# SECTION TRANSAXLE & TRANSMISSION

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### < SYSTEM DESCRIPTION >

[6MT: RS6F94R]

INFOID:000000004921895

# SYSTEM DESCRIPTION M/T SYSTEM

System Diagram

**CROSS-SECTIONAL VIEW** 



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

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

### **M/T SYSTEM**

### < SYSTEM DESCRIPTION >

### System Description

### **TRIPLE-CONE SYNCHRONIZER**

Triple-cone synchronizer 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





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# < DTC/CIRCUIT DIAGNOSIS > DTC/CIRCUIT DIAGNOSIS > POSITION SWITCH BACK-UP LAMP SWITCH

### BACK-UP LAMP SWITCH : Component Parts Location

1 : Position switch



# BACK-UP LAMP SWITCH : Component Inspection

### 1.CHECK BACK-UP LAMP SWITCH

- 1. Disconnect position switch connector. Refer to TM-23, "Removal and Installation".
- 2. Check continuity between position switch terminals.

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

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace position switch. Refer to <u>TM-23</u>, "Removal and <u>Installation"</u>.



# PARK/NEUTRAL POSITION (PNP) SWITCH

PARK/NEUTRAL POSITION (PNP) SWITCH : Component Parts Location INFOLD:0000000492 1899

1 : Position switch



PARK/NEUTRAL POSITION (PNP) SWITCH : Component Inspection

INFOID:000000004921900

1. CHECK PARK/NEUTRAL POSITION (PNP) SWITCH

1. Disconnect position switch connector. Refer to TM-23, "Removal and Installation".

INFOID:000000004921898

### **POSITION SWITCH**

### < DTC/CIRCUIT DIAGNOSIS >

### [6MT: RS6F94R]

### 2. Check continuity between position switch terminals.

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

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace position switch. Refer to <u>TM-23</u>, "<u>Removal and</u> <u>Installation</u>".



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

# SYMPTOM DIAGNOSIS

# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

### NVH Troubleshooting Chart

INFOID:000000004921901

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

SUSPECTED PARTS (Possible cause)		OIL (Oil level is low)	OIL (Wrong oil)	OIL (Oil level is high)	GASKET (Damaged)	OIL SEAL (Worn or damaged)	O-RING (Worn or damaged)	SHIFT CONTROL LINKAGE (Worn)	SHIFT FORK (Worn)	GEAR (Worn or damaged)	BEARING (Worn or damaged)	BAULK RING (Worn or damaged)	INSERT SPRING (Damaged)
Reference		TM-17		TM-26		TM-19	TM-26	TM-26					
Symptoms	Noise	1	2							3	3		
	Oil leakage		3	1	2	2	2						
	Hard to shift or will not shift		1	1				2				3	3
	Jumps out of gear							1	2	2			

# < PRECAUTION > PRECAUTION PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" INFOID:000000005096896

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 TΜ 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:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SRS AIR BAG".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

### WARNING:

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

### Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:000000005096897 Κ

### NOTE:

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

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

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

### OPERATION PROCEDURE

 Connect both battery cables. NOTE:

Supply power using jumper cables if battery is discharged.

- 2. Turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
- Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
- Perform the necessary repair operation. 4.

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### PRECAUTIONS

< PRECAUTION >

- 5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
- 6. Perform self-diagnosis check of all control units using CONSULT-III.

Service Notice or Precautions for Manual Transaxle

INFOID:000000004921902

### 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. <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

INFOID:000000004922167 B

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

Tool number (Kent-Moore No.) Tool name		Description	С
KV381054S0 (J-34286) Puller		Removing mainshaft front bearing outer race	ТМ
	ZZA0601D		E
KV38100200 (-)		<ul> <li>Installing mainshaft front bearing outer race</li> <li>Installing mainshaft rear bearing outer race</li> </ul>	F
Drift a: 65 mm (2.56 in) dia. b: 49 mm (1.93 in) dia.		<ul> <li>Installing differential side bearing outer race (clutch housing side)</li> </ul>	G
	ZZA1143D		Н
ST33220000 (-)		Installing input shaft oil seal	
Drift a: 37 mm (1.46 in) dia. b: 31 mm (1.22 in) dia	C TO TOTAL CONTRACTOR		I
c: 22 mm (0.87 in) dia.			J
0700400004	ZZA1046D		-
ST33400001 (J-26082) Drift		(transaxle case side)	K
a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.			L
K1/325000 & A	ZZA0814D	Installing differential side oil seal	M
( - ) (Renault SST: B.vi 1666)		installing unreferitial side on sear	
Drift set 1. —			Ν
( - ) (Stamping number: B.vi 1666-A)			0
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. —			Ρ
( - ) (Stamping number: B.vi 1666-B)	JPDIC0730ZZ		
Drift d: 54 mm (2.13 in) dia.			
e: 48.6 mm (1.913 in) dia. f: 26.6 mm (1.047 in) dia.			

### < PREPARATION >

Tool number (Kent-Moore 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	<ul> <li>Installing input shaft rear bearing</li> <li>Installing mainshaft front bearing inner race</li> </ul>
ST33052000 ( - ) Drift a: 22 mm (0.87 in) dia. b: 28 mm (1.10 in) dia.	a b zzao969D	<ul> <li>Removing mainshaft rear bearing inner race</li> <li>Removing 6th main gear</li> <li>Removing 5th main gear</li> <li>Removing 4th main gear</li> <li>Removing 1st main gear</li> <li>Removing 1st-2nd synchronizer hub assembly</li> <li>Removing 2nd main gear</li> <li>Removing bushing</li> <li>Removing 3rd main gear</li> <li>Removing mainshaft front bearing inner race</li> </ul>
KV32102700 ( - ) Drift a: 48.6 mm (1.913 in) dia. b: 41.6 mm (1.638 in) dia.	a b S-NT065	<ul> <li>Installing bushing</li> <li>Installing 2nd main gear</li> <li>Installing 3rd main gear</li> <li>Installing 4th main gear</li> <li>Installing 5th main gear</li> <li>Installing 6th main gear</li> </ul>
ST30901000 (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.	a b c ZZA0976D	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.	a b zzao969D	Removing differential side bearing inner race (clutch housing side)
KV32300QAM ( - ) (Renault SST: B.vi 1823) Drift	PCIE2076J	Removing and installing input shaft rear bear- ing mounting bolt

### < PREPARATION >

# **Commercial Service Tools**

### INFOID:000000004922168

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Tool name		Description
Socket a: 8 mm (0.31 in) b: 5 mm (0.20 in)		Removing and installing drain plug
Spacer	PCIB1776E	Removing mainshaft front bearing outer race
: 25 mm (0.98 in) dia. : 25 mm (0.98 in)		
Drift : 17 mm (0.67 in) dia.	PCIB1780E	Installing bushing
	a	
Drift a: 24 mm (0.94 in) dia.	S-NT063	Removing input shaft rear bearing
)rift	PCIB1779E	Installing input shaft front boaring
u: 35 mm (1.38 in) dia. u: 25 mm (0.98 in) dia.		motaning input shart none bearing
	a b S-NT065	
Drift a: 43 mm (1.69 in) dia.	~~~	<ul> <li>Installing input shaft rear bearing</li> <li>Removing differential side bearing inner race (transaxle case side)</li> </ul>
	a	
	NT109	

### < PREPARATION >



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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 <u>MA-10, "Fluids and Lubricants"</u>. viscosity

Oil capacity : Refer to TM-57, "General Specification".

- After refilling gear oil, check oil the level. Refer to <u>TM-17</u>, <u>"Inspection"</u>.
- Set a gasket on filler plug and then install it to transaxle case.
   CAUTION:

### Never reuse gasket.

< PERIODIC MAINTENANCE >

Refer to TM-26, "Exploded View".

**GEAR OIL** 

Inspection

**OIL LEVEL** 

figure. CAUTION:

Draining

1.

2.

CAUTION:

CAUTION:

Never reuse gasket.

"Exploded View".

Never reuse gasket.

"Exploded View".

1.

**OIL LEAKAGE** 

Exploded View

PERIODIC MAINTENANCE

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

2. Check the oil level from filler plug mounting hole as shown in the

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

4. Tighten filler plug to the specified torque. Refer to TM-26,

Stop engine. Remove drain plug (1) and gasket, using a socket

3. Set a gasket on drain plug and install it to clutch housing, using

4. Tighten drain plug to the specified torque. Refer to TM-26.

Remove filler plug (1) and gasket from transaxle case.

Never start engine while checking oil level.

Start engine and let it run to warm up transaxle.

[Commercial service tool] and then drain gear oil.

a socket [Commercial service tool].

5. Tighten filler plug to the specified torque. Refer to <u>TM-26, "Exploded View"</u>.

TM-17

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### < REMOVAL AND INSTALLATION >

# REMOVAL AND INSTALLATION SIDE OIL SEAL

### **Exploded View**

Refer to TM-26, "Exploded View".

### Removal and Installation

### REMOVAL

- 1. Remove front drive shafts. Refer to <u>FAX-16</u>, "LEFT SIDE : Removal and Installation" (LH) or <u>FAX-17</u>, "<u>RIGHT SIDE : Removal and Installation</u>" (RH).
- Remove differential side oil seals (1) from clutch housing and transaxle case, using a suitable tool. CAUTION:

Never damage transaxle case and clutch housing.



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### INSTALLATION

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

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

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

### **CAUTION:**

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

### Inspection



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INSPECTION AFTER INSTALLATION Check the oil level. Refer to <u>TM-17</u>, "Inspection". INFOID-000000004921910

INFOID:000000004921909

### CONTROL LINKAGE

### < REMOVAL AND INSTALLATION >

### CONTROL LINKAGE

### **Exploded View**

INFOID:000000004921911

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### TM-19

### **CONTROL LINKAGE**

### < REMOVAL AND INSTALLATION >

- 8. Remove clips from the air duct and air cleaner case. <u>TM-22, "Removal and Installation"</u>.
- 9. Remove air cleaner case and air ducts. Refer to EM-24, "Removal and Installation".
- 10. Pull out and disconnect the each cable from the shifter lever A and the selector lever, using a suitable remover.
- 11. Remove each lock plate upward to disconnect the each cable from the cable mounting bracket.
- 12. Remove cable mounting bracket from the transaxle case.
- 13. Remove center muffler, exhaust front tube, and heat plate. Refer to EX-5. "Removal and Installation".
- 14. Remove bracket from the vehicle.
- 15. Release the tabs (A) on the front and back of the control device (1) to remove the control device from under the vehicle.



### INSTALLATION

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

- 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.
- Shift the shifter lever in the neutral position.
- 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.

- Shift the shifter lever A in the neutral position.
- Insert the each cable until it reaches the shifter lever A and the selector lever.
- The lock plate (1) which fixes the selector cable (2) has an indentation (
   Never confuse the lock plate with the lock plate (3) which fixes the shifter cable (4).

• Insert the each lock plate until it reaches the cable mounting bracket.



Install the selector cable according to the following instructions.

- 1. Install the selector cable (1) on the cable mounting bracket to install the lock plate.
- 2. Install the selector cable on the selector lever (2).
- 3. Slide the stopper (3) in the direction of the arrow (A) shown in the figure.
- 4. Press the lock (4) in the direction of the arrow (B) shown in the figure.

### CAUTION:

### Never move the selector lever.

5. Side the stopper in the direction of the arrow (C) shown in the figure.

### CAUTION:

Never move the selector lever.



### **CONTROL LINKAGE**

### < REMOVAL AND INSTALLATION >

### Inspection

INFOID:000000004921913

### **INSPECTION AFTER INSTALLATION**

- Check that the shifter lever knob maintains its position.
- Operate the shifter lever in each position to check that the shifter lever smoothly operates without any complication, snag, noise, backlash, or interference. If any malfunction is fund, repair malfunctioning parts or replace the control device.
- Check that the shifter lever automatically and smoothly returns to the neutral position when selecting the 1st-2nd side and the 5th-6th side. If any malfunction is fund, repair malfunctioning parts or replace the control device.

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### < REMOVAL AND INSTALLATION >

### AIR BREATHER HOSE

### **Exploded View**

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[6MT: RS6F94R]



- 1. Air cleaner case
- 2. Air breather hose

Transaxle assembly

3. Air duct

6. 2 way connector

4. Clip

### Removal and Installation

REMOVAL

1. Remove air duct (inlet). Refer to EM-24, "Removal and Installation".

5.

- 2. Remove clip from the air duct.
- 3. Remove air duct. Refer to EM-24, "Removal and Installation".
- 4. Remove clip from the air cleaner case.
- Remove air breather hose from the 2 way connector.
   CAUTION:

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

### INSTALLATION

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

- When installing air breather hose on 2 way connector, aim paint mark face toward the vehicle front.
- When installing air breather hose on 2 way connector, push it until it hits transaxle case.
- When installing air breather hose to air cleaner case, make sure that clip are fully inserted.
- **CAUTION:**

Make sure that air breather hose is not collapsed or blocked due to folding or bending when installed.

INFOID:000000004921915

### **POSITION SWITCH**

### < REMOVAL AND INSTALLATION >

# POSITION SWITCH

### **Exploded View**

Refer to TM-26, "Exploded View".

### REMOVAL

- 1. Remove air duct (inlet). Refer to EM-24, "Removal and Installation".
- 2. Remove battery. Refer to PG-95, "Removal and Installation".
- 3. Remove clips from the air cleaner case and air duct. Refer to TM-22, "Removal and Installation".
- 4. Remove air cleaner case and air ducts. Refer to EM-24, "Removal and Installation".
- 5. Remove bracket (1).

- 6. Disconnect position switch connector.
- 7. Remove position switch from transaxle case.



### INSTALLATION

1.	<ul> <li>Apply recommended sealant to threads of position switch.</li> <li>Use Genuine Silicone RTV or an equivalent. Refer to <u>GI-17, "Recommended Chemical Products</u> and <u>Sealants"</u>.</li> <li>CAUTION:</li> </ul>	I
	Remove old sealant and oil adhering to threads.	J
2.	Install position switch to transaxle case.	
3.	Tighten position switch to the specified torque. Refer to TM-26, "Exploded View".	
4.	For the next step and after, install in the reverse order of removal.	Κ
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### < UNIT REMOVAL AND INSTALLATION >

[6MT: RS6F94R]

# UNIT REMOVAL AND INSTALLATION TRANSAXLE ASSEMBLY

Exploded View

INFOID:000000004921916



1. Transaxle assembly

 $\Delta$ : Refer to "INSTALLATION" in <u>TM-24</u>, "Removal and Installation" for the locations and tightening torque.

### Removal and Installation

INFOID:000000004921917

### 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 the battery cable from the negative terminal.
- 2. Remove air duct (inlet). Refer to EM-24, "Removal and Installation".
- 3. Remove battery. Refer to PG-95. "Removal and Installation".
- 4. Remove clips from air cleaner case and air duct. Refer to TM-22, "Removal and Installation".
- 5. Remove air cleaner case and air ducts. Refer to EM-24, "Removal and Installation".
- 6. Remove air breather hose. Refer to TM-22, "Removal and Installation".
- 7. Remove bracket (1).

- 8. Disconnect position switch connector.
- 9. Remove harness clip from transaxle assembly.
- 10. Disconnect selector cable and shifter cable from transaxle assembly. Refer to TM-19, "Removal and Installation".
- 11. Remove starter motor. Refer to <u>STR-22, "Removal and Installa-</u> tion".
- 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.



### < UNIT REMOVAL AND INSTALLATION >

### Never depress clutch pedal during removal procedure. А 13. Remove engine under cover. 14. Remove fender protector LH. Refer to EXT-22, "FENDER PROTECTOR : Removal and Installation". 15. Disconnect ground cable. В 16. Remove front drive shafts. Refer to FAX-16, "LEFT SIDE : Removal and Installation" (LH) or FAX-17, "RIGHT SIDE : Removal and Installation" (RH). NOTE: Insert a suitable plug into differential side oil seal after removing front drive shaft. 17. Set a suitable jack to transaxle assembly and then set a suitable jack to engine assembly. CAUTION: When setting a suitable jack, be careful so that it does not contact with the switch. ТΜ 18. Remove engine mounting bracket (LH) mounting bolts (+) from transaxle assembly. Refer to EM-74, "Removal and Installation". $\triangleleft$ : Vehicle front 19. Remove rear engine mounting bracket and rear torque rod. Refer to EM-74, "Removal and Installation". 20. Remove transaxle assembly mounting bolts, using a power tool [Commercial service tool]. Remove transaxle assembly from the engine. CAUTION: JPDIC0661ZZ • Fix transaxle assembly to a suitable jack. The transaxle assembly must not interfere with the wire harnesses and clutch tube. Н 22. Remove CSC (Concentric Slave Cylinder). 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 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. Tighten transaxle assembly mounting bolts to the specified torque. (A) The figure is the view from the engine. Κ : Transaxle to engine $(\bullet)$ $\otimes$ : Engine to transaxle Bolt symbol А в M Quantity 3 6 B B Bolt length JPDIC0094Z 60 (2.36) 50 (1.97) "ℓ" mm (in) Ν Tightening torgue 62.0 (6.3, 46) N·m (kg-m, ft-lb) C Inspection INFOID:000000004931940 **INSPECTION AFTER INSTALLATION** Check the control linkage. Refer to <u>TM-21</u>, "Inspection". Check the oil leakage and oil level. Refer to TM-17, "Inspection".

