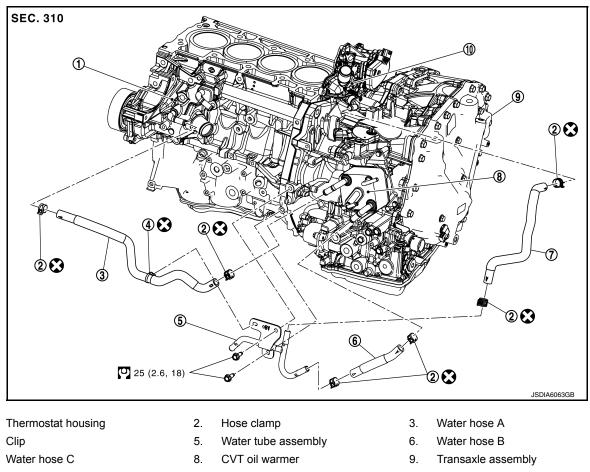
< REMOVAL AND INSTALLATION >

WATER HOSE

Exploded View

INFOID:000000012201266

[CVT: RE0F10D]



- 10. Water outlet
- Always replace after every disassembly.
- ∴ N·m (kg-m, ft-lb)

Removal and Installation

INFOID:000000012201267

REMOVAL

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WARNING:

Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way.

CAUTION:

Perform when the engine is cold.

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

- 1. Remove battery. Refer to PG-105, "Removal and Installation".
- 2. Remove ECM and bracket as a set. Refer to EC-1256, "Removal and Installation".
- 3. Remove CVT fluid charging pipe. Refer to TM-577, "Exploded View".
- 4. Remove water hoses.
- 5. Remove water tube assembly

INSTALLATION

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TM-570

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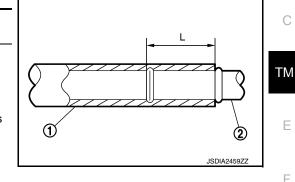
WATER HOSE

< REMOVAL AND INSTALLATION >

Note the followings and installation is in the reverse order of removal. **CAUTION:**

- · Never reuse hose clamp and clip.
- Securely install the water hose clip to the converter housing.
- · Refer to the following when installing water hoses.

Hose (1)	Installation side tube (2)	Direction of paint mark	Hose insertion depth (L)		
Water hose A	Thermostat hous- ing				
	CVT oil warmer				
	CVT oil warmer	Frontward	Hose end reaches the 2-stage bulge.		
Water hose B	Water tube as- sembly				
Water hose C	Water tube as- sembly				
	Water outlet	Leftward			



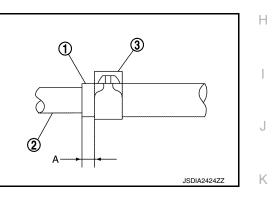
 Refer to the followings when installing hose clamp. **CAUTION:** Hose clamp should not interfere with the bulge of tube.

Hose clamp (3) Installation side tube Hose (1) Clamping position (2) Direction of tab (A) Thermostat housing Water hose A CVT oil warmer CVT oil warmer 5 – 7 mm (0.20 – Frontward Water hose B Water tube assem-0.28 in) from hose bly end Water tube assembly Water hose C Water outlet Leftward

Inspection

INSPECTION AFTER INSTALLATION

Start the engine and check visually that there is no leakage of engine coolant.