# UNIT DISASSEMBLY AND ASSEMBLY TRANSAXLE ASSEMBLY

**Exploded View** 

CASE AND HOUSING



[6MT: RS6F94R]

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Apply Genuine Silicone RTV or an equivalent. Refer to <u>GI-17, "Recommended Chemical Products and Sealants"</u>. Refer to <u>GI-4, "Components"</u> for symbols not described on the above.

### < UNIT DISASSEMBLY AND ASSEMBLY >

### SHAFT AND GEAR



### < UNIT DISASSEMBLY AND ASSEMBLY >



- Mainshaft front bearing outer 1. 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

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

- : Apply gear oil.
- : Replace the parts as a set.

Refer to GI-4, "Components" for symbols not described on the above.

### < 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.

Refer to <u>GI-4, "Components"</u> for symbols not described on the above.

5.

8.

Selector lever

Fork rod

### **FINAL DRIVE**

- 6. Reverse fork rod

### < UNIT DISASSEMBLY AND ASSEMBLY >



### Disassembly

- 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.



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### < 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).

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



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### < UNIT DISASSEMBLY AND ASSEMBLY >

### [6MT: RS6F94R]

- 11. Remove reverse idler shaft assembly (1) according to the following procedures.
- 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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Revision: 2009 March

### < UNIT DISASSEMBLY AND ASSEMBLY >

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

### Never damage transaxle case.

19. Remove shim (2) from transaxle case.



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

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

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

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





### [6MT: RS6F94R]

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### < 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 a screwdriver. **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].

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**TM-36** 

### < 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.

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

2. Install plug to clutch housing.

Assembly

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









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### [6MT: RS6F94R]
#### < 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.

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.

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

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

Select mainshaft rear bearing adjusting shim according to the following procedures 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).

**TM-37** 









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#### < UNIT DISASSEMBLY AND ASSEMBLY >

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

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

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

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

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











[6MT: RS6F94R]

#### < UNIT DISASSEMBLY AND ASSEMBLY >

 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.

 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.

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

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

- 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) according to the following procedures.
- 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) according to the following procedures.
- a. Install spring washer to clutch housing.
- 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.
- 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-17,</u> <u>"Recommended Chemical Products and Sealants"</u>.
     CAUTION:
  - Remove old sealant adhering to the mounting surfaces. Also remove any moisture, oil, or foreign material adhering to both mounting surfaces.
  - 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 >

#### [6MT: RS6F94R]

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- 30. Install reverse idler shaft mounting bolt (-) according to the following procedures.
- 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) according to the following procedures.
- a. Apply recommended sealant to threads of position switch.
- Use Genuine Silicone RTV or an equivalent. Refer to GI-17, "Recommended Chemical Products and Sealants". CAUTION:

#### Remove old sealant and oil adhering to threads.

- b. Install position switch to transaxle case, and tighten it to the specified torque.
- Install bracket (2) to transaxle case, and tighten mounting bolt to the specified torque.
- 34. Install selector lever (3) according to following the procedures.
- 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.

- Install drain plug according to the following procedures.
- Install gasket to drain plug. 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 according to the following procedures.
- Install gasket to filler plug, and then install them to transaxle case. a. **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.







#### **TM-41**

#### < UNIT DISASSEMBLY AND ASSEMBLY >

INPUT SHAFT AND GEAR

drift (A) [SST: KV32300QAM ( - )].

**Exploded View** 

Refer to TM-26, "Exploded View".

Disassembly

#### **CAUTION:**

1.

- Fix input shaft in a vise with backplate, 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.

Remove input shaft rear bearing mounting bolt (1), using the

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

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#### < UNIT DISASSEMBLY AND ASSEMBLY >

#### [6MT: RS6F94R]



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



#### 7. Remove snap ring (1).

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





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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) according to the following procedures. **CAUTION:** 

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

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

#### Inspection

#### INSPECTION AFTER DISASSEMBLY

Input shaft and gear

Check the following items and replace if necessary.

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



Synchronizer hub and coupling sleeve

Check the following items and replace if necessary.

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

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Baulk ring

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#### < 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**

Refer to TM-26, "Exploded View".

Remove snap ring (1).

#### Disassembly

#### **CAUTION:**

1.

- Fix mainshaft in a vise with backplate, 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.

- Remove 6th main gear (1) and mainshaft rear bearing inner race (2) according to the following procedures.
- 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) according to the following procedures.
- a. Set a puller [Commercial service tool] to 4th main gear.
- b. Remove 5th main gear and 4th main gear, using the drift (A) [SST: ST33052000 ( )].
- 4. Remove mainshaft adjusting shim.

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#### < UNIT DISASSEMBLY AND ASSEMBLY >

- Remove 1st main gear (1), 1st-2nd synchronizer hub assembly (2), 2nd main gear (3), and 3rd main gear (4) according to the following procedures.
- 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) according to the following procedures.
- 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

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#### **CAUTION:**

- Select mainshaft rear bearing adjusting shim according to the following procedures 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.



#### [6MT: RS6F94R]

#### < UNIT DISASSEMBLY AND ASSEMBLY >

 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.

- 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 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 ( )].

 Install 3rd main gear (1) and 2nd main gear (2), using the drift (A) [SST: KV32102700 ( - )].



- 2 : Mainshaft
- 3 : 3rd main gear

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)









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Unit: mm (in)

#### < UNIT DISASSEMBLY AND ASSEMBLY >

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

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



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





 11. Install mainshaft rear bearing inner race (1), using the drift (A) [SST: ST30901000 (J-26010-01)].
 CAUTION: Replace mainshaft rear bearing inner race and mainshaft rear bearing outer race as a set.

12. Install snap ring. CAUTION: Never reuse snap ring.



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#### Inspection

#### INSPECTION AFTER DISASSEMBLY

Mainshaft and Gear

#### < UNIT DISASSEMBLY AND ASSEMBLY >

• Excessive wear, damage, and peeling of gear.

Synchronizer hub and coupling sleeve

Check the following items and replace if necessary.

Check the following items and replace if necessary.

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

• Damage, peeling, bend, uneven wear, and distortion of shaft.

#### [6MT: RS6F94R]

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SCIA0608J

Baulk ring

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

· Breakage, damage, and unusual wear on contact surface of cou-

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.



#### **REVERSE IDLER SHAFT AND GEAR**

#### < UNIT DISASSEMBLY AND ASSEMBLY >

**REVERSE IDLER SHAFT AND GEAR** 

#### **Exploded** View

Refer to TM-26, "Exploded View".

#### Disassembly

1. Remove reverse output gear (1).

2. Remove snap ring (1).

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

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



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INFOID:000000004921929

#### **REVERSE IDLER SHAFT AND GEAR**

#### < UNIT DISASSEMBLY AND ASSEMBLY >

#### 5. Remove needle bearings (1) and washer.

#### [6MT: RS6F94R]



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

Never reuse snap ring.

Assembly

- Check that snap ring is securely installed in a groove.
- Replace reverse output gear, snap ring, reverse baulk ring, return spring, needle bearing, reverse idler shaft, spacer, reverse input gear, and lock washer as a set.

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

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

#### Bearing

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

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**FINAL DRIVE** 

# FINAL DRIVE

#### Exploded View

Refer to TM-26, "Exploded View".

#### Disassembly

- Remove differential side bearing inner race (clutch housing side) (1) according to the following procedures.
- 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)].
- 2. Remove speedometer drive gear.
- Remove final gear mounting bolts, and then remove final gear (1).



- Remove differential side bearing inner race (transaxle case side) (1) according to the following procedures.
- a. Set a puller [Commercial service tool] to differential side bearing inner race (transaxle case side).
- b. Remove differential side bearing inner race (transaxle case side), using a drift (A) [Commercial service tool].



Assembly

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

#### Replace final gear and differential case as a set.

2. Install speedometer drive gear.

INFOID:000000004921933

[6MT: RS6F94R]

INFOID:000000004921934

INFOID:000000004921935



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

Bearing

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

#### CAUTION:

Inspection

CAUTION:

case side) as a set.

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

### < UNIT DISASSEMBLY AND ASSEMBLY >

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

3. Install differential side bearing inner race (clutch housing side), using a drift (A) [Commercial service tool]. CAUTION:

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

Replace differential side bearing inner race (transaxle case side) and differential side bearing outer race (transaxle

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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#### SHIFT FORK AND FORK ROD

#### < UNIT DISASSEMBLY AND ASSEMBLY >

SHIFT FORK AND FORK ROD

#### **Exploded View**

Refer to TM-26, "Exploded View".

Disassembly

Refer to TM-31, "Disassembly" for disassembly procedure.

Assembly

Refer to TM-36, "Assembly" for assembly procedure.

Inspection

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

SCIA7785E

**TM-56** 

INFOID:000000004921937

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INFOID:000000004921939

INFOID:000000004921940

#### SERVICE DATA AND SPECIFICATIONS (SDS)

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

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

#### **General Specification**

INFOID:000000004924606

Transaxle type			RS6F94R	
Engine type		MR18DE	C	
Number of speed			6	
Synchromesh type			Warner	TM
Shift pattern				E
			2 4 6 PCIB1769E	F
Gear ratio	1st		3.727	0
	2nd		2.105	G
	3rd		1.452	
	4th		1.171	Н
	5th		0.971	
	6th		0.811	
	Reverse		3.687	
Final gear			3.933	
Number of teeth	Input gear	1st	11	J
		2nd	19	
		3rd	31	
		4th	35	K
		5th	35	
		6th	37	
		Reverse	11	
	Main gear	1st	41	
		2nd	40	M
		3rd	45	
		4th	41	
		5th	34	N
		6th	30	
		Reverse	42	0
	Reverse idler gear	Input/Output	28/29	
	Final gear	Final gear/Pinion	59/15	
		Side gear/Pinion mate gear	21/18	— P
Oil capacity (Referen	nce)	ℓ (US pt, Imp pt)	Approx. 2.0 (4-1/4, 3-1/2)	
Remarks	Reverse synchronize	r	Installed	
Triple-cone synchronizer		zer	1st and 2nd	

[6MT: RS6F94R]

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< BASIC INSPECTION >

# BASIC INSPECTION DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:000000005062387

#### BEFORE STARTING TROUBLE DIAGNOSIS

- TCM receives signals from sensor, switch, and others to control gear shifting and lock-up with a solenoid. Therefore, input and output signals during CVT activation must be correct and stable. In addition, valves must be free from adhesion and solenoids must have no malfunctions for CVT system to operate normally.
- It is more difficult to diagnose intermittent malfunctions than continuous ones. These kinds of malfunctions often occur due to poor electrical connections or improper wiring. If this is the case, it is necessary to check the related circuit carefully and not to replace a normal part by mistake.
- When a visual check is not sufficient, connect CONSULT-III (or GST) and circuit tester according to "DETAILED FLOW" and perform "ROAD TEST". (Refer to <u>TM-199, "Description"</u>.)
- For a complaint regarding drivability, always take time to talk with the customer before starting trouble diagnoses. Helpful information, especially for diagnosing intermittent malfunctions, can be obtained from the customer.
- Use the attached "Diagnostic Work Sheet" to specifically find out what malfunction occurs under what conditions. (Refer to <u>TM-59</u>, "Diagnostic Work Sheet".)
- Starting with the inspection of basic items facilitates diagnoses of malfunctions in electrically controlled vehicle drivability.

#### DETAILED FLOW

#### **1.**OBTAIN INFORMATION ABOUT SYMPTOM

- 1. Refer to <u>TM-59</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.
- 2. Check the following:
- Service history
- Harnesses and connectors malfunction. Refer to <u>GI-34, "Intermittent Incident"</u>.

>> GO TO 2.

#### 2.CHECK DTC

- 1. Before checking the malfunction, check whether any DTC exists.
- 2. If DTC exists, perform the following operations.
- Record the DTC and freeze frame data. (Print out the data using CONSULT-III and affix them to the Work Order Sheet.)
- Erase DTCs.
- Check the relationship between the cause that is clarified with DTC and the malfunction information described by the customer. <u>TM-176, "Symptom Table"</u> is effective.
- 3. Check the information of related service bulletins and others also.

#### Do malfunction information and DTC exist?

Malfunction information and DTC exist. >>GO TO 3. Malfunction information exists, but not DTC. >>GO TO 4. Malfunction information does not exist, but DTC does. >>GO TO 5.

#### **3.**REPRODUCE MALFUNCTION SYMPTOM

Check any malfunction described by a customer, except those with DTC on the vehicle.

Also investigate whether the symptom is a fail-safe or normal operation. Refer to TM-172, "Fail-safe".

When a malfunction symptom is reproduced, the question sheet is effective. Refer to <u>TM-59</u>, "<u>Diagnostic Work</u> <u>Sheet</u>".

Verify the relationship between the symptom and the conditions in which the malfunction described by the customer occurs.

>> GO TO 5.

#### DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[CVT: RE0F08B]

4.REPRODUCE MALFUNCTION SYMPTOM	
Check the malfunction described by the customer on the vehicle. Also investigate whether the symptom is a fail-safe or normal operatio When a malfunction symptom is reproduced, the question sheet is effective Sheet."	n. Refer to <u>TM-172, "Fail-safe"</u> . ective. Refer to <u>TM-59, "Diagnostic Work</u>
Verify the relationship between the symptom and the conditions in whit tomer occurs.	ch the malfunction described by the cus-
>> GO TO 6.	
5. PERFORM "DTC CONFIRMATION PROCEDURE"	т
Perform "DTC CONFIRMATION PROCEDURE" of the appropriate DT Refer to <u>TM-174</u> , " <u>DTC Inspection Priority Chart</u> " when multiple DTC order for performing the diagnosis. <b>NOTE:</b>	C to check if DTC is detected again. s are detected, and then determine the
If no DTC is detected, refer to the freeze frame data.	
Is any DTC detected?	
NO >> Check according to <u>GI-34, "Intermittent Incident"</u> .	
6. IDENTIFY MALFUNCTIONING SYSTEM WITH "DIAGNOSIS CHA	RT BY SYMPTOM"
Use <u>TM-176</u> , " <u>Symptom Table</u> " from the symptom inspection result in forming the diagnosis based on possible causes and symptoms.	step 4. Then identify where to start per-
	I
>> GO TO 8.	
<b>1</b> .REPAIR OR REPLACE THE MALFUNCTIONING PARTS	
Repair or replace the detected malfunctioning parts. Reconnect parts or connector after repairing or replacing, and then era	ase DTC if necessary.
>> GO TO 8.	
O.FINAL CHECK Porform "DTC CONFIRMATION PROCEDURE" again to make sure th	and the repair is correctly performed
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,
Is DTC or malfunction symptom reproduced?	
YES-1 (DTC is reproduced)>>GO TO 5.	
NO >> Before delivering the vehicle to the customer, make sure t	hat DTC is erased.
Diagnostic Work Sheet	INF01D:000000005062388
DESCRIPTION	I
There are many operating conditions that may cause a malfunction	
of the transaxle parts. By understanding those conditions properly, a quick and exact diagnosis can be achieved	
In general, customers have their own criteria for a problem. There-	WHAT Vehicle & engine model
fore, it is important to understand the symptom and status well enough by asking the customer about the concerns carefully. In	WHEN Date, Frequencies
order to systemize all the information for the diagnosis, prepare the question sheet referring to the question points.	WHERE Road conditions HOW Operating conditions, Weather conditions, Symptoms
	SEF907L
WORKSHEET SAMPLE	

# Revision: 2009 March

#### DIAGNOSIS AND REPAIR WORK FLOW

#### < BASIC INSPECTION >

[CVT: RE0F08B]

			Questi	on Sheet			
Customer name	MR/MS	Registration number			Manuf. Date		
		VIN			Model & Year		
In Service Date		Engine			Mileage		km / Mile
Symptoms		□ Vehicle does not move (□ Any position □ Particular position				)	
		□ No up-shift		□ No down-shif	ft		
		Lock-up malfunction					
		□ Shift point to	o high	□ Shift point too	o low		
		□ Shift shock	$(\Box N \to D  \Box I$	$N \rightarrow R$ $\Box$ Lock-u	up 🛛 R, D, L, Ma	anual position)	
		□ Slip (□ N	$\rightarrow D  \Box \ N \rightarrow R$	□ Lock-up □	R, D, L, Manual po	osition)	
		□ Noise		□ Vibration			
		□ No pattern se	elect				
		□ Others					
		(				)	
First occurrence		□ Recently (Indicate approximate month and year)					
Frequency		□ All the time	□ Under certair	n conditions	□ Sometimes (	times a da	ay)
Weather condi- tions		□ Not affected					
	Weather	□ Fine	□ Clouding	□ Raining	□ Snowing	D Other (	)
	Temp.	□ Hot	□ Warm	Cool	□ Cold	□ Temp. [Appi °F)]	ox. °C (
	Humidity	🗆 High	□ Middle	□ Low			
Transaxle conditi	ons	Cold	During warm	-up	□ After warm-up	)	
		□ Engine spee	d (	rpm)			
Road conditions		□ In town	□ In suburbs	□ Freeway	□ Off road (Up /	′ Down)	
Driving conditions		□ Not affected					
		□ At starting	□ While idling	□ While engine	racing	□ At racing	□ While cruis- ing
C		□ While accele	rating	□ While decele	rating	While turnin	g (Right / Left)
		□ Vehicle spee	d [	km/h (	MPH)]		
Other conditions							

INSPECTION AND ADJUSTMENT	
< BASIC INSPECTION > [CVT: RE0F08]	3]
INSPECTION AND ADJUSTMENT	Λ
TCM REPLACEMENT	~
TCM REPLACEMENT : Description	2389 B
After replacing TCM, check that the replacement is successful.	
• When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and the replace TCM.	en <sub>C</sub>
After replacement, perform "TCM REPLACEMENT: Special Repair Requirement". Refer to TM-6 "TCM REPLACEMENT : Special Repair Requirement"	<u>i1.</u>
• When TCM is replaced in advance, perform "TRANSAXLE ASSEMBLY REPLACEMENT: Speci Repair Requirement". Refer to <u>TM-61</u> , " <u>TRANSAXLE ASSEMBLY REPLACEMENT</u> : <u>Special Repair</u> Requirement".	ial <sup>TM</sup> air
TCM REPLACEMENT : Special Repair Requirement	2390 E
CAUTION: Immediately after TCM is replaced or after transaxle assembly is replaced (after TCM initialization complete), self-diagnosis result of "P1701" may be displayed. In this case, erase self-diagnosis result of using CONSULT III. After president activities preserve to the perform DTC P1701 reproduction preserve	is F ult
and check that malfunction is not detected. Refer to <u>TM-135, "DTC Logic"</u> . <b>1.</b> CHECK AFTER WORK	re G
<ol> <li>Shift selector lever to "P" position.</li> <li>Turn ignition switch ON.</li> <li>Check that "P" is displayed on shift position indicator on combination meter. NOTE:</li> </ol>	Н
"P" is displayed approximately 1 to 2 seconds after tuning ignition switch ON. Does shift position indicator display "P"?	I
YES >> INSPECTION END NO >> Check the following. • The harness between TCM and ROM ASSY in transaxle assembly is open or shorted. • Terminals disconnected, loose, or bent from connector housing. TRANSAXLE ASSEMBLY REPLACEMENT	J
TRANSAXLE ASSEMBLY REPLACEMENT : Description	r 2391
TCM enables more precise control by acquiring each solenoid's calibration data (individual characteristic values) stored in ROM assembly (built in control valve). Therefore, after TCM or transaxle assembly is replace it is necessary to perform TCM calibration.	al- ∟ ∋d,
<ul> <li>CAUTION:</li> <li>When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and the replace TCM</li> </ul>	en M
After replacement, perform "TCM REPLACEMENT: Special Repair Requirement". Refer to TM-6 <u>"TCM REPLACEMENT : Special Repair Requirement"</u> .	<b>1.</b> N
<ul> <li>When TCM is replaced in advance, perform "TRANSAXLE ASSEMBLY REPLACEMENT: Special Repair Requirement". Refer to <u>TM-61</u>, "<u>TRANSAXLE ASSEMBLY REPLACEMENT</u>: <u>Special Repair Requirement</u>".</li> </ul>	ial <u>air</u>
TRANSAXLE ASSEMBLY REPLACEMENT : Special Repair Requirement	2392
CAUTION: Immediately after TCM is replaced or after control valve or transaxle assembly is replaced (after TC initialization is complete), self-diagnosis result of "P1701" may be displayed. In this case, erase se diagnosis result using CONSULT-III. After erasing self-diagnosis result, perform DTC P1701 reproduction procedure and check that malfunction is not detected. Refer to <u>TM-135</u> , " <u>DTC Logic</u> ". <b>1</b> .PREPARATION BEFORE WORK	P :M :If- ic-

With CONSULT-III

#### **INSPECTION AND ADJUSTMENT**

< BASIC INSPECTION >

#### 1. Start the engine. CAUTION:

Never drive the vehicle.

2. Select "Data monitor" in "TRANSMISSION".

3. Select "ATFTEMP COUNT".

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

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

#### 2. PERFORM TCM INITIALIZATION

#### With CONSULT-III

- 1. Turn ignition switch OFF.
- 2. Turn ignition switch ON. CAUTION:
- Never start the engine.
- 3. Select "Self Diagnostic Results" in "TRANSMISSION".
- 4. Shift selector lever to "R" position.
- 5. Depress slightly the accelerator pedal (Pedal angle: 2.0/8) while depressing the brake pedal.
- 6. Select "Erase".
- 7. Turn ignition switch OFF while keeping the selector lever in "R" position.
- 8. Wait approximately 10 seconds.
- 9. Turn ignition switch ON while keeping the selector lever in "R" position.
- 10. Select "Special function" in "TRANSMISSION".
- 11. Select "CALIB DATA".
- 12. Check that "CALIB DATA" value is as shown as in the following table.

Item name	Display value	Item name	Display value
UNIT CLB ID 1	00	GAIN PL	256
UNIT CLB ID 2	00	OFFSET PL	40
UNIT CLB ID 3	00	OFFSET2 PL	0
UNIT CLB ID 4	00	MAP NO SEC	32
UNIT CLB ID 5	00	GAIN SEC	256
UNIT CLB ID 6	00	OFFSET SEC	40
MAP NO LU	33	OFFSET2 SEC	0
GAIN LU	256	MAP NO SL	32
OFFSET LU	40	GAIN SL	256
OFFSET2 LU	0	OFFSET SL	40
MAP NO PL	32	OFFSET2 SL	0

#### Is "CALIB DATA" value it?

```
YES >> GO TO 3.
```

```
NO >> GO TO 1.
```

#### **3.**CHECK AFTER WORK

1. Shift selector lever to "P" position.

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

#### NOTE:

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

Does shift position indicator display "P"?

- YES >> INSPECTION END
- NO >> Check the following.
  - The harness between TCM and ROM ASSY in transaxle assembly is open or shorted.
  - Terminals disconnected, loose, or bent from connector housing.
  - Power supply and ground of TCM. (Refer to TM-135, "Diagnosis Procedure".)

#### TM-62

#### CVT SYSTEM

# < SYSTEM DESCRIPTION > SYSTEM DESCRIPTION CVT SYSTEM

#### System Diagram

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#### **CVT SYSTEM**

#### < SYSTEM DESCRIPTION >

#### **Component Parts Location**

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[CVT: RE0F08B]



- 1. Shift position indicator (On the combination meter)
- 4. ECM Refer to <u>EC-22,</u> <u>"Component Parts Location"</u>
- 7. Overdrive control switch
- 10. Control valve assembly\*
- 13. Stop lamp switch
- A. Center console
- D. Brake pedal, left side

#### NOTE:

The following components are included in control valve assembly.

- CVT fluid temperature sensor
- Torque converter clutch solenoid valve
- Lock-up select solenoid valve
- Line pressure solenoid valve

- 2. OD OFF indicator lamp (On the combination meter)
- 5. IPDM E/R Refer to <u>PCS-6</u>, "<u>Component Parts</u> <u>Location</u>" (With intelligent Key system), <u>PCS-37</u>, "<u>Component Parts</u> <u>Location</u>" (Without intelligent Key system)
- 8. Secondary speed sensor
- 11. CVT unit connector
- 14. Accelerator pedal position sensor
- B. Transaxle assembly

3. Crankshaft position sensor

6. BCM

Refer to <u>BCS-9</u>, "<u>Component Parts</u> <u>Location</u>" (With intelligent Key system), <u>BCS-88</u>, "<u>Component Parts</u> <u>Location</u>" (Without intelligent Key system)

- 9. Transmission range switch
- 12. Primary speed sensor
- 15. TCM
- C. Accelerator pedal, upper

#### **CVT SYSTEM**

#### [CVT: RE0F08B]

Secondary pressure solenoid valve	
Secondary pressure sensor	A
Step motor	
ROM assembly	
*: Control valve assembly is included in transaxle assembly.	В

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< SYSTEM DESCRIPTION >

#### < SYSTEM DESCRIPTION >

## MECHANICAL SYSTEM

#### **Cross-Sectional View**

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[CVT: RE0F08B]



- 1. Converter housing
- 4. Reverse brake
- 7. Steel belt
- 10. Internal gear
- 13. Final gear
- 16. Output gear
- 19. Torque converter

- 2. Oil pump
- 5. Planetary carrier
- 8. Sun gear
- 11. Secondary pulley
- 14. Idler gear
- 17. Parking gear

- 3. Forward clutch
- 6. Primary pulley
- 9. Side cover
- 12. Differential case
- 15. Reduction gear
- 18. Input shaft

#### < SYSTEM DESCRIPTION >

#### System Diagram

[CVT: RE0F08B]





#### System Description

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O. Activation

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Driving force of engine is transmitted to wheels via torque converter, planetary gear, belt & pulley, differential gear, and others. In addition, with mounting of parking mechanism, secondary pulley is mechanically fixed by shifting the selector lever to "P" position.

Activation state a	according to each	n gear shifting
--------------------	-------------------	-----------------

	Casandan (ail	Solenoid valve				
position	pressure sensor	Line pressure	Secondary pres- sure	Lock-up	Lock-up /select switching	Step motor
Р	0	0	0		0	
R	0	0	0		0	0
Ν	0	0	0		0	0
D (Low)	0	0	0	0		0
D (High)	0	0	0	0		0
D (Lock-up)	0	0	0	0		0
L	0	0	0	0		0

#### Power transmission of each position

"P" position

- Driving force from input shaft is not transmitted to primary pulley because of idling caused by poor engagement of forward clutch and reverse brake.
- Since the parking pole interlocked with the selector lever becomes into engagement with the parking gear integral with the output shaft to mechanically fix the output shaft, torque from wheel is not transmitted to secondary pulley.

#### < SYSTEM DESCRIPTION >



#### Planet gear

Description	Sun gear	Planetary carrier	Internal gear
Condition	Fixed	Input	—
Rotating direction	_	Idle	In the positive direction

"R" position

<sup>•</sup> Driving force from input shaft rotates sun gear in opposite direction of input shaft rotation because reverse brake is engaged and internal gear is fixed.

<sup>•</sup> Therefore primary pulley rotates in opposite direction of input shaft rotation and driving force output is in opposite direction rotation.

#### < SYSTEM DESCRIPTION >



#### Planet gear

Description	Sun gear	Planetary carrier	Internal gear
Condition	Output	Input	Fixed
Rotating direction	In the positive direction	In the positive direction	_

"N" position

• Driving force from input shaft is not transmitted to primary pulley because of idling caused by poor engagement of forward clutch and reverse brake.

 Torque from wheel is not transmitted to input shaft because of idling of planetary carrier caused by poor engagement of forward clutch and reverse brake.

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#### < SYSTEM DESCRIPTION >



#### Planet gear

Description	Sun gear	Planetary carrier	Internal gear
Condition	_	Input	—
Rotating direction	Stopped	Idle	In the positive direction

"D" and "L" positions

<sup>•</sup> Since the Forward clutch is engaged, driving force from Input shaft rotates Sun gear in the positive direction via Forward clutch.

<sup>•</sup> Therefore primary pulley rotates in the positive direction, and driving force is outputted in the forward direction.

#### < SYSTEM DESCRIPTION >



#### Planet gear

Description	Sun gear	Planetary carrier	Internal gear
Condition	Input/Output	Input	—
Rotating direction	In the positive direction	In the positive direction	Idle

#### **Component Parts Location**

#### Refer to TM-66, "Cross-Sectional View".

#### **Component Description**

Item	Function	
Torque converter	The torque converter is the device that increases the engine torque as well as the conventional CVT and transmits it to the transaxle.	
Oil pump	This is a trochoid type oil pump directly driven by the engine. Discharged oil from oil pump is conveyed to control valve to be used for operating oil for primary and secondary pulleys, clutch, and for 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 and 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 internal gear.	
Internal gear	The internal gear is directly connected to reverse brake drum. It is a gear that moves the outer edge of outer pinion gear of planetary carrier. It performs switching of forwards, reverse and others by fixing or releasing internal gear.	
Planetary carrier	The planetary carrier consists of carrier, inner pinion gear, outer pinion gear, and pinion shaft. It transmits traction force to move the vehicle in reverse when internal gear is fixed.	
Sun gear	Sun gear is a set part of planetary carrier and internal gear. It transmits transmitted traction force to primary fix pulley (FIX). It rotates in same or opposite direction according to activation of either forward clutch or reverse brake.	

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INFOID:000000005062401

#### < SYSTEM DESCRIPTION >

Item	Function	
Input shaft	The input shaft is directly connected to forward clutch drum and transmits traction force from torque converter. In shaft center, there are holes for hydraulic distribution to primary pulley and hydraulic distribution for lock-up ON/OFF.	
Primary 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 star wheels 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.	
Secondary pulley		
Steel belt		
Manual shaft	The parking rod rotates the parking pole and the parking pole engages with the parking gear when the manual shaft is in "P" position. As a result the parking gear and the output axis are fixed.	
Parking rod		
Parking pawl		
Parking gear		
Output gear	Reduction gear consists of primary deceleration (output gear and idler gear in pair) and secondary deceleration (reduction gear and final gear in pair). Each of them uses a helical gear.	
Idler gear		
Reduction gear		
Final gear		
Differential		
## < SYSTEM DESCRIPTION >

# HYDRAULIC CONTROL SYSTEM

# System Diagram



# System Description

Hydraulic control mechanism consists of trochoid type oil pump directly driven by the engine, hydraulic control valve controlling line pressure and gear shifting, and input signals.

## LINE PRESSURE AND SECONDARY PRESSURE CONTROL

When an input torque signal corresponding to engine driving force is transmitted from ECM to TCM, TCM controls line pressure solenoid valve and secondary pressure solenoid valve to adjust to a correct oil pressure.

#### Normal Control

Optimize the line pressure and secondary pressure, depending on driving conditions, on the basis of the throttle position, the engine speed, the primary pulley (input) revolution speed, the secondary pulley (output) revo-Ν lution speed, the brake signal, the transmission range switch signal, the lock-up signal, the voltage, the target gear ratio, the fluid temperature, and the fluid pressure.

#### Feedback Control

For the normal fluid control and the select fluid control, secondary pressure is detected for feedback control by using a secondary pressure sensor to set a high-precision secondary pressure.

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# HYDRAULIC CONTROL SYSTEM

### < SYSTEM DESCRIPTION >

## **Component Parts Location**

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[CVT: RE0F08B]



- 1. Shift position indicator (On the combination meter)
- 4. ECM Refer to <u>EC-22,</u> <u>"Component Parts Location"</u>
- 7. Overdrive control switch
- 10. Control valve assembly\*
- 13. Stop lamp switch
- A. Center console
- D. Brake pedal, left side

#### NOTE:

The following components are included in control valve assembly.

- CVT fluid temperature sensor
- Torque converter clutch solenoid valve
- Lock-up select solenoid valve
- Line pressure solenoid valve

- 2. OD OFF indicator lamp (On the combination meter)
- IPDM E/R Refer to <u>PCS-6</u>, "<u>Component Parts</u> <u>Location</u>" (With intelligent Key system), <u>PCS-37</u>, "<u>Component Parts</u> <u>Location</u>" (Without intelligent Key system)
- 8. Secondary speed sensor
- 11. CVT unit connector
- 14. Accelerator pedal position sensor
- B. Transaxle assembly

3. Crankshaft position sensor

6. BCM

Refer to <u>BCS-9</u>, "<u>Component Parts</u> <u>Location</u>" (With intelligent Key system), <u>BCS-88</u>, "<u>Component Parts</u> <u>Location</u>" (Without intelligent Key system)

- 9. Transmission range switch
- 12. Primary speed sensor
- 15. TCM
- C. Accelerator pedal, upper

# HYDRAULIC CONTROL SYSTEM

#### < SYSTEM DESCRIPTION >

- Secondary pressure solenoid valve
- Secondary pressure sensor
- Step motor
- ROM assembly
- \*: Control valve assembly is included in transaxle assembly.

# **Component Description**

[CVT: RE0F08B]

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Name	Function	
Torque converter regulator valve	Optimizes the supply pressure for the torque converter depending on driving conditions.	
Pressure regulator valve	Optimizes the discharge pressure from the oil pump depending on driving conditions.	
TCC control valve	<ul> <li>Activates or deactivates the lock-up.</li> <li>Locks-up smoothly by opening lock-up operation excessively.</li> </ul>	
Shift control valve	Controls inflow/outflow of line pressure from the primary pulley depending on the stroke difference between the stepping motor and the primary pulley.	
Secondary valve	Controls the line pressure from the secondary pulley depending on operating conditions.	
Clutch regulator valve	Adjusts the clutch operating pressure depending on operating conditions.	
Manual valve	Transmits the clutch operating pressure to each circuit in accordance with the selected position.	
Select control valve	Engages forward clutch, reverse brake smoothly depending on select operation.	
Select switch valve	The select switch valve enables to select engagement/disengagement of lock-up clutch and that of forward clutch and reverse clutch.	
TCC solenoid valve	TM-114, "Description"	
Secondary pressure solenoid valve	TM-126, "Description"	
Line pressure solenoid valve	TM-120, "Description"	
Step motor	TM-146, "Description"	
Lock-up select solenoid valve	TM-143, "Description"	
Primary speed sensor	TM-107, "Description"	
Secondary speed sensor	TM-110, "Description"	
Transmission range switch	TM-101, "Description"	
Primary pulley		
Secondary pulley	TM 74 "Component Description"	
Forward clutch	<u>IM-71, Component Description</u>	
Torque converter		
ТСМ	Judges the vehicle driving status according to the signal from each sensor and controls the non-step transmission mechanism properly.	
Accelerator pedal position sensor	TM-138, "Description"	

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## < SYSTEM DESCRIPTION > CONTROL SYSTEM

# System Diagram

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[CVT: RE0F08B]



# System Description

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

## TCM FUNCTION

The function of the TCM is to:

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

SENSORS (or SIGNALS)		TCM		ACTUATORS
Transmission range switch 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 Overdrive control switch signal Vehicle speed signal	⇒	Shift control Line pressure control Primary pressure control Secondary pressure control Lock-up control Engine brake control Vehicle speed control Fail-safe control Self-diagnosis CONSULT-III communication line Duet-EA control CAN system On board diagnosis	⇒	Line pressure solenoid valve Secondary pressure solenoid valve Torque converter clutch solenoid valve Lock-up select solenoid valve Step motor Shift position indicator OD OFF indicator lamp

INPUT/OUTPUT SIGNAL OF TCM

# **CONTROL SYSTEM**

### < SYSTEM DESCRIPTION >

## [CVT: RE0F08B]

	Control item	Fluid pressure control	Select con- trol	Shift control	Lock-up control	CAN com- munication control	Fail-safe function <sup>*2</sup>	А
	Transmission range switch	Х	Х	Х	Х	Х	Х	В
	CVT fluid temperature sensor	Х	Х	Х	Х		Х	
	Secondary pressure sensor	Х					Х	-
	Primary speed sensor	Х	Х	Х	Х		Х	С
	Secondary speed sensor	Х	Х	Х	Х		Х	
Input	Engine speed signal <sup>*1</sup>	Х	Х	Х	Х	Х	Х	ТМ
·	Accelerator pedal position signal *1	Х	Х	Х	Х	Х	Х	
	Closed throttle position signal <sup>*1</sup>	Х	Х		Х	Х		_
	Stop lamp switch signal <sup>*1</sup>	Х	Х		Х	Х		
	Overdrive control switch signal <sup>*1</sup>		Х	Х	Х	Х		-
	TCM power supply voltage signal	Х	Х	Х	Х	Х	Х	F
	Line pressure solenoid valve	Х		Х			Х	-
	Secondary pressure solenoid valve	Х					Х	G
Output	TCC solenoid valve			Х	Х		Х	G
	Lock-up select solenoid valve			Х	Х		Х	-
	Step motor		Х				Х	Н

\*1: Input via CAN communications.