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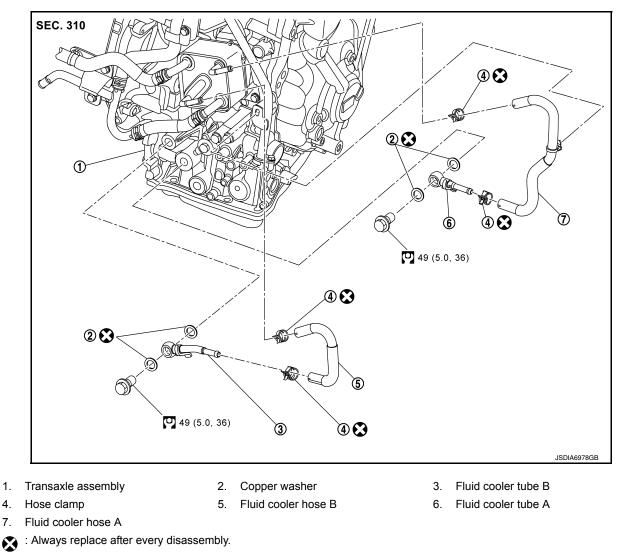
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< REMOVAL AND INSTALLATION >

FLUID COOLER HOSE

Exploded View

INFOID:000000012201269



◯ :N·m (kg-m, ft-lb)

Removal and Installation

INFOID:000000012201270

REMOVAL

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

- 1. Remove fluid cooler hose A and B.
- 2. Remove fluid cooler tube A and B.

INSTALLATION

Note the followings and Installation is in the reverse order of removal.

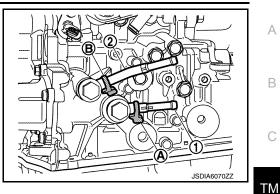
CAUTION:

Never reuse hose clamp, and copper washer.

FLUID COOLER HOSE

< REMOVAL AND INSTALLATION >

Refer to the followings when installing CVT fluid cooler tubes. When installing fluid cooler tube A (1) and fluid cooler tube B (2) to transaxle assembly, contact fluid cooler tubes stopper (A) and (B) to transaxle case.



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[CVT: RE0F10D]

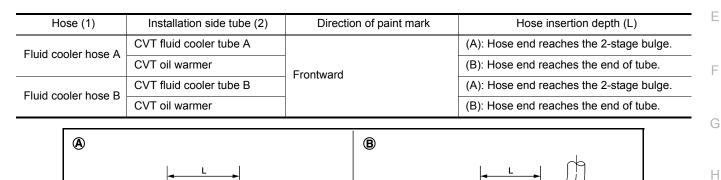
А

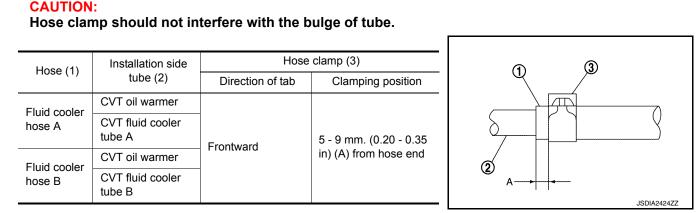
В

Refer to the followings when installing fluid cooler hose.

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Refer to the followings when installing hose clamp.





Inspection

INSPECTION AFTER INSTALLATION

Start the engine and check visually that there is no leakage of CVT fluid.

ADJUSTMENT AFTER INSTALLATION

Adjust the CVT fluid level. Refer to <u>TM-441</u>, "Adjustment".

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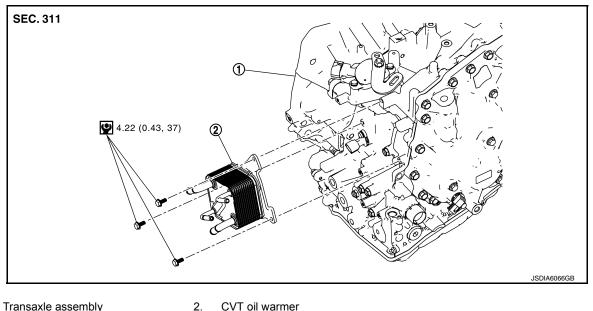
< REMOVAL AND INSTALLATION >

CVT OIL WARMER

Exploded View

INFOID:000000012201272

[CVT: RE0F10D]



1. Transaxle assembly

: N·m (kg-m, in-lb)

Removal and Installation

INFOID:000000012201273

REMOVAL

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WARNING:

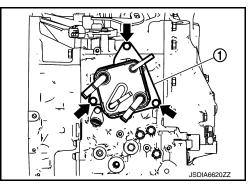
Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way. CAUTION:

Perform when the engine is cold.