\*2: If these input and output signals are different, the TCM triggers the fail-safe function.

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# **CONTROL SYSTEM**

### < SYSTEM DESCRIPTION >

## **Component Parts Location**

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[CVT: RE0F08B]



- 1. Shift position indicator (On the combination meter)
- 4. ECM Refer to <u>EC-22,</u> <u>"Component Parts Location"</u>
- 7. Overdrive control switch
- 10. Control valve assembly\*
- 13. Stop lamp switch
- A. Center console
- D. Brake pedal, left side

#### NOTE:

The following components are included in control valve assembly.

- CVT fluid temperature sensor
- Torque converter clutch solenoid valve
- Lock-up select solenoid valve
- Line pressure solenoid valve

- 2. OD OFF indicator lamp (On the combination meter)
- IPDM E/R Refer to <u>PCS-6</u>, "<u>Component Parts</u> <u>Location</u>" (With intelligent Key system), <u>PCS-37</u>, "<u>Component Parts</u> <u>Location</u>" (Without intelligent Key system)
- 8. Secondary speed sensor
- 11. CVT unit connector
- 14. Accelerator pedal position sensor
- B. Transaxle assembly

3. Crankshaft position sensor

6. BCM

Refer to <u>BCS-9</u>, "<u>Component Parts</u> <u>Location</u>" (With intelligent Key system), <u>BCS-88</u>, "<u>Component Parts</u> <u>Location</u>" (Without intelligent Key system)

- 9. Transmission range switch
- 12. Primary speed sensor
- 15. TCM
- C. Accelerator pedal, upper

# **CONTROL SYSTEM**

### < SYSTEM DESCRIPTION >

- Secondary pressure solenoid valve
- Secondary pressure sensor

[CVT:	RE0F08B]
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Secondary pressure sensor		А
Step motor		
ROM assembly		
Control valve assembly is included in transaxle assembly	ly.	В
Component Description	INEQ10-00000005062409	
Namo	Function	С
Transmission range switch	TM-101, "Description"	тм
CVT fluid temperature sensor	TM-104, "Description"	1 101
Secondary pressure sensor	TM-128, "Description"	
Primary speed sensor	TM-107, "Description"	Е
Secondary speed sensor	TM-110, "Description"	
Line pressure solenoid valve	TM-120, "Description"	
Secondary pressure solenoid valve	TM-126, "Description"	F
TCC solenoid valve	TM-114, "Description"	
Lock-up select solenoid valve	TM-143, "Description"	G
Step motor	TM-146, "Description"	
ТСМ	TM-75, "Component Description"	
Accelerator pedal position sensor	TM-138, "Description"	Н
Stop lamp switch	TM-98, "Description"	
Overdrive control switch	TM-151, "Description"	1

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# LOCK-UP AND SELECT CONTROL SYSTEM

## < SYSTEM DESCRIPTION >

## [CVT: RE0F08B]

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# LOCK-UP AND SELECT CONTROL SYSTEM

## System Diagram



# System Description

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- 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.
- The lock-up applied gear range was expanded by locking up the torque converter at a lower vehicle speed than AT models.
- Lock-up is prohibited when CVT fluid temperature is low.



## TORQUE CONVERTER CLUTCH AND SELECT CONTROL VALVE CONTROL

#### Lock-up Released

In the lock-up released state, the torque 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.

# LOCK-UP AND SELECT CONTROL SYSTEM

## < SYSTEM DESCRIPTION >

## **Component Parts Location**

# [CVT: RE0F08B]

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- Shift position indicator 1. (On the combination meter)
- ECM 4. Refer to EC-22, "Component Parts Location"
- 7. Overdrive control switch
- 10. Control valve assembly\*
- 13. Stop lamp switch
- Α. Center console
- D. Brake pedal, left side

#### NOTE:

The following components are included in control valve assembly.

- CVT fluid temperature sensor
- · Torque converter clutch solenoid valve
- · Lock-up select solenoid valve
- · Line pressure solenoid valve
- Revision: 2009 March

- OD OFF indicator lamp 2. (On the combination meter)
- IPDM E/R 5. Refer to PCS-6, "Component Parts Location" (With intelligent Key system), PCS-37, "Component Parts Location" (Without intelligent Key system)
- Secondary speed sensor 8.
- 11. CVT unit connector
- 14. Accelerator pedal position sensor
- Transaxle assembly Β.

- Crankshaft position sensor 3.
- BCM 6. Μ Refer to BCS-9, "Component Parts Location" (With intelligent Key system), BCS-88, "Component Parts Location" (Without intelligent Key Ν system) 9. Transmission range switch 12. Primary speed sensor 15. TCM C. Accelerator pedal, upper

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# LOCK-UP AND SELECT CONTROL SYSTEM

#### < SYSTEM DESCRIPTION >

- Secondary pressure solenoid valve
- Secondary pressure sensor
- Step motor
- ROM assembly
- \*: Control valve assembly is included in transaxle assembly.

# Component Description

Name	Function
Transmission range switch	TM-101, "Description"
CVT fluid temperature sensor	TM-104, "Description"
Primary speed sensor	TM-107, "Description"
Secondary speed sensor	TM-110, "Description"
TCC solenoid valve	TM-114, "Description"
Lock-up select solenoid valve	TM-143, "Description"
Select switch valve	
TCC control valve	
Torque converter regulator valve	TM-75, "Component Description"
Select control valve	
Manual valve	
Forward clutch	
Reverse brake	TM-71, "Component Description"
Torque converter	
ТСМ	TM-75, "Component Description"
Accelerator pedal position sensor	TM-138, "Description"

# SHIFT CONTROL SYSTEM

## < SYSTEM DESCRIPTION >

# SHIFT CONTROL SYSTEM



Secondary pulley speed

<sup>i</sup>-- Overdrive control switch

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[CVT: RE0F08B]

INFOID:000000005062414

System Diagram

# NOTE:

The gear ratio is set for each position separately.

Oil system

---- Electrical system — Mechanical system

## System Description

In order to select the gear ratio that can obtain the driving force in accordance with driver's intention and the vehicle condition, TCM monitors the driving conditions, such as the vehicle speed and the throttle position and selects the optimum gear ratio, and determines the gear change steps to the gear ratio. Then TCM sends the command to the step motor, controls the inflow/outflow of line pressure from the primary pulley to determine the position of the moving-pulley and controls the gear ratio.

Line pressure

#### **"D" POSITION**

Shifting over all the ranges of gear ratios from the lowest to the highest.



Use this position for the improved engine braking.



## **"L" POSITION**

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# SHIFT CONTROL SYSTEM

#### < SYSTEM DESCRIPTION >

By limiting gear range to the lowest position, the strong driving force and the engine brake can be secured.



#### DOWNHILL ENGINE BRAKE CONTROL (AUTO ENGINE BRAKE CONTROL)

When a downhill slope is detected with the accelerator pedal released, the engine brake will be strengthened up by downshifting so as not to accelerate the vehicle more than necessary.

#### ACCELERATION CONTROL

According to vehicle speed and a change of accelerator pedal angle, driver's request for acceleration and driving scene are judged. This function assists improvement in the acceleration feeling by making the engine speed proportionate to the vehicle speed. And a shift map that can gain a larger driving force is available for compatibility of mileage with driveability.

## Component Parts Location



## < SYSTEM DESCRIPTION >

- 1. Shift position indicator (On the combination meter)
- ECM 4. Refer to EC-22, "Component Parts Location"
- 7. Overdrive control switch
- 10. Control valve assembly
- 13. Stop lamp switch
- Α. Center console
- D. Brake pedal, left side
- NOTE:

The following components are included in control valve assembly.

- · CVT fluid temperature sensor
- Torque converter clutch solenoid valve
- · Lock-up select solenoid valve
- · Line pressure solenoid valve
- · Secondary pressure solenoid valve
- · Secondary pressure sensor
- Step motor
- ROM assembly
- \*: Control valve assembly is included in transaxle assembly.

# Component Description

2. OD OFF indicator lamp (On the combination meter)

IPDM E/R 5. Refer to PCS-6, "Component Parts Location" (With intelligent Key system), PCS-37, "Component Parts Location" (Without intelligent Key system)

SHIFT CONTROL SYSTEM

- 8. Secondary speed sensor
- 11. CVT unit connector
- Accelerator pedal position sensor 14.
- Β. Transaxle assembly

[CVT: RE0F08B]

3.	Crankshaft position sensor	A
6.	BCM Refer to <u>BCS-9</u> , " <u>Component Parts</u> <u>Location</u> " (With intelligent Key sys- tem), <u>BCS-88</u> , " <u>Component Parts</u> <u>Location</u> " (Without intelligent Key system)	В
9.	Transmission range switch	C
12.	Primary speed sensor	
15.	ТСМ	ТМ
C.	Accelerator pedal, upper	
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Item	Function	
Transmission range switch	TM-101, "Description"	J
Primary speed sensor	TM-107, "Description"	
Secondary speed sensor	TM-110, "Description"	ĸ
Step motor	TM-146, "Description"	
Shift control valve	TM-75, "Component Description"	
Primary pulley	TM 71 "Component Description"	
Secondary pulley	- <u>IN-71, Component Description</u>	
ТСМ	TM-75, "Component Description"	N
Accelerator pedal position sensor	TM-138, "Description"	
Overdrive control switch	TM-151, "Description"	

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#### < SYSTEM DESCRIPTION >

# SHIFT LOCK SYSTEM WITH INTELLIGENT KEY SYSTEM

## WITH INTELLIGENT KEY SYSTEM : System Description

The shift lever cannot be shifted from the "P" position unless the brake pedal is depressed while the ignition switch is set to ON. The shift lock is unlocked by turning the shift lock solenoid ON when the ignition switch is set to ON, the park position switch is turned ON (selector lever is in "P" position), and the stop lamp switch is turned ON (brake pedal is depressed) as shown in the operation chart in the figure. Therefore, the shift lock solenoid receives no ON signal and the shift lock remains locked if all of the above conditions are not fulfilled. (However, selector operation is allowed if the shift lock release button is pressed.)

# Stop lamp SW OFF (Brake pedal is released) ON ("P" position) Park position SW OFF (Other positions) Unlock (ON) Shift lock solenoid Lock (OFF)

ON

OFF

ON

Ignition SW

(Brake pedal is depressed)

## SHIFT LOCK OPERATION AT "P" POSITION

When Brake Pedal Is Not Depressed (No Selector Operation Allowed) The shift lock solenoid (A) is turned OFF (not energized) and the solenoid rod (B) is extended with the spring when the brake pedal is not depressed (no selector operation allowed) with the ignition switch ON.

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 pull rod (D). For these reasons, the selector lever cannot be shifted from the "P" position.

B C JSDIA1293ZZ

When Brake Pedal Is Depressed (Shift 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 by the electromagnetic force. The connecting lock lever (C) rotates when the solenoid is activated. Therefore, the pull rod (D) can be moved. For these reasons, the selector lever can be shifted to other positions.

"P" POSITION HOLD MECHANISM (IGNITION SWITCH LOCK)

**TM-86** 



### [CVT: RE0F08B]

#### < SYSTEM DESCRIPTION >

The shift lock solenoid (A) is not energized when the ignition switch is in any position other than ON. In this condition, 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. Then the selector operation from "P" position can be performed.

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D : Pull 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.

WITH INTELLIGENT KEY SYSTEM : Component Parts Location

F B ⊘ Н ⓓ **(C)** Κ L (4 Μ JSDIA1309ZZ Shift lock release button Stop lamp switch Park position switch 2. 3. Ν Shift lock solenoid Center console Brake pedal, upper C. CVT shift selector В.

WITH INTELLIGENT KEY SYSTEM : Component Description

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## SHIFT LOCK

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Component	Function
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
Lock lever	It moves according to the operation of the shift lock solenoid and performs the release of the shift lock.
Pull rod	It links with the selector button and restricts the selector lever movement.



#### < SYSTEM DESCRIPTION >

[CVT:	RE0F08B]
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Component	Function
Park position switch	It detects that the selector lever is in "P" position.
Shift lock release button	It moves the lock lever forcibly

# WITHOUT INTELLIGENT KEY SYSTEM

# WITHOUT INTELLIGENT KEY SYSTEM : System Description

The shift lever cannot be shifted from the "P" position unless the brake pedal is depressed while the ignition switch is set to ON. The shift lock is unlocked by turning the shift lock solenoid ON when the ignition switch is set to ON, the park position switch is turned ON (selector lever is in "P" position), and the stop lamp switch is turned ON (brake pedal is depressed) as shown in the operation chart in the figure. Therefore, the shift lock solenoid receives no ON signal and the shift lock remains locked if all of the above conditions are not fulfilled. (However, selector operation is allowed if the shift lock release button is pressed.)



## SHIFT LOCK OPERATION AT "P" POSITION

When Brake Pedal Is Not Depressed (No Selector Operation Allowed) The shift lock solenoid (A) is turned OFF (not energized) and the solenoid rod (B) is extended with the spring when the brake pedal is not depressed (no selector operation allowed) with the ignition switch ON.

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 pull rod (D). For these reasons, the selector lever cannot be shifted from the "P" position.



When Brake Pedal Is Depressed (Shift 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 by the electromagnetic force. The connecting lock lever (C) rotates when the solenoid is activated. Therefore, the pull rod (D) can be moved. For these reasons, the selector lever can be shifted to other positions.



#### < SYSTEM DESCRIPTION >

#### "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. In this condition, the shift mechanism is locked and "P" position is held. The operation cannot be per-

formed 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. Then the selector operation from "P" position can be performed.

D : Pull 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 MECHANISM

The key cannot be 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 positions other than "P" position. The rotator (D) that rotates together with the key (C) cannot be rotated for this reason. The key cannot be removed from the key cylinder because it cannot be turned to LOCK (E).



Key Unlock Status

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









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## < SYSTEM DESCRIPTION >

## [CVT: RE0F08B]

# WITHOUT INTELLIGENT KEY SYSTEM : Component Parts Location

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- 1. Shift lock release button
- 4. Shift lock solenoid
- A. Center console
- D. Key cylinder

- 2. Stop lamp switch
- 5. Key interlock cable
- B. Brake pedal, upper
- 3. Park position switch
- 6. Key cylinder
- C. CVT shift selector

# WITHOUT INTELLIGENT KEY SYSTEM : Component Description

INFOID:000000005062420

## SHIFT LOCK

Component	Function
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
Lock lever	It moves according to the operation of the shift lock solenoid and performs the release of the shift lock.
Pull 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.
Key interlock cable and key interlock rod	It transmits the lock lever operation to the slider in the key cylinder.
Shift lock release button	It moves the lock lever forcibly.

## **KEY LOCK**

Com	ponent	Function
Key cylinder	Rotator	It rotates together with the key and restricts the slider movement when the ignition switch is in LOCK position.
Slider	Slider	It moves according to the rotation of the lock lever.
Key interlock cable and key interlock rod		Actuation of lock lever is conveyed to slider in the key cylinder.

## **ON BOARD DIAGNOSTIC (OBD) SYSTEM**

### < SYSTEM DESCRIPTION >

# ON BOARD DIAGNOSTIC (OBD) SYSTEM

### **Diagnosis Description**

#### DESCRIPTION

The CVT system has two self-diagnostic systems.

The first is the emission-related on board diagnostic system (OBD-II) performed by the TCM in combination with the ECM. A malfunction is indicated by the MIL (Malfunction Indicator Lamp) and is stored as a DTC in the ECM memory and in the TCM memory.

The second is the TCM original self-diagnosis performed by the TCM. A malfunction history is stored in the TCM memory. The detected items are overlapped with OBD-II self-diagnostic items. For details, refer to TM-174, "DTC Index".

#### **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. For details, refer to <u>EC-85, "Diagnosis Description"</u>.

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# DIAGNOSIS SYSTEM (TCM)

# CONSULT-III Function (TRANSMISSION)

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[CVT: RE0F08B]

## FUNCTION

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

Diagnostic test mode	Function
Work Support	This mode enables a technician to adjust some devices faster and more accurately.
Self Diagnostic Results	Retrieve DTC from ECU and display diagnostic items.
Data Monitor	Monitor the input/output signal of the control unit in real time.
CAN Diagnosis	This mode displays a network diagnosis result about CAN by a diagram.
CAN Diagnosis Support Monitor	It monitors the status of CAN communication.
Function Test	This mode can show results of self-diagnosis of ECU with either "OK" or "NG". For engine, more prac- tical tests regarding sensors/switches and/or actuators are available.
ECU Identification	Display the ECU identification number (part number etc.) of the selected system.
Special Function	Other results or histories, etc. that are recorded in ECU are displayed.

# SELF DIAGNOSTIC RESULTS MODE Refer to TM-174, "DTC Index".

#### DATA MONITOR MODE

**Display Items List** 

		Мо	nitor item sele	ction	
Monitored item	(Unit)	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	SELEC- TION FROM MENU	Remarks
VSP SENSOR	(km/h or mph)	Х	_	▼	_
ESTM VSP SIG	(km/h or mph)	Х		▼	_
PRI SPEED SEN	(rpm)	Х		▼	_
ENG SPEED SIG	(rpm)	Х	_	▼	Engine speed signal (Signal input via CAN com- munications)
SEC HYDR SEN	(V)	Х		▼	_
PRI HYDR SEN	(V)	Х		▼	Not mounted but displayed.
ATF TEMP SEN	(V)	Х	_	▼	CVT fluid temperature sensor
VIGN SEN	(V)	Х	—	▼	_
VEHICLE SPEED	(km/h or mph)	—	Х	▼	Vehicle speed recognized by the TCM.
PRI SPEED	(rpm)	—	Х	▼	Primary pulley speed
SEC SPEED	(rpm)	—	—	▼	Secondary pulley speed
ENG SPEED	(rpm)	—	Х	▼	
SLIP REV	(rpm)	_	х	▼	Difference between engine speed and primary pulley speed.
GEAR RATIO		_	Х	▼	_
G SPEED	(G)	_		▼	_

X: Standard, —: Not applicable, ▼: Option

# **DIAGNOSIS SYSTEM (TCM)**

### < SYSTEM DESCRIPTION >

## [CVT: RE0F08B]

		Monitor item selection				
Monitored item	(Unit)	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	SELEC- TION FROM MENU	Remarks	
ACC PEDAL OPEN	(0.0/8)	х	x	▼	Degree of opening for accelerator recognized by the TCM. For fail-safe operation, the specific value used for control is displayed.	
TRQ RTO		—	—	▼	_	
SEC PRESS	(MPa)	_	Х	▼	TN	
PRI PRESS	(MPa)	_	Х	▼	Not mounted but displayed.	
ATFTEMP COUNT		_	х	▼	Means CVT fluid temperature. Actual oil temperature °C (°F) numeric value is converted. Refer to <u>TM-191</u>	
DSR REV	(rpm)	—	—	▼	— <sub>F</sub>	
DGEAR RATIO		_	—	▼		
DSTM STEP	(step)	_	_	▼	_	
STM STEP	(step)	_	Х	▼		
LU PRS	(MPa)			▼	_	
LINE PRS	(MPa)	_	_	▼		
TGT SEC PRESS	(MPa)	_		▼	_	
ISOLT1	(A)	_	х	▼	Torque converter clutch solenoid valve output current	
ISOLT2	(A)	_	Х	▼	Line pressure solenoid valve output current	
ISOLT3	(A)	—	х	▼	Secondary pressure solenoid valve output cur- rent	
SOLMON1	(A)	Х	х	▼	Torque converter clutch solenoid valve monitor current	
SOLMON2	(A)	Х	Х	▼	Line pressure solenoid valve monitor current	
SOLMON3	(A)	Х	х	▼	Secondary pressure solenoid valve monitor current	
BRAKESW	(On/Off)	Х	х	▼	Stop lamp switch signal (Signal input via CAN communications)	
FULL SW	(On/Off)	Х	х	▼	Full switch signal (Signal input via CAN commu- nications)	
IDLE SW	(On/Off)	Х	х	▼	Idle switch signal (Signal input via CAN communications)	
SPORT MODE SW	(On/Off)	Х	х	▼	Overdrive control switch signal (Signal input via CAN communications)	
STRDWNSW	(On/Off)	Х	—	▼		
STRUPSW	(On/Off)	Х	—	▼		
DOWNLVR	(On/Off)	Х	—	▼	- Not mounted but displayed	
UPLVR	(On/Off)	Х	—	▼		
NONMMODE	(On/Off)	x	_	▼		
MMODE	(On/Off)	x	_	▼		
INDLRNG	(On/Off)	_	—	▼	"L" position indicator output	

# **DIAGNOSIS SYSTEM (TCM)**

#### < SYSTEM DESCRIPTION >

		Mor	nitor item seled	ction		
Monitored item	(Unit)	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	SELEC- TION FROM MENU	Remarks	
INDDRNG	(On/Off)	_	—	▼	"D" position indicator output	
INDNRNG	(On/Off)	—	—	▼	"N" position indicator output	
INDRRNG	(On/Off)	—	—	▼	"R" position indicator output	
INDPRNG	(On/Off)	—	—	▼	"P" position indicator output	
CVT LAMP	(On/Off)	—	—	▼	—	
SPORT MODE IND	(On/Off)	_	—	▼	_	
MMODE IND	(On/Off)	—	—	▼	Not mounted but displayed.	
SMCOIL D	(On/Off)	_	_	▼	Step motor coil "D" energizing status	
SMCOIL C	(On/Off)	_	_	▼	Step motor coil "C" energizing status	
SMCOIL B	(On/Off)	_	_	▼	Step motor coil "B" energizing status	
SMCOIL A	(On/Off)	_	_	▼	Step motor coil "A" energizing status	
LUSEL SOL OUT	(On/Off)	—	_	▼	-	
LUSEL SOL MON	(On/Off)	_	_	▼	_	
VDC ON	(On/Off)	Х	—	▼	_	
TCS ON	(On/Off)	Х	—	▼	_	
ABS ON	(On/Off)	Х	—	▼	_	
ACC ON	(On/Off)	Х	—	▼	Not mounted but displayed.	
RANGE		_	х	▼	Indicates position is recognized by TCM. Indi- cates a specific value required for control wher fail-safe function is activated.	
M GEAR POS		_	Х	▼		
D POSITION SW	(On/Off)	Х	_	▼		
N POSITION SW	(On/Off)	Х	_	▼	-	
L POSITION SW	(On/Off)	Х	—	▼	-	
P POSITION SW	(On/Off)	Х		▼	-	
R POSITION SW	(On/Off)	Х	_	▼	_	

### WORK SUPPORT MODE

Display Item List

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

Engine Brake Adjustment

Under normal operating conditions of the transaxle main body and CVT system, if a customer indicates strangeness of involuntary application of the brake on a downhill run, engine brake is allowed to be released in accordance with "Engine Brake Adjustment".

#### **"ENGINE BRAKE LEVEL"**

< SYSTEM DESCRIPTION > [CVT: RE0F08B]	
0: Initial set value (Engine brake level control is activated)	
OFF: Engine brake level control is deactivated.	А
<b>CAUTION:</b> Mode of "+1", "0", "-1", "-2", "OFF" can be selected by touching "UP" or "DOWN" on CONSULT-III screen. However, do not select mode other than "0" and "OFF". Selecting "+1" or "-1" or "-2" is selected, that may cause irregular driveability.	В
Conform CVTF Deterioration <ul> <li>Check CVT fluid deterioration level when driving under severe conditions.</li> </ul>	С
"CVTF DETERIORATION DATE"	
More than 210000:	I IVI
It is necessary to change CVT fluid.	
Less than 210000:	Е
It is not necessary to change CVT fluid.	
<ul> <li>How to Erase CVT Fluid Deterioration Date</li> <li>Select "clear".</li> </ul>	F
Calibration Data After replacing transaxle assembly, it is necessary to initialize ROM data of TCM. Checking calibration data makes it possible to check that initialization is successful.	G
Diagnostic Tool Function	
OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)	Η
Refer to <u>EC-106, "Diagnosis Tool Function"</u> .	Ι
	J
	K
	L
	M
	Ν
	0

# DTC/CIRCUIT DIAGNOSIS U1000 CAN COMM CIRCUIT

## Description

INFOID:000000005062424

Real time communication is performed between each control unit such as TCM, ECM, combination meter, or others. Information is shared and linked between other control units. Each system is optimally controlled according to driving conditions of the vehicle.

In CAN (Controller Area Network) communication, 2 control units are connected via 2 communication lines (CAN-H and CAN-L) allowing a high rate of information transmission via less wiring. Each control unit transmits/receives data but selectively reads required data only.

## DTC Logic

INFOID:000000005062425

## DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
U1000	CAN communication line	TCM cannot transmit and receive CAN communication signals continuously for 2 seconds or more	<ul><li>CAN communication line</li><li>Each control unit</li></ul>

## DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

## >> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT-III

#### 1. Start the engine.

- 2. Maintain idling state for 2 seconds or more.
- 3. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

#### Is "U1000" detected?

- YES >> Go to TM-96, "Diagnosis Procedure".
- NO >> INSPECTION END

## **Diagnosis Procedure**

INFOID:000000005062426

Go to LAN-23, "CAN System Specification Chart".

# U1010 CONTROL UNIT (CAN)

#### < DTC/CIRCUIT DIAGNOSIS >

# U1010 CONTROL UNIT (CAN)

## Description

Real time communication is performed between each control unit such as TCM, ECM, combination meter, or others. Information is shared and linked between other control units. Each system is optimally controlled according to driving conditions of the vehicle.

In CAN (Controller Area Network) communication, 2 control units are connected via 2 communication lines (CAN-H and CAN-L) allowing a high rate of information transmission via less wiring. Each control unit transmits/receives data but selectively reads required data only.

## DTC Logic

INFOID:000000005062428

INFOID:000000005062427

## DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
U1010	TCM Communication Malfunction	TCM detects a malfunction in CAN communication initial diagnosis (control unit malfunction)	ТСМ
DTC CO	NFIRMATION PROCEDURE		
1.PREC	ONDITIONING		
Immediat Then wai	ely after performing any "DTC tat least 10 seconds before per	CONFIRMATION PROCEDURE", always forming the next test.	turn ignition switch OFF.
:	>> GO TO 2.		
2.PERF	ORM DTC CONFIRMATION PR	OCEDURE	
With C	ONSULT-III		
1. Start 2 Main	the engine. tain idling state for 6 seconds or	more	
3. Selec	ct "Self Diagnostic Results" in "T	RANSMISSION".	
<u>Is "U1010</u>	<u>)" detected?</u>		
YES : NO :	>> Go to <u>TM-97, "Diagnosis Pro</u> >> INSPECTION END	<u>cedure"</u> .	
Diagno	sis Procedure		INFOID:000000005062429
<b>1.</b> CHEC	K INTERMITTENT INCIDENT		
Refer to (	GI-34, "Intermittent Incident".		
Is the ins	pection result normal?		
YES :	>> Replace TCM. Refer to <u>TM-2</u>	2 <u>11, "Exploded View"</u> . Darts	
	>> Repair of replace damaged p	uito.	

Ρ

# P0703 BRAKE SWITCH B

# Description

- Stop lamp switch is installed to upper part of brake pedal.
- Stop lamp switch detects that brake pedal is depressed.
- Stop lamp switch transmits a signal of brake pedal depression to BCM.
- TCM receives stop lamp switch signal (CAN signal) from BCM.

# DTC Logic

INFOID:000000005062431

INFOID:000000005062430

## DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0703	Brake Switch B Circuit	<ul> <li>TCM detects malfunction in CAN communication between BCM</li> <li>TCM detects a state that ON/OFF of stop lamp switch signal is not switched</li> </ul>	<ul> <li>Harness or connectors (CAN communication line is open or shorted.) (Stop lamp switch circuit is open or short- ed.)</li> <li>Stop lamp switch</li> <li>BCM</li> </ul>

# DTC CONFIRMATION PROCEDURE

#### CAUTION:

#### Always drive vehicle at a safe speed.

## **1.**PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

#### >> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

#### With CONSULT-III

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following conditions for 10 seconds or more.

VEHICLE SPEED

: More than 30 km/h (19 MPH)

- 6. Depress brake pedal and stop the vehicle.
- 7. Turn ignition switch OFF.
- 8. Repeat the above steps 4 to 7 two times.
- 9. Turn ignition switch ON.
- 10. Select "Self Diagnostic Results" in "TRANSMISSION".

#### Is "P0703" detected?

- YES >> Go to TM-98, "Diagnosis Procedure".
- NO >> INSPECTION END

#### **Diagnosis** Procedure

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

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

# P0703 BRAKE SWITCH B

#### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F08B]

Connector         Terminal         Ground         Voltage (Apprive (Apprive (Apprive))           E115         1         Battery volta         Battery volta           Is the inspection result normal?         YES >> GO TO 2.         Battery volta         Battery volta           2.CHECK HARNESS BETWEEN BCM AND STOP LAMP SWITCH (PART 1)         1         Disconnect BCM connector.         2         Check continuity between BCM vehicle side harness connector terminal and stop lamp switch vehicle side harness connector terminal.         With intelligent key system         Continu           BCM vehicle side harness connector         Stop lamp switch vehicle side harness connector         Continu           M68         9         E115         2         Exister           Without intelligent key system         BCM vehicle side harness connector         Stop lamp switch vehicle side harness connector         Continu           M68         9         E115         2         Exister           Without intelligent key system         Exister         Continu         Continu           M65         9         E115         2         Exister           Is the inspection result normal?         Exister         Is the inspection result normal?         Is the inspection result normal?	hicle side
E115       1       Battery volta         Is the inspection result normal?       YES >> GO TO 2.       NO >> GO TO 7.         2.CHECK HARNESS BETWEEN BCM AND STOP LAMP SWITCH (PART 1)       1.       Disconnect BCM connector.         2. CHEck continuity between BCM vehicle side harness connector terminal and stop lamp switch vel harness connector terminal.       with intelligent key system         BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continu         M68       9       E115       2       Exister         Without intelligent key system       BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continu         M68       9       E115       2       Exister         Without intelligent key system       Stop lamp switch vehicle side harness connector       Continu         M65       9       E115       2       Exister         M65       9       E115       2       Exister         Is the inspection result normal?       Exister       Exister       Exister	hicle side
Is the inspection result normal?         YES       >> GO TO 2.         NO       >> GO TO 7.         2.CHECK HARNESS BETWEEN BCM AND STOP LAMP SWITCH (PART 1)         1. Disconnect BCM connector.         2. Check continuity between BCM vehicle side harness connector terminal and stop lamp switch vel harness connector terminal.         With intelligent key system         BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector         Connector       Terminal       Continu         M68       9       E115       2       Exister         Without intelligent key system       BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continu         M68       9       E115       2       Exister         Without intelligent key system       ECM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continu         M65       9       E115       2       Exister         M65       9       E115       2       Exister         Is the inspection result normal?       Contextor       Terminal       Continu	hicle side
2. Check continuity between BCM vehicle side harness connector terminal and stop lamp switch veharness connector terminal.         With intelligent key system         BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector         Connector       Terminal       Continuity         M68       9       E115       2       Exister         Without intelligent key system       BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continuity         M68       9       E115       2       Exister         Without intelligent key system       E       Connector       Terminal         BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continuity         M65       9       E115       2       Exister         M65       9       E115       2       Exister         Is the inspection result normal?       E       E       E       E	ehicle side
With intelligent key system         BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continu         Connector       Terminal       Connector       Terminal         M68       9       E115       2       Existe         Without intelligent key system       BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continu         BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continu         M65       9       E115       2       Existe         Is the inspection result normal?       Existe       Existe       Existe	uity ed
BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continu         Connector       Terminal       Connector       Terminal       Continu         M68       9       E115       2       Existe         Without intelligent key system       BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continu         BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continu         M65       9       E115       2       Existe         Is the inspection result normal?       Existe       Existe       Existe	ed
Connector     Terminal       M68     9     E115     2     Existe       Without intelligent key system      Stop lamp switch vehicle side harness connector     Connector     Terminal       BCM vehicle side harness connector     Stop lamp switch vehicle side harness connector     Continu       Connector     Terminal     Connector     Terminal       M65     9     E115     2     Existe       Is the inspection result normal?     Contractor     Contractor     Contractor	ed
Mb8     9     E115     2     Existe       Without intelligent key system     BCM vehicle side harness connector     Stop lamp switch vehicle side harness connector     Continu       Connector     Terminal     Connector     Terminal       M65     9     E115     2     Existe       Is the inspection result normal?     E     E     E     E	ea
Without intelligent key system         BCM vehicle side harness connector       Stop lamp switch vehicle side harness connector       Continu         Connector       Terminal       Connector       Terminal         M65       9       E115       2       Exister         Is the inspection result normal?       Exister       Exister       Exister	
Connector     Terminal     Connector     Terminal       M65     9     E115     2     Exister	
M65         9         E115         2         Exister           Is the inspection result normal?         Inspection result normal? <td< td=""><td>uity</td></td<>	uity
Is the inspection result normal?	ed.
s the inspection result normal?	
Nith intelligent key system       BCM vehicle side harness connector       Continuity	/
Connector Terminal Ground	
M68 9 Not existed	d
Vithout intelligent key system	
Connector Continuity	/
M65 9 Not existen	d
Is the inspection result normal? YES >> GO TO 4. NO >> Repair or replace damaged parts. 4.CHECK STOP LAMP SWITCH (PART 1)	
Check stop lamp switch. Refer to TM-100, "Component Inspection (Stop Lamp Switch)".	
Is the inspection result normal? YES >> GO TO 7. NO >> GO TO 5.	
<b>D.</b> PERFORM STOP LAMP SWITCH INSTALLATION POSITION ADJUSTMENT	
Perform stop lamp switch installation position adjustment. Refer to BR-7, "Inspection and Adjustmen	<u>nt"</u> .
>> GO TO 6.	
6.CHECK STOP LAMP SWITCH (PART 2)	

Check stop lamp switch. Refer to <u>TM-100, "Component Inspection (Stop Lamp Switch)"</u>. Is the inspection result normal?