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid/coolant from spilling.

- 1. Remove ECM and bracket as a set. Refer to EC-1256, "Removal and Installation".
- Pull out water hoses from CVT oil warmer. Refer to TM-570. "Removal and Installation".
- 3. Pull out fluid cooler hoses from CVT oil warmer. Refer to TM-572, "Removal and Installation".
- 4. Remove mounting bolt () and remove CVT oil warmer from transaxle assembly.



INSTALLATION Installation is in the reverse order of removal.

CVT OIL WARMER

< REMOVAL AND INSTALLATION >	CVT: RE0F10D]
Inspection	INFOID:000000012201274
INSPECTION AFTER INSTALLATION Start the engine and check visually that there is no leakage of CVT fluid and engine coolant.	
ADJUSTMENT AFTER INSTALLATION Adjust the CVT fluid level. Refer to <u>TM-441, "Adjustment"</u> .	

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[CVT: RE0F10D]

< REMOVAL AND INSTALLATION >

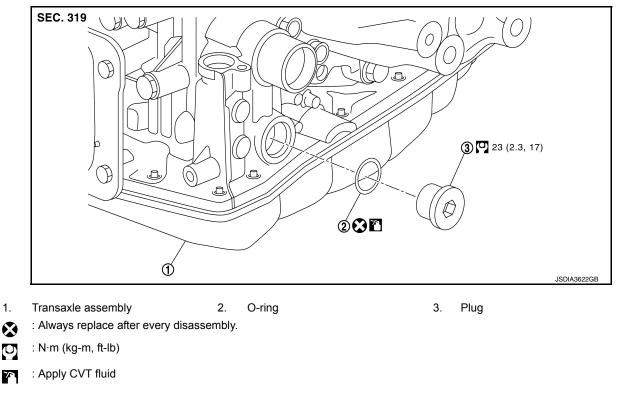
PLUG

Description

Replace the O-ring if oil leakage or exudes from the plug.

Exploded View

INFOID:000000012201276



Removal and Installation

REMOVAL

- 1. Remove front fender protector (LH). Refer to EXT-31, "Removal and Installation".
- 2. Remove the plug and O-ring.

INSTALLATION

Installation is in the reverse order of removal. **CAUTION:**

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

Inspection and Adjustment

INSPECTION AFTER INSTALLATION Start the engine and check visually that there is no leakage of CVT fluid.

ADJUSTMENT AFTER INSTALLATION Adjust the CVT fluid level. Refer to <u>TM-441, "Adjustment"</u>. INFOID:0000000012201278

INFOID:000000012201277

INFOID:000000012201275

[CVT: RE0F10D]