< DTC/CIRCUIT DIAGNOSIS >

- YES >> INSPECTION END
- NO >> Replace stop lamp switch. Refer to <u>BR-17, "Exploded View"</u>.

# 7. DETECT MALFUNCTIONING ITEMS

#### Check the following.

- 10A fuse (No.7)
- Harness for short or open between battery and stop lamp switch (Refer to <u>PG-6</u>, "Wiring Diagram <u>BAT-</u> <u>TERY POWER SUPPLY -</u>".)
- Battery

Is the inspection result normal?

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

**8.**CHECK INTERMITTENT INCIDENT

Refer to GI-34, "Intermittent Incident".

#### Is the inspection result normal?

- YES >> Replace BCM. Refer to <u>BCS-82</u>, "<u>Exploded View</u>" (With intelligent key system), <u>BCS-148</u>, <u>"Exploded View</u>" (Without intelligent key system).
- NO >> Repair or replace damaged parts.

### Component Inspection (Stop Lamp Switch)

INFOID:000000005062433

# **1.**CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

Stop lamp switch connector		ctor	Condition	Continuity
Connector	Terr	ninal	Condition	Continuity
E115 3	1	2	Depressed brake pedal	Existed
	1		Brake pedal not depressed	Not existed
	3 4	Λ	Depressed brake pedal	Existed
		Brake pedal not depressed	Not existed	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-17, "Exploded View"</u>.

## **P0705 TRANSMISSION RANGE SWITCH A**

#### < DTC/CIRCUIT DIAGNOSIS >

# **P0705 TRANSMISSION RANGE SWITCH A**

## Description

- Transmission range switch is installed to upper part of transaxle case.
- В • Transmission range switch detects the selector lever position and transmits selector lever position signal to TCM.

# **DTC Logic**

#### DTC DETECTION LOGIC

DTC	Trouble diagnos	sis name	DTC is	s detected if		Possible cause	•
P0705	Transmission Rang Circuit (PRNDL Inp	ge Sensor A but)	<ul> <li>Range signal is</li> <li>2 or more range TCM</li> </ul>	not transmitted to TC signals are transmitte	M Harness of [Transmiss or shorted Transmiss	or connectors sion range switch .] ion range switch	circuit is open
отс со	NFIRMATION F	PROCED	URE				
1.PREC	ONDITIONING						
Immediat Then wai	tely after perform it at least 10 secc	ning any " ands befor	DTC CONFIRM	IATION PROCEE e next test.	OURE", always	turn ignition	switch OFF
	>> GO TO 2.						
2.perf	ORM DTC CONF	FIRMATIO	N PROCEDUR	E			
With C 1. Start	ONSULT-III the engine.						
2. Shift 3. Sele With G Follow th Is <u>"P0708</u> YES NO Diagno	and hold selecto ct "Self Diagnosti ST e procedure "Wit <u>5" detected?</u> >> Go to <u>TM-101</u> >> INSPECTION sis Procedure	r lever to o c Results' h CONSU , <u>"Diagno:</u> I END <del>e</del>	each position fo ' in "TRANSMIS ILT-III". <u>sis Procedure"</u> .	r 5 seconds or mo SION".	ore.	IVI	=01D:000000005062438
2. Shift 3. Sele With G Follow th <u>Is "P070!</u> YES NO Diagno <b>1.</b> CHE0	and hold selecto ct "Self Diagnosti ST e procedure "Wit <u>5" detected?</u> >> Go to <u>TM-101</u> >> INSPECTION sis Procedure CK TRANSMISSI	r lever to o c Results' h CONSU <u>, "Diagno:</u> I END e ON RANC	each position fo ' in "TRANSMIS ILT-III". <u>sis Procedure"</u> . GE SWITCH PO	r 5 seconds or mo SION". WER CIRCUIT	ore.	IN	=01D:00000000506243i
2. Shift 3. Sele With G Follow th <u>Is "P0708</u> YES NO Diagno 1. CHE0 1. Turn 2. Disco 3. Turn 4. Chec	and hold selecto ct "Self Diagnosti ST e procedure "Wit <u>5" detected?</u> >> Go to <u>TM-101</u> >> INSPECTION sis Procedure CK TRANSMISSI ignition switch O onnect transmiss ignition switch O ck voltage betwee	r lever to o c Results' h CONSU , <u>"Diagno:</u> I END E I END E ON RANC FF. ion range N. en transmi	each position fo ' in "TRANSMIS LT-III". SE SWITCH PO switch connecto ission range swi	ower CIRCUIT	arness connect	tor terminal ar	F01D:000000000506243
2. Shift 3. Selee With G Follow th Is "P070! YES NO Diagno 1. CHEC 1. Turn 2. Disco 3. Turn 4. Chec Transmi	and hold selecto ct "Self Diagnosti ST e procedure "Wit <u>5" detected?</u> >> Go to <u>TM-101</u> >> INSPECTION sis Procedure CK TRANSMISSI ignition switch O onnect transmiss ignition switch O ck voltage betwee	r lever to o c Results' h CONSU , <u>"Diagno:</u> I END E I END E I ON RANC FF. ion range N. en transmi	each position fo ' in "TRANSMIS ILT-III". <u>sis Procedure"</u> . GE SWITCH PO switch connector ission range swi	PWER CIRCUIT	ore. arness connect	tor terminal ar	FOID:000000000506243
<ol> <li>Shift</li> <li>Sele</li> <li>With G</li> <li>Follow th</li> <li>Is "P070!</li> <li>YES</li> <li>NO</li> <li>Diagno</li> <li>CHEC</li> <li>Turn</li> <li>Chec</li> <li>Transmit</li> </ol>	and hold selecto ct "Self Diagnosti SST e procedure "Wit <u>5" detected?</u> >> Go to <u>TM-101</u> >> INSPECTION sis Procedure CK TRANSMISSI ignition switch O onnect transmiss ignition switch O ck voltage betwee ssion range switch ve	r lever to o c Results' h CONSU , <u>"Diagno:</u> I END I END E ION RANC FF. ion range N. en transmi ehicle side ha	each position fo ' in "TRANSMIS ILT-III". <u>sis Procedure"</u> . GE SWITCH PO switch connector ission range swi arness connector Terminal	WER CIRCUIT	ore. arness connect Condition	tor terminal ar	=oi⊡:000000000506243 nd ground. tage (Approx.)
2. Shift 3. Sele With G Follow th Is "P0708 YES NO Diagno 1. CHEC 1. Turn 2. Disco 3. Turn 4. Chec Transmin	and hold selecto ct "Self Diagnosti SST e procedure "Wit <u>5" detected?</u> >> Go to <u>TM-101</u> >> INSPECTION sis Procedure CK TRANSMISSI ignition switch O connect transmiss ignition switch O ck voltage betwee ssion range switch ve Connector F21	r lever to o c Results' h CONSU , <u>"Diagno:</u> I END E ON RANC FF. ion range N. en transmi	each position fo ' in "TRANSMIS LT-III". <u>sis Procedure"</u> . GE SWITCH PO switch connector ission range swi arness connector Terminal	WER CIRCUIT or. Ground	ore. arness connect Condition Ignition switch: ON	tor terminal ar	nd ground. tage (Approx.)

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

1. Turn ignition switch OFF.

2. Disconnect TCM connector.

# **TM-101**

INFOID:000000005062434

INFOID:000000005062435

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С

# **P0705 TRANSMISSION RANGE SWITCH A**

#### < DTC/CIRCUIT DIAGNOSIS >

- [CVT: RE0F08B]
- 3. Check continuity between TCM vehicle side harness connector terminals and transmission range switch vehicle side harness connector terminals.

TCM vehicle side	TCM vehicle side harness connector		Transmission range switch vehicle side harness connector	
Connector	Terminal	Connector	Terminal	
E19	18		4	
ETO	22		5	
	26	F21	6	Existed
E19	43		7	
	44		8	

Is the inspection 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 vehicle side harness connector terminal and ground.

TCM vehicle side harness connector			Continuity
Connector	Terminal		Continuity
E18	18		
LIO	22	Ground	
	26		Not existed
E19	43		
	44		

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

4. CHECK TRANSMISSION RANGE SWITCH

- 1. Remove control cable from manual lever. Refer to TM-207, "Exploded View".
- 2. Check transmission range switch. Refer to TM-103. "Component Inspection (Park/Neutral Position Switch)".

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to <u>GI-34, "Intermittent Incident"</u>.
- NO >> Transmission range switch is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223</u>. <u>"Exploded View"</u>.

**5.** CHECK HARNESS BETWEEN TRANSMISSION RANGE SWITCH AND IPDM E/R (PART 1)

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

Transmission range sw conr	itch vehicle side harness nector	IPDM E/R vehicle si	IPDM E/R vehicle side harness connector		
Connector	Terminal	Connector	Terminal		
F21 3		E15	58	Existed	

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

 ${f 6}.$ CHECK HARNESS BETWEEN TRANSMISSION RANGE SWITCH AND IPDM E/R (PART 2)

Check continuity between transmission range switch vehicle side harness connector terminal and ground.

# P0705 TRANSMISSION RANGE SWITCH A

#### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F08B]

Transmission range switch ve	ehicle side harness connector		Continuity	А
Connector	Terminal	Ground	Continuity	
F21	3		Not existed	
Is the inspection result norn	nal?			В
YES >> GO TO 7. NO >> Repair or replace	ce damaged parts.			С
<b>1</b> .DETECT MALFUNCTIO	NING ITEMS			
Check the following. • IPDM E/R • 10A fuse (No.55, located	in the IPDM E/R)			ТМ
<ul> <li>TOA fuse (No.55, located in the IPDM E/R)</li> <li>Harness for short or open between IPDM E/R and ignition switch (Refer to <u>PG-38, "Wiring Diagram - IGNI-</u> <u>TION POWER SUPPLY -".)</u></li> <li>Ignition switch</li> </ul>				
Is the inspection result norn	nal?			
YES >> Check intermitt NO >> Repair or replace	ent incident. Refer to <u>GI-34</u> ce damaged parts.	, "Intermittent Incident".		F
Component Inspectio	n (Park/Neutral Positi	on Switch)	INFOID:000000005062437	
1.CHECK TRANSMISSION	N RANGE SWITCH			G

Check continuity of transmission range switch connector terminals.

Transmiss	ion range switch c	onnector	Condition	Continuity
Connector	Terminal		Conduon	Continuity
1	2	Manual lever: "P" and "N" positions	Existed	
3	Z	Other than the above	Not existed	
	2	Λ	Manual lever: "P" position	Existed
	3 4	Other than the above	Not existed	
	F21 3 5	F	Manual lever: "R" position	Existed
F04		S	Other than the above	Not existed
F21		c	Manual lever: "N" position	Existed
		0	Other than the above	Not existed
	2	7	Manual lever: "D" position	Existed
	З	1	Other than the above	Not existed
	2	0	Manual lever: "L" position	Existed
	3	8	Other than the above	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Transmission range switch is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223</u>, <u>"Exploded View"</u>.

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# P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

#### < DTC/CIRCUIT DIAGNOSIS >

# P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

## Description

INFOID:000000005062438

[CVT: RE0F08B]

- CVT fluid temperature sensor is installed to control valve.
- CVT fluid temperature sensor detects CVT fluid temperature in oil pan.
- The CVT fluid temperature sensor converts CVT fluid temperature into output voltage and transmits the signal to TCM.
- The CVT fluid temperature sensor uses a thermistor and its electrical resistance varies as the temperature varies. The electrical resistance decreases as the temperature increases.

## DTC Logic

INFOID:000000005062439

## DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0710	Transmission Fluid Tempera- ture Sensor A Circuit	<ul> <li>CVT fluid temperature does not rise to the specified temperature after driving for a certain period of time with the TCM-received oil temperature sensor value between -39°C (-38.2°F) and 20°C (-68°F)</li> <li>CVT fluid temperature sensor value that TCM receives is more than 180°C (356°F)</li> <li>TCM-received CVT fluid temperature sensor value while driving is less than -40°C (-40°F)</li> </ul>	<ul> <li>Harness or connectors (CVT fluid temperature sensor circuit is open or shorted.)</li> <li>CVT fluid temperature sensor</li> </ul>

## DTC CONFIRMATION PROCEDURE

#### CAUTION:

# Always drive vehicle at a safe speed.

**1.**PRECONDITIONING (PART 1)

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

## >> GO TO 2.

**2.** PRECONDITIONING (PART 2)

With CONSULT-III

- Turn ignition switch ON.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "ATF TEMP SEN".

#### Is "ATF TEMP SEN" value within 2.03 - 0.16 V?

YES >> INSPECTION END

NO-1 ("ATF TEMP SEN" indicates 0.15 V or less.)>>Go to TM-105, "Diagnosis Procedure".

NO-2 ("ATF TEMP SEN" indicates 2.04 V or more.)>>GO TO 3.

## ${\it 3.}$ PERFORM DTC CONFIRMATION PROCEDURE

#### With CONSULT-III

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "RANGE" and "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following conditions for 14 minutes or more.

RANGE VEHICLE SPEED : D : More than 10 km/h (7 MPH)

6. Stop the vehicle.

7. Select "Self Diagnostic Results" in "TRANSMISSION".

# P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

With GST Follow the procedure "With CONSULT-III".

Is "P0710" detected?

YES >> Go to TM-105, "Diagnosis Procedure".

NO >> INSPECTION END

## **Diagnosis Procedure**

# 1.CHECK CVT FLUID TEMPERATURE SENSOR CIRCUIT (PART 1)

1. Turn ignition switch ON.

2. Check resistance between TCM vehicle side harness connector terminals.

TCM connector			Condition		
Connector	Ter	minal		Condition	
			CVT fluid temperatu	ure: 20°C (68°F)	6.83 – 6.29 kΩ
E19	47	42	CVT fluid temperatu	ure: 50°C (122°F)	2.25 – 2.10 kΩ
			CVT fluid temperatu	ure: 80°C (176°F)	0.90 – 0.85 kΩ
s the inspection	result normal?	) -			
YES >> GO	TO 2.				
	FLUID TEMPE	RAIURE SE	INSOR CIRCUIT (PA	(RT2)	
1. Disconnect	TCM connector	r. TCM vehicle	aida harnaaa aannaa	tor terminal and ground	
2. Check contin	nully between		side namess connec	tor terminal and ground	
TCM	1 vehicle side harn	ess connector			Continuity
Connect	tor	Termina	al	Ground	Continuity
E19	E19 47				Not existed
s the inspection	result normal?				
•					
YES >> Che	ck intermittent	incident. Ref	er to <u>GI-34, "Intermitt</u>	ent Incident".	
YES >> Che NO >> GO	ck intermittent TO 3.	incident. Ref	er to <u>GI-34, "Intermitt</u>	ent Incident".	
YES >> Che NO >> GO <b>3.</b> CHECK CVT	ck intermittent TO 3. FLUID TEMPE	INCIDENT. Ref	er to <u>GI-34, "Intermitt</u> ENSOR	ent Incident".	
YES >> Che NO >> GO 3.CHECK CVT	ck intermittent TO 3. FLUID TEMPE	INCIDENT. REF	er to <u>GI-34, "Intermitt</u> ENSOR	ent Incident".	
YES >> Che NO >> GO 3.CHECK CVT 1. Turn ignition 2. Disconnect	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne	incident. Ref	er to <u>GI-34, "Intermitt</u> ENSOR	ent Incident".	
YES >> Che NO >> GO 3.CHECK CVT 1. Turn ignition 2. Disconnect ( 3. Check CVT Sensor)	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne fluid temperatu	incident. Ref ERATURE SE ector. ure sensor. R	er to <u>GI-34, "Intermitt</u> ENSOR Refer to <u>TM-106, "Co</u> i	ent Incident". mponent Inspection (C)	VT Fluid Temperature
YES >> Che NO >> GO 3.CHECK CVT 1. Turn ignition 2. Disconnect 3. Check CVT <u>Sensor)"</u> .	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne fluid temperatu	incident. Ref ERATURE SE ector. ure sensor. R	er to <u>GI-34, "Intermitt</u> ENSOR Refer to <u>TM-106, "Co</u> r	ent Incident". mponent Inspection (C)	VT Fluid Temperature
YES >> Che NO >> GO 3.CHECK CVT 1. Turn ignition 2. Disconnect ( 3. Check CVT <u>Sensor)"</u> . <u>s the inspection</u> YES >> GO	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne fluid temperatu result normal?	incident. Refe ERATURE SE ector. ure sensor. R	er to <u>GI-34, "Intermitt</u> ENSOR Refer to <u>TM-106, "Co</u> r	ent Incident". mponent Inspection (C	✓T Fluid Temperature
YES >> Che NO >> GO 3.CHECK CVT 1. Turn ignition 2. Disconnect of 3. Check CVT <u>Sensor)"</u> . Is the inspection YES >> GO NO >> CVT	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne fluid temperatu result normal? TO 4.	incident. Ref ERATURE SE ector. ure sensor. R	er to <u>GI-34, "Intermitt</u> ENSOR Refer to <u>TM-106, "Cor</u> s malfunctioning. Re	ent Incident". mponent Inspection (C) place transaxle assem	<u>VT Fluid Temperature</u> bly. Refer to <u>TM-223,</u>
YES >> Che NO >> GO 3.CHECK CVT 1. Turn ignition 2. Disconnect ( 3. Check CVT <u>Sensor)"</u> . <u>s the inspection</u> YES >> GO NO >> CVT	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne fluid temperatu result normal? TO 4. fluid temperation	incident. Ref ERATURE SE ector. ure sensor. R	er to <u>GI-34, "Intermitt</u> ENSOR Refer to <u>TM-106, "Cor</u> s malfunctioning. Re	ent Incident". mponent Inspection (C place transaxle assem	<u>VT Fluid Temperature</u> bly. Refer to <u>TM-223,</u>
YES >> Che NO >> GO 3.CHECK CVT 1. Turn ignition 2. Disconnect ( 3. Check CVT <u>Sensor)"</u> . (s the inspection YES >> GO NO >> CVT <u>"Exp</u> 4.CHECK HAR	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne fluid temperatu result normal? TO 4. fluid temperato oloded View".	incident. Ref ERATURE SE ector. ure sensor. R ture sensor i EN TCM AN	er to <u>GI-34, "Intermitt</u> ENSOR Refer to <u>TM-106, "Cor</u> s malfunctioning. Re D CVT UNIT (CVT FI	ent Incident". mponent Inspection (C) place transaxle assem	VT Fluid Temperature bly. Refer to TM-223, SENSOR) (PART 1)
YES >> Che NO >> GO 3.CHECK CVT 1. Turn ignition 2. Disconnect 3. Check CVT <u>Sensor)"</u> . s the inspection YES >> GO NO >> CVT <u>"Exp</u> 4.CHECK HAR 1. Disconnect	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne fluid temperatu result normal? TO 4. fluid temperation oloded View". NESS BETWE TCM connector	incident. Ref ERATURE SE ector. ure sensor. R ture sensor i EN TCM ANI	er to <u>GI-34, "Intermitt</u> ENSOR Refer to <u>TM-106, "Con</u> s malfunctioning. Re D CVT UNIT (CVT FL	ent Incident". mponent Inspection (C place transaxle assem	<u>VT Fluid Temperature</u> bly. Refer to <u>TM-223,</u> SENSOR) (PART 1)
YES >> Che NO >> GO 3.CHECK CVT 1. Turn ignition 2. Disconnect ( 3. Check CVT <u>Sensor)"</u> . 3. Check CVT <u>Sensor)"</u> . 5. the inspection YES >> GO NO >> CVT <u>"Exr</u> 4.CHECK HAR 1. Disconnect ( 2. Check conti	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne fluid temperatu result normal? TO 4. fluid temperato bloded View". NESS BETWE TCM connector nuity between	incident. Ref ERATURE SE ector. ure sensor. R ture sensor i EN TCM ANI r. TCM vehicle	er to <u>GI-34, "Intermitt</u> ENSOR Refer to <u>TM-106, "Co</u> r s malfunctioning. Re D CVT UNIT (CVT FI side harness connect	ent Incident". mponent Inspection (C) place transaxle assem LUID TEMPERATURE	VT Fluid Temperature bly. Refer to <u>TM-223,</u> SENSOR) (PART 1) unit vehicle side har-
YES >> Che NO >> GO 3.CHECK CVT 1. Turn ignition 2. Disconnect 3. Check CVT <u>Sensor)"</u> . Is the inspection YES >> GO NO >> CVT <u>"Exp</u> 4.CHECK HAR 1. Disconnect 2. Check continess connect	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne fluid temperatu result normal? TO 4. fluid temperato bloded View". NESS BETWE TCM connector nuity between ctor terminals.	incident. Ref ERATURE SE ector. ure sensor. R ture sensor i EN TCM ANI r. TCM vehicle	er to <u>GI-34, "Intermitt</u> ENSOR Refer to <u>TM-106, "Con</u> s malfunctioning. Re D CVT UNIT (CVT FL side harness connec	ent Incident". mponent Inspection (C place transaxle assem LUID TEMPERATURE	VT Fluid Temperature bly. Refer to TM-223, SENSOR) (PART 1) unit vehicle side har-
YES $>>$ Che NO $>>$ GO 3.CHECK CVT 1. Turn ignition 2. Disconnect of 3. Check CVT Sensor)". Is the inspection YES $>>$ GO NO $>>$ CVT "Exp 4.CHECK HAR 1. Disconnect 2. Check continess connect TCM vehicl	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne fluid temperatu result normal? TO 4. fluid temperato bloded View". NESS BETWE TCM connector nuity between ctor terminals.	incident. Ref ERATURE SE ector. ure sensor. R ture sensor i EN TCM ANI r. TCM vehicle	er to <u>GI-34, "Intermitt</u> ENSOR Refer to <u>TM-106, "Con</u> s malfunctioning. Re D CVT UNIT (CVT FI side harness connect	ent Incident". mponent Inspection (C) place transaxle assem LUID TEMPERATURE ctor terminals and CVT de harness connector	VT Fluid Temperature bly. Refer to <u>TM-223,</u> SENSOR) (PART 1) unit vehicle side har-
YES >> Che NO >> GO 3.CHECK CVT 1. Turn ignition 2. Disconnect 3. Check CVT <u>Sensor)"</u> . Is the inspection YES >> GO NO >> CVT <u>"Exp</u> 4.CHECK HAR 1. Disconnect 2. Check conti ness connect TCM vehicl Connector	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne fluid temperatu result normal? TO 4. fluid temperato bloded View". NESS BETWE TCM connector nuity between ctor terminals.	incident. Ref ERATURE SE ector. ure sensor. R ture sensor i EN TCM ANI r. TCM vehicle	er to <u>GI-34, "Intermitt</u> ENSOR Refer to <u>TM-106, "Con</u> s malfunctioning. Re D CVT UNIT (CVT FL side harness connect <u>CVT unit vehicle sin</u> Connector	ent Incident". mponent Inspection (C place transaxle assem LUID TEMPERATURE ctor terminals and CVT de harness connector	VT Fluid Temperature bly. Refer to TM-223, SENSOR) (PART 1) unit vehicle side har- Continuity
YES >> Che NO >> GO 3.CHECK CVT 1. Turn ignition 2. Disconnect 3. Check CVT Sensor)". Is the inspection YES >> GO NO >> CVT "Exp 4.CHECK HAR 1. Disconnect 2. Check conti ness connect TCM vehicl Connector	ck intermittent TO 3. FLUID TEMPE switch OFF. CVT unit conne fluid temperatures result normal? TO 4. fluid temperato oloded View". NESS BETWE TCM connector nuity between ctor terminals.	incident. Ref ERATURE SE ector. ure sensor. R ture sensor i EN TCM ANI r. TCM vehicle	er to <u>GI-34, "Intermitt</u> ENSOR Refer to <u>TM-106, "Con</u> s malfunctioning. Re D CVT UNIT (CVT FI side harness connector CVT unit vehicle sin Connector	ent Incident". mponent Inspection (C) place transaxle assem LUID TEMPERATURE ctor terminals and CVT de harness connector Terminal 19	VT Fluid Temperature bly. Refer to <u>TM-223,</u> SENSOR) (PART 1) unit vehicle side har- Continuity

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

[CVT: RE0F08B]

INFOID:000000005062440

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# P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

#### < DTC/CIRCUIT DIAGNOSIS >

5. CHECK HARNESS BETWEEN TCM AND CVT UNIT (CVT FLUID TEMPERATURE SENSOR) (PART 2)

Check continuity between TCM vehicle side harness connector terminals and ground.

TCM vehicle side	harness connector		Continuity
Connector	Terminal	Ground	Continuity
E10	42	Giouna	Not ovisted
L19	47		

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-34, "Intermittent Incident"</u>.

NO >> Repair or replace damaged parts.

## Component Inspection (CVT Fluid Temperature Sensor)

INFOID:000000005062441

[CVT: RE0F08B]

## **1.**CHECK CVT FLUID TEMPERATURE SENSOR (PART 1)

Check resistance between CVT unit harness connector terminals.

CV	T unit harness conne	ector	Condition	Bagistones (Approx.)
Connector	Terminal		Condition	Resistance (Approx.)
			CVT fluid temperature: 20°C (68°F)	6.83 – 6.29 kΩ
F24	17	19	CVT fluid temperature: 50°C (122°F)	2.25 – 2.10 kΩ
			CVT fluid temperature: 80°C (176°F)	0.90 – 0.85 kΩ

Is the inspection result normal?

YES >> GO TO 2.

NO >> CVT fluid temperature sensor is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223</u>, <u>"Exploded View"</u>.

# **2.**CHECK CVT FLUID TEMPERATURE SENSOR (PART 2)

Check continuity between CVT unit vehicle side harness connector terminal and ground.

CVT unit harr	ness connector		Continuity
Connector	Terminal	Ground	Continuity
F24	17		Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> CVT fluid temperature sensor is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223</u>. <u>"Exploded View"</u>.

# **P0715 INPUT SPEED SENSOR A**

#### < DTC/CIRCUIT DIAGNOSIS >

# P0715 INPUT SPEED SENSOR A

## Description

- Primary speed sensor is installed to the front side of transaxle case.
- Primary speed sensor detects primary pulley speed.
- Primary speed sensor converts primary pulley speed to pulse signal and transmits the signal to TCM.

# **DTC** Logic

## DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause	
P0715	Input/Turbine Speed Sensor A Circuit	<ul> <li>Primary speed sensor signal is not transmitted to TCM</li> <li>Primary speed sensor value is less than 150 rpm while secondary pulley speed is more than 500 rpm</li> </ul>	<ul> <li>Harness or connectors (Primary speed sensor circuit is open or shorted.)</li> <li>Primary speed sensor</li> </ul>	E
				F
		URE		
Always c	drive vehicle at a safe spe	eed.		G
1.PREC	ONDITIONING			0
Immediat	ely after performing any "	DTC CONFIRMATION PROCEDUR	E", always turn ignition switch OFF.	
Then wai	t at least 10 seconds befor	e performing the next test.		Н
າ 	>> GO TO 2.			1
Z.PERF	ORM DTC CONFIRMATIO	IN PROCEDURE		
With C	ONSULT-III			
<ol> <li>Start</li> <li>Seled</li> </ol>	the engine. ct "Data Monitor" in "TRAN	SMISSION".		J
3. Selec	ct "SEC SPEED" and "VEH	IICLE SPEED".		
4. Drive	the vehicle.	a far E agganda ar mara		K
J. IVIAIII		s for 5 seconds of more.		
SE	EC SPEED :	More than 500 rpm		
VE	EHICLE SPEED :	More than 10 km/h (7 MPH)		L
6. Stop	the vehicle.			
	ct "Self Diagnostic Results"	' IN "TRANSMISSION".		M
Follow th	e procedure "With CONSU	LT-III".		
<u>ls "P0715</u>	5" detected?			
YES	>> Go to <u>TM-107, "Diagno</u>	<u>sis Procedure"</u> .		Ν
NO	>> INSPECTION END			
Diagno	sis Procedure		INFOID:000000005062444	0
1.снес	K PRIMARY SPEED SEN	SOR POWER CIRCUIT		
1. Turn	ignition switch OFF.			Ρ
2. Disco	onnect primary speed sens	sor connector.		

3. Turn ignition switch ON.

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

[CVT: RE0F08B]

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INF0ID:000000005062442

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# **P0715 INPUT SPEED SENSOR A**

#### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F08B]

Primary speed sensor vehicle side harness connector			Voltage (Approx)
Connector	Terminal	Ground	vollage (Approx.)
F55	3		Battery voltage
le the increation requit name			

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 6.

2. CHECK TCM INPUT SIGNAL

1. Turn ignition switch OFF.

2. Connect primary speed sensor connector.

- 3. Lift the vehicle.
- 4. Start the engine.

5. Check frequency of primary speed sensor.

TCM connector		Condition	Data (Approx.)	
Connector	Terminal		Condition	Data (Applox.)
				1275 Hz
E19	38	42	<ul> <li>Selector lever: "L" position</li> <li>While driving at 20 km/h (12 MPH)</li> </ul>	(V) 6 4 0 0 0 0 0 0 0 0 0 0 0 0 0

Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 3.

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

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

TCM vehicle side harness connector		Primary speed sensor vehicle side harness con- nector		Continuity
Connector	Terminal	Connector	Terminal	
E10	38	F55	2	Existed
E19	42		1	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

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

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

TCM vehicle side harness connector			Continuity
Connector	Terminal	- Ground	Continuity
E19	38		Not existed
	42		

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.
### **P0715 INPUT SPEED SENSOR A**

#### < DTC/CIRCUIT DIAGNOSIS >

### 5. CHECK CVT UNIT CIRCUIT

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

CVT unit connector				Continuity
Connector	Termina	il	Ground	Conuntury
F24	19			Not existed
Is the inspection result	normal?			
YES >> GO TO 9.	enlace damaged part	c		
6 CHECK HARNESS	BETWEEN PRIMAR	SPEED SENSO	R (POWER) AND IE	PDM E/R (PART 1)
1 Turn ignition switch				
2. Disconnect IPDM I	E/R connector.			
3. Check continuity b	etween primary spee	d sensor vehicle s	side harness connec	ctor terminal and IPDM E/R
venicie side name:	ss connector terminal			
Primary speed sensor vehi	cle side harness connec-	IPDM E/R vehic	le side harness connecto	
to		0	<b>T</b>	Continuity
Connector	Ierminal	Connector	Ierminal	
F55	3	E15	58	Existed
Is the inspection result	<u>normal?</u>			
YES >> GO IO 7.	collaco damagod part	c		
<b>I</b> .CHECK HARNESS	BETWEEN PRIMAR	Y SPEED SENSO	R (POWER) AND IF	'DM E/R (PART 2)
Check continuity betwe	en primary speed se	nsor vehicle side h	narness connector te	erminal and ground.
Primary speed sense	or vehicle side harness cor	inector		
Connector	Termina		Ground	Continuity
F55	3			Not existed
Is the inspection result	normal?			
YES >> GO TO 8.				
NO >> Repair or r	eplace damaged part	S.		
8. DETECT MALFUNG	CTIONING ITEMS			
Check the following.				
• IPDM E/R				
<ul> <li>10A fuse (No.55, local</li> </ul>	ated in the IPDM E/R)	E/Denediansitiense	witch (Defende DC)	
<ul> <li>Harness for short or TION POWER SUPP</li> </ul>		E/R and ignition s	witch (Refer to <u>PG-</u>	<u>38, "Wiring Diagram - IGNI-</u>
<ul> <li>Ignition switch</li> </ul>	<u> </u>			
Is the inspection result	normal?			
YES >> Check inte	rmittent incident. Ref	er to <u>GI-34, "Intern</u>	nittent Incident"	
NO >> Repair or r	eplace damaged part	S.		
9. CHECK INTERMIT	FENT INCIDENT			
Refer to GI-34, "Interm	ittent Incident".			
Is the inspection result	normal?			
YES >> Replace p	rimary speed sensor.	Refer to <u>TM-215.</u>	"Exploded View".	
NO >> Repair or r	eplace damaged part	S.		

[CVT: RE0F08B]

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#### < DTC/CIRCUIT DIAGNOSIS >

### P0720 OUTPUT SPEED SENSOR

### Description

- Secondary speed sensor is installed to the upper side of converter housing.
- Secondary speed sensor detects secondary pulley speed.
- Secondary speed sensor converts secondary pulley speed to pulse signal and transmits the signal to TCM.
- TCM converts pulse signal to vehicle speed.

### DTC Logic

INFOID:000000005062446

INFOID:000000005062445

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0720	Output Speed Sensor Circuit	<ul> <li>Secondary speed sensor signal is not transmitted to TCM</li> <li>Secondary speed sensor value is less than 150 rpm while primary pulley speed is more than 1,000 rpm</li> </ul>	<ul> <li>Harness or connectors (Secondary speed sensor circuit is open or shorted.)</li> <li>Secondary speed sensor</li> </ul>

## DTC CONFIRMATION PROCEDURE

### Always drive vehicle at a safe speed.

### 1.PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

#### >> GO TO 2.

### 2. PERFORM DTC CONFIRMATION PROCEDURE

- With CONSULT-III
- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "PRI SPEED" and "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following conditions for 5 seconds or more.

PRI SPEED	: More than 1,000 rpm
VEHICLE SPEED	: More than 10 km/h (7 MPH)

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

#### With GST

Follow the procedure "With CONSULT-III".