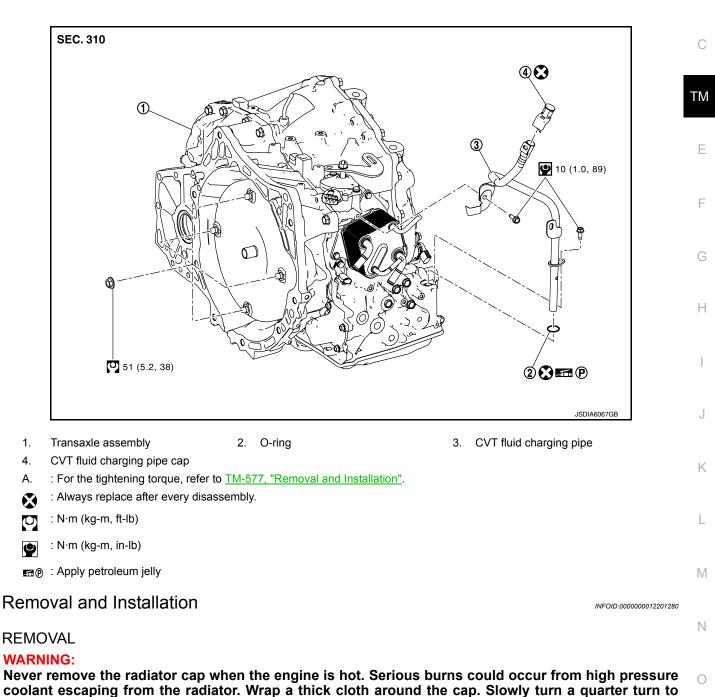
< UNIT REMOVAL AND INSTALLATION >

UNIT REMOVAL AND INSTALLATION TRANSAXLE ASSEMBLY

Exploded View

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INFOID:000000012201279



- CAUTION:
- Perform when the engine is cold.
 When replacing TCM and transatle assembly
- When replacing TCM and transaxle assembly simultaneously, perform "ADDITIONAL SERVICE WHEN REPLACING TCM AND TRANSAXLE ASSEMBLY" before work. Refer to <u>TM-433</u>, "Work Procedure".

allow built-up pressure to escape. Carefully remove the cap by turning it all the way.

NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

1. Remove the battery. Refer to PG-105, "Removal and Installation".

TM-577

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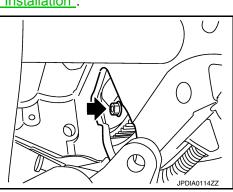
TRANSAXLE ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

- 2. Remove the air duct and air cleaner case. Refer to EM-192. "Removal and Installation".
- 3. Remove air breather hose. Refer to TM-555, "Removal and Installation".
- 4. Remove the ECM and bracket as a set. Refer to EC-1256, "Removal and Installation".
- 5. Drain engine coolant. Refer to CO-40, "Draining and Filling".
- 6. Remove CVT fluid charging pipe from transaxle assembly.
- 7. Remove O-ring from CVT fluid charging pipe.
- 8. Disconnect fluid cooler hoses from transaxle assembly. Refer to TM-572. "Removal and Installation".
- Disconnect following harness connector and wire harness. Refer to <u>TM-361, "CVT CONTROL SYSTEM :</u> <u>Component Parts Location"</u>.
 - CVT unit harness connector
 - Input speed sensor harness connector
 - Primary speed sensor harness connector
 - Output speed sensor harness connector
 - Transmission range switch connector
- 10. Remove harness and clip from the transaxle assembly.
- 11. Remove water hoses and water tube assembly. Refer to TM-570, "Removal and Installation".
- 12. Remove control cable from transaxle assembly. Refer to TM-549, "Removal and Installation".
- 13. Remove starter motor. Refer to STR-28, "MR16DDT : Removal and Installation".
- 14. Turn crankshaft and remove the four tightening nuts (+) for drive plate and torque converter.
 CAUTION:

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

- 15. Remove exhaust front tube. Refer to <u>EX-5, "Exploded View"</u>.
- 16. Separate the propeller shaft. Refer to <u>DLN-124</u>, "<u>Removal and</u> <u>Installation</u>".
- Remove front drive shafts. Refer to <u>FAX-83, "2WD : Removal</u> and Installation" (2WD), <u>FAX-97, "AWD : Removal and Installa-</u> tion" (4WD).



- 18. Remove front suspension member from vehicle. Refer to FSU-17, "Removal and Installation".
- 19. Remove transfer assembly from transaxle assembly with power tool. Refer to <u>DLN-94</u>, "<u>Removal and</u> <u>Installation</u>".
- 20. Support transaxle assembly with a transmission jack. CAUTION:

When setting the transmission jack, be careful not to collide against the drain plug.

21. Support engine assembly with a transmission jack. CAUTION:

When setting the transmission jack, be careful not to collide against the drain plug.

- 22. Remove engine mounting insulator (LH). Refer to EM-221, "AWD : Exploded View".
- 23. Remove bolts fixing transaxle assembly to engine assembly.
- 24. Remove transaxle assembly from vehicle.

CAUTION:

- Secure torque converter to prevent it from dropping.
- Secure transaxle assembly to a transmission jack.

INSTALLATION

Note the followings and installation is in the reverse order of removal. **CAUTION:**

TRANSAXLE ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

[CVT: RE0F10D]

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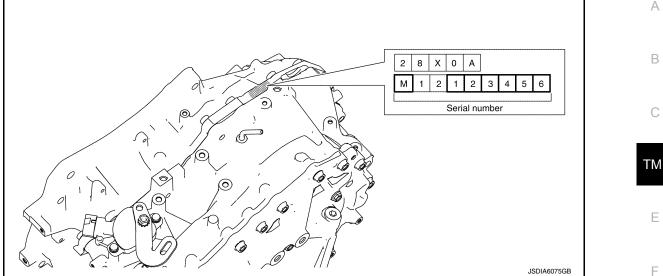
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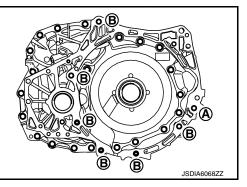
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• Write down the serial number of the new transaxle assembly.

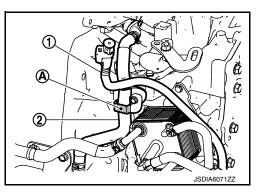


- When replacing an engine or transaxle you must make sure any dowels are installed correctly during re-assembly
- Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drive train components.
- Never reuse O-rings or copper sealing washers.
- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the nuts for the torque converter while securing the crankshaft pulley bolt, be sure to confirm the tightening torque of the crankshaft pulley bolt. Refer to <u>EM-248</u>, "<u>Exploded View</u>".
- After converter is installed to drive plate, rotate crankshaft several turns to check that CVT rotates freely without binding.
- When installing the CVT to the engine, align the matching mark on the drive plate with the matching mark on the torque converter.
- When installing the drive plate to torque converter nuts, tighten them temporarily. Then tighten the nuts to the specified torque.
- Install the transaxle assembly and engine assembly mounting bolts according to the following standards.

Bolt symbol	А	В				
Insertion direction	Transaxle to engine	Engine to transaxle				
Number of bolts	1	6				
Bolt length mm (in)	55 (2.17)	50 (1.97)				
Tightening torque N·m (kg-m, ft-lb)	62 (6.3, 46)					



- When installing charging pipe (1) to transaxle assembly, bracket (A) of charging pipe surrounds the water hose (2).
- When replaced transaxle assembly, perform "ADDITIONAL SER-VICE WHEN REPLACING TRANSAXLE ASSEMBLY". Refer to <u>TM-431, "Description"</u>.



TRANSAXLE ASSEMBLY

< UNIT REMOVAL AND INSTALLATION >

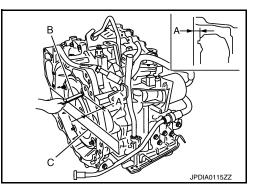
Inspection and Adjustment

INSPECTION BEFORE INSTALLATION

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

- B : Scale
- C : Straightedge

Dimension (A) : Refer to TM-584, "Torque Converter".



INSPECTION AFTER INSTALLATION

Check the following items:

• Start the engine and check visually that there is no leakage of CVT fluid and engine coolant.

• For CVT position, refer to <u>TM-439</u>, "Inspection".