#### Is "P0720" detected?

- YES >> Go to TM-110, "Diagnosis Procedure".
- NO >> INSPECTION END

#### **Diagnosis** Procedure

### 1.CHECK SECONDARY SPEED SENSOR POWER CIRCUIT

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



### **P0720 OUTPUT SPEED SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F08B]

Secondary sp	eed sensor vehicle						Valtage (Approx)	
Connec	tor	Termin	al		Ground		voltage (Approx.)	
F19		3					Battery voltage	
the inspection (ES >> GO NO >> GO	result normal? TO 2. TO 5. UNPUT SIGNA							
Turn ignition Connect see Lift the vehic Start the en Check frequ	n switch OFF. condary speed cle. gine. iency of second	sensor conn lary speed s	ector. ensor.					
	TCM connector			0	<b>(</b> )			
Connector	Те	rminal		Condi	tion		Data (Approx.)	
E19	29	42	• Sel • Wh	ector lever: "L' ile driving at 2 <sup>,</sup>	" position 0 km/h (12 MPH)	(V) 15 10 5 0	570 Hz	
the inspection ES >> GO	result normal? TO 8.						JSDIA1305GB	
the inspection (ES >> GO IO >> GO CHECK HAR Turn ignitior Disconnect Check conti vehicle side	TO 8. TO 3. NESS BETWE Switch OFF. TCM connector nuity between harness connector	EN TCM AN r and second TCM vehicle ector termina	ID SECONI dary speed e side harn ls.	DARY SPEI sensor cont ess connec	ED SENSOR ( nector. ctor terminals a	PART 1	) ondary speed sen	Sor
the inspection (ES >> GO IO >> GO CHECK HAR Turn ignitior Disconnect Check conti vehicle side	TO 8. TO 3. NESS BETWE Switch OFF. TCM connector nuity between harness conne	EN TCM AN r and second TCM vehicle actor termina	D SECONI dary speed e side harn ls. Secondary	DARY SPEI sensor coni ess connec speed sensor	ED SENSOR ( nector. ctor terminals a vehicle side harne	PART 1	) ondary speed sen	sor
the inspection (ES >> GO NO >> GO .CHECK HAR Turn ignition Disconnect Check conti vehicle side TCM vehic	TO 8. TO 3. NESS BETWE n switch OFF. TCM connector nuity between harness conne	EN TCM AN r and second TCM vehicle ector termina	D SECONI dary speed e side harn ls. Secondary Conr	DARY SPEI sensor con ess connec speed sensor nector	ED SENSOR ( nector. ctor terminals a vehicle side harne ctor Terminal	PART 1) and sec	ondary speed sen	sor
the inspection YES >> GO NO >> GO CHECK HAR Turn ignition Disconnect Check conti vehicle side TCM vehic Connector E19	TO 8. TO 3. NESS BETWE n switch OFF. TCM connector nuity between harness conne le side harness con	EN TCM AN r and second TCM vehicle ector termina nnector erminal 29 42	D SECONI dary speed e side harn ls. Secondary Conr F	DARY SPEI sensor cont ess connect speed sensor nector 19	ED SENSOR ( nector. ctor terminals a vehicle side harne ctor Terminal 2 1	PART 1	ondary speed sen Continuity Existed	sor
the inspection YES >> GO NO >> GO •CHECK HAR Turn ignition Disconnect Check conti vehicle side TCM vehic Connector E19 the inspection YES >> GO NO >> Rep •CHECK HAR heck continuity	TO 8. TO 3. NESS BETWE n switch OFF. TCM connector nuity between harness connector nuity between harness connector nuity between harness connector nuity between harness connector nuity between harness connector nuity between TC 4. vair or replace of NESS BETWE v between TCM	EN TCM AN r and second TCM vehicle ector termina nector erminal 29 42 42 42 42 42 42 42 42 42 42 42 42 42	ID SECONI dary speed e side harn ls. Secondary Conr F ts. ID SECONI e harness co	DARY SPEI sensor com ess connector speed sensor nector 19 DARY SPEI onnector tel	ED SENSOR ( nector. ctor terminals a vehicle side harne ctor Terminal 2 1 ED SENSOR ( rminals and gr	PART 1 and sec ess con- I PART 2 ound.	ondary speed sen Continuity Existed	sor
the inspection (ES >> GO NO >> GO .CHECK HAR Turn ignition Disconnect Check conti vehicle side TCM vehic E19 the inspection (ES >> GO NO >> Rep .CHECK HAR heck continuity	TO 8. TO 3. NESS BETWE n switch OFF. TCM connector nuity between harness conne le side harness con result normal? TO 4. nair or replace d NESS BETWE / between TCM	EN TCM AN r and second TCM vehicle ector terminal 29 42 amaged par EN TCM AN vehicle side	D SECONI dary speed e side harn ls. Secondary Conr F ts. D SECONI e harness co	DARY SPEI sensor contents ess connector nector 19 DARY SPEI onnector tents	ED SENSOR ( nector. ctor terminals a vehicle side harne ctor 2 1 ED SENSOR ( rminals and gre	PART 1	ondary speed sen Continuity Existed	
the inspection YES >> GO NO >> GO CHECK HAR Turn ignition Disconnect Check conti vehicle side TCM vehic Connector E19 the inspection YES >> GO NO >> Rep CHECK HAR heck continuity TCM	result normal? TO 8. TO 3. NESS BETWE n switch OFF. TCM connector nuity between harness conne le side harness con le side harness con result normal? TO 4. vair or replace of NESS BETWE v between TCM v between TCM	EN TCM AN r and second TCM vehicle ector termina nector erminal 29 42 42 42 42 42 42 42 42 42 42 42 42 42	ID SECONI dary speed e side harn ls. Secondary Conr F ts. ID SECONI e harness constant	DARY SPEI sensor contents speed sensor nector 19 DARY SPEI onnector ten	ED SENSOR ( nector. ctor terminals a vehicle side harne ctor Terminal 2 1 ED SENSOR ( rminals and gro	PART 1) and sec ess con- I PART 2) ound.	) ondary speed sen Continuity Existed ) Continuity	

### P0720 OUTPUT SPEED SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

### **5.** CHECK HARNESS BETWEEN SECONDARY SPEED SENSOR (POWER) AND IPDM E/R (PART 1)

#### 1. Turn ignition switch OFF.

- 2. Disconnect IPDM E/R connector.
- Check continuity between secondary speed sensor vehicle side harness connector terminal and IPDM E/ R vehicle side harness connector terminal.

Secondary speed sensor ne	vehicle side harness con- ctor	IPDM E/R vehicle si	de harness connector	Continuity
Connector	Terminal	Connector	Terminal	
F19	3	E15	58	Existed

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

 $\mathbf{6}$ . CHECK HARNESS BETWEEN SECONDARY SPEED SENSOR (POWER) AND IPDM E/R (PART 2)

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

Secondary speed sensor ve	hicle side harness connector		Continuity
Connector	Terminal	Ground	Continuity
F19	3		Not existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace damaged parts.

#### 7. DETECT MALFUNCTIONING ITEMS

Check the following.

- IPDM E/R
- 10A fuse (No.55, located in the IPDM E/R)
- Harness for short or open between IPDM E/R and ignition switch (Refer to <u>PG-38</u>, "Wiring Diagram IGNI-<u>TION POWER SUPPLY -"</u>.)

Ignition switch

Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-34, "Intermittent Incident".
- NO >> Repair or replace damaged parts.

**8.**CHECK INTERMITTENT INCIDENT

Refer to GI-34, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace secondary speed sensor. Refer to TM-216, "Exploded View".

NO >> Repair or replace damaged parts.

### **P0725 ENGINE SPEED**

### < DTC/CIRCUIT DIAGNOSIS >

### P0725 ENGINE SPEED

### Description

TCM receives engine speed signal from ECM via CAN communication.

### DTC Logic

INFOID:000000005062449

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### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause	-
P0725	Engine Speed Input Circuit	<ul> <li>TCM detects a malfunction in CAN communication between TCM and ECM</li> <li>When primary pulley speed is more than 1,000 rpm, engine speed (CAN signal) is less than 450 rpm</li> </ul>	<ul> <li>Harness or connectors (CAN communication line is open or shorted.) (Engine speed signal circuit is open or shorted.)</li> <li>ECM</li> </ul>	E
DTC CO CAUTION	NFIRMATION PROCED N: Irive vehicle at a safe spe	URE		F
1.PRFC	ONDITIONING			G
	elv after performing anv "	DTC CONFIRMATION PROCEDUR	E", always turn ignition switch OFF.	0
Then wait	t at least 10 seconds befor	e performing the next test.		Н
2.PERF	>> GO TO 2. ORM DTC CONFIRMATIC	N PROCEDURE		I
With Constant 1. Start 2. Select 3. Select 4. Drive	ONSULT-III the engine. ct "Data Monitor" in "TRAN ct "PRI SPEED SEN". the vehicle. tain the following condition	SMISSION".		J
J. Main				Κ
6. Stop 7. Selec	the vehicle. the vehicle. t "Self Diagnostic Results"	in "TRANSMISSION".		L
YES : NO :	So to <u>TM-113, "Diagnos</u> " NSPECTION END	sis Procedure".		M
Diagnos	sis Procedure		INFOID:000000005062450	
<b>1.</b> CHEC	K DTC WITH ECM			Ν
With Control 1. Turn 2. Perfo	ONSULT-III ignition switch ON. rrm "Self Diagnostic Result	s" in "ENGINE".		0
Is the insp YES > NO >	<u>pection result normal?</u> >> Check intermittent incid >> Check DTC detected ite	ent. Refer to <u>GI-34, "Intermittent Incid</u> em. Refer to <u>TM-174, "DTC Index"</u> .	dent".	Ρ

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### **P0740 TORQUE CONVERTER**

#### < DTC/CIRCUIT DIAGNOSIS >

### P0740 TORQUE CONVERTER

### Description

- Torque converter clutch solenoid valve is installed to control valve.
- Torque converter clutch solenoid valve adjusts oil pump discharge pressure to an optimum level according to the driving conditions.
- The adoption of an N/L type (normal low) torque converter clutch solenoid valve enables generation of a control oil pressure when a voltage is not applied to the coil.
- Torque converter clutch solenoid valve is controlled by TCM according to signals transmitted from vehicle speed sensor and accelerator pedal position sensor.
- Lock-up is prohibited when CVT fluid temperature is low.
- When accelerator pedal is depressed (throttle opening angle is less than 2.0/8) in the lock-up state, engine speed does not suddenly change. If engine speed changes suddenly, lock-up is not applied.

#### **DTC Logic**

INFOID:000000005062452

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0740	Torque Converter Clutch Cir- cuit/Open	<ul> <li>Torque converter clutch solenoid valve monitor voltage value of TCM is less than 70% of torque converter clutch solenoid valve target voltage value</li> <li>Torque converter clutch solenoid valve current command value of TCM and torque converter clutch solenoid valve current monitor value is deviated</li> </ul>	<ul> <li>Harness or connectors (Torque converter clutch solenoid valve circuit is open or shorted.)</li> <li>Torque converter clutch solenoid valve</li> </ul>

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

#### Always drive vehicle at a safe speed.

**1.**PRECONDITIONING (PART 1)

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

>> GO TO 2.

**2.** PRECONDITIONING (PART 2)

#### With CONSULT-III

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "ATF TEMP SEN".

Is "ATF TEMP SEN" value 2.17 V or less?

- YES >> GO TO 3.
- NO >> 1. Warm up transaxle.
  - 2. GO TO 3.

#### **3.**PERFORM DTC CONFIRMATION PROCEDURE

#### With CONSULT-III

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following conditions for 5 seconds or more.

VEHICLE SPEED

: More than 40 km/h (25 MPH)

6. Stop the vehicle.

With GST
 Follow the procedure "With CONSULT-III".

Is "P0740" detected?

YES >> Go to <u>TM-115. "Diagnosis Procedure"</u>. NO >> INSPECTION END

7. Select "Self Diagnostic Results" in "TRANSMISSION".

#### **Diagnosis** Procedure

< DTC/CIRCUIT DIAGNOSIS >

## $1. {\sf check \ torque \ converter \ clutch \ solenoid \ valve \ circuit}$

#### 1. Turn ignition switch OFF.

2. Check resistance between TCM connector terminal and ground.

TCM conr	nector		Con	odition	Resistance (Approx.)
Connector	Terminal	-	Con		Resistance (Approx.)
		Ground	CVT fluid temperature	e: 20°C (68°F)	5.60 – 6.60 Ω
E18	3		CVT fluid temperature	e: 50°C (122°F)	6.76 – 6.87 Ω
			CVT fluid temperature	e: 80°C (176°F)	7.47 – 7.59 Ω
s the inspection re YES >> Check NO >> GO TO CHECK TORQU 1. Disconnect CV 2. Check torque verter Clutch S s the inspection re YES >> GO TO NO >> Torque	esult normal? intermittent in 2. JE CONVERT /T unit connect converter clut Solenoid Valve) esult normal? 0 3. converter clut 3. "Exploded \	cident. Refer to <u>(</u> ER CLUTCH SO tor. ch solenoid valv <u>"</u> . tch solenoid valv <u>/iew"</u> .	GI-34, "Intermittent of DLENOID VALVE ve. Refer to <u>TM-116</u> ve is malfunctioning	Incident". 6, "Component Ins g. Replace transax	pection (Torque Con-
TM-22 B.CHECK HARN (ALVE) (PART 1) Disconnect TC Check continu ness connecto	ESS BETWEE M connector. ity between To r terminal.	EN TCM AND C	NT UNIT (TORQU	JE CONVERTER	CLUTCH SOLENOID
<u>TM-22</u> 3.CHECK HARN /ALVE) (PART 1) 1. Disconnect TC 2. Check continu ness connecto	ESS BETWEE M connector. ity between To r terminal.	EN TCM AND C	NT UNIT (TORQU harness connector	JE CONVERTER	UTCH SOLENOID
TM-22 3.CHECK HARN /ALVE) (PART 1) 1. Disconnect TC 2. Check continu ness connector TCM vehicle s Connector	ESS BETWEE CM connector. ity between To or terminal. ide harness connection Term	EN TCM AND C	VT UNIT (TORQU harness connector CVT unit vehicle side ha	JE CONVERTER	CLUTCH SOLENOID unit vehicle side har Continuity
TM-22 3.CHECK HARN /ALVE) (PART 1) 1. Disconnect TC 2. Check continu ness connector TCM vehicle s Connector E18	ESS BETWEE CM connector. ity between To or terminal. ide harness connection Term	EN TCM AND C	CVT UNIT (TORQU       harness connector       CVT unit vehicle side ha       Connector       F24	JE CONVERTER	CLUTCH SOLENOID unit vehicle side har Continuity Existed
3.CHECK HARN VALVE) (PART 1) 1. Disconnect TC 2. Check continumers connector TCM vehicles Connector E18 Is the inspection rest YES >> GO TC NO >> Repain 4.CHECK HARN VALVE) (PART 2) Check continuity b TCM vehicles TCM vehicles	ESS BETWEE CM connector. ity between To or terminal. ide harness connector ide harness connector ide harness connector ide harness connector ide harness connector ide harness connector ide harness connector isotre harnes	EN TCM AND C CM vehicle side ector hinal 3 maged parts. EN TCM AND C ehicle side harne s connector Terminal	CVT UNIT (TORQU harness connector CVT unit vehicle side ha Connector F24 CVT UNIT (TORQU ess connector termi	JE CONVERTER of terminal and CVT arness connector Terminal 12 JE CONVERTER of nal and ground.	CLUTCH SOLENOIE unit vehicle side har Continuity Existed CLUTCH SOLENOIE Continuity

NO >> Repair or replace damaged parts.

INFOID:000000005062453

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### **P0740 TORQUE CONVERTER**

#### < DTC/CIRCUIT DIAGNOSIS >

### Component Inspection (Torque Converter Clutch Solenoid Valve)

### [CVT: RE0F08B]

INFOID:000000005062454

### 1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check resistance between CVT unit harness connector terminal and ground.

CVT unit har	CVT unit harness connector		Condition	Posistance (Approx.)	
Connector	Terminal		Condition	Resistance (Approx.)	
		Ground	CVT fluid temperature: 20°C (68°F)	$5.60-6.60~\Omega$	
F24	12		CVT fluid temperature: 50°C (122°F)	$6.76 - 6.87 \ \Omega$	
			CVT fluid temperature: 80°C (176°F)	7.47 – 7.59 Ω	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Torque converter clutch solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223, "Exploded View"</u>.

### **P0744 TORQUE CONVERTER**

#### < DTC/CIRCUIT DIAGNOSIS >

### P0744 TORQUE CONVERTER

### Description

- This is detected when torque converter clutch is not engaged under an electrically normal condition of torque converter clutch solenoid valve.
- This DTC is not caused by an electrical malfunction (circuit open or short) but is caused by a mechanical malfunction (control valve clogging, solenoid valve sticking, and others).

### DTC Logic

INFOID:000000005062456

INFOID:000000005062455

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
	Torque Converter Clutch Cir-	Torque converter slip speed is more than a	Hydraulic control circuit     Tarrus converter clutch colonoid volvo
P0744	cuit Intermittent	while TCM is in lock-up command state	Lock-up select solenoid valve
DTC CO CAUTION Always o 1.PREC	NFIRMATION PROCED N: drive vehicle at a safe spo ONDITIONING	URE eed.	
Immediat	ely after performing any '	DTC CONFIRMATION PROCEDUR	E", always turn ignition switch OFF.
i nen wai	t at least 10 seconds befor	e performing the next test.	
:	>> GO TO 2.		
2.perf	ORM DTC CONFIRMATIC	N PROCEDURE	
With C	ONSULT-III		
1. Start 2. Selec	the engine. ct "Data Monitor" in "TRAN	SMISSION".	
3. Selec	ct "RANGE", "ATF TEMP S	SEN", "ACC PEDAL OPEN" and "VEH	IICLE SPEED".
4. Drive	e the vehicle. tain the following condition	s for 10 seconds or more	
J. Main			
R/	ANGE :	D	
AT	F TEMP SEN :	2.03 V or less	
AC	CC PEDAL OPEN :	0.0/8 – 1.0/8	
	HICLE SPEED :	More than 40 km/h (25 MPH)	
6. Stop