ADJUSTMENT AFTER INSTALLATION Adjust the CVT fluid level. Refer to <u>TM-441, "Adjustment"</u>. [CVT: RE0F10D]

INFOID:000000012201281

TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL [CVT: RE0F10D] < UNIT DISASSEMBLY AND ASSEMBLY > UNIT DISASSEMBLY AND ASSEMBLY А TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL Exploded View INFOID:000000012201282 В SEC. 311 ТΜ 202 ⓓ Е 3€22 **(4**) JSDIA4173ZZ 1. Torque converter 2 O-ring 3. Converter housing oil seal Н 4 Transaxle assembly : Always replace after every disassembly. (\mathbf{x}) : Apply CVT fluid \sim Disassembly INFOID:000000012201283 Remove transaxle assembly. Refer to <u>TM-577, "Removal and Installation"</u>. Remove torgue converter from transaxle assembly. **CAUTION:** Κ Never damage the bushing on the inside of torque converter sleeve when removing torque converter. Remove O-ring from input shaft. L 4. Remove converter housing oil seal using an oil seal remover (commercial service tool). **CAUTION:** Be careful not to scratch converter housing. Μ Assembly INFOID:000000012201284 Note the followings and assembly is in the reverse order of disassembly. Ν **CAUTION:** Never reuse O-ring. Never reuse converter housing oil seal. Apply CVT fluid to O-ring. Ο Apply CVT fluid to converter housing oil seal. Ρ

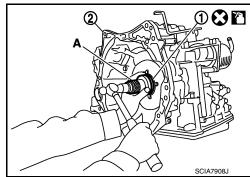
TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

< UNIT DISASSEMBLY AND ASSEMBLY >

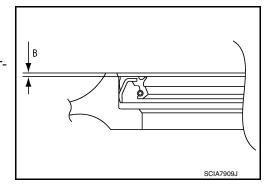
٠ Drive converter housing oil seal (1) evenly using a drift (A) (commercial service tool) so that converter housing oil seal protrudes by the dimension (B) respectively.

		Unit: mm (in)
Commercial service tool: (A)	Outer diameter: 65 (2.56)	
	Inner diameter: 60 (2.36)	

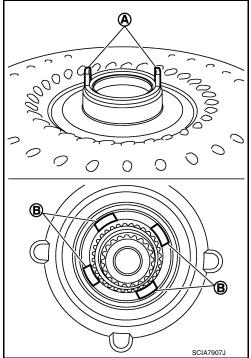
: Transaxle assembly 2



[CVT: RE0F10D]



- 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

INFOID:000000012201285

NOTE:

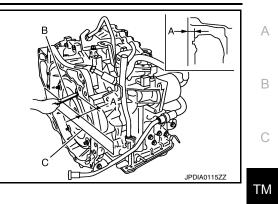
Converter housing oil seal pulling direction is used as the reference.

Dimension (B) : 1.0 ± 0.5 mm (0.039 \pm 0.020 in)

TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

- < UNIT DISASSEMBLY AND ASSEMBLY >
- 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 <u>TM-584, "Torque Converter"</u>.



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SERVICE DATA AND SPECIFICATIONS (SDS)

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General Specification

INFOID:000000012201286

Applied model	Engine	MR16DDT		
Applied model	Axle	2WD/AWD		
Transaxle model		RE0F10D		
	D position	2.631 – 0.378		
Transaxle gear ratio	R position	1.960		
	Final drive	5.694		
Recommended fluid and fluid capacity		MA-11, "Fluids and Lubricants"		

Shift Characteristics

INFOID:000000012201287

Unit: rpm

Throttle position	Shift pattern	CVT input speed					
	Shin patern	At 40 km/h (25 MPH)	At 60 km/h (37 MPH)				
2/8	"D" position	1,500 – 3,200	1,600 – 3,500				
2/0	ECO mode	1,500 – 3,200	1,600 – 3,500				
8/8	"D" position	4,000 - 4,800	4,600 - 5,400				
0/0	ECO mode	4,000 - 4,800	4,600 - 5,400				

NOTE:

Lock-up is engaged at the vehicle speed of approximately 18 km/h (11 MPH) to 130 km/h (81 MPH).

Stall Speed

INFOID:000000012201288

Stall speed	2,600 – 3,040
Torque Converter	INFO/D:000000012201289
	Unit: mm (in)
Dimension "A" between the converter housing and torque converter	14.4 (0.567)

[CVT: RE0F10D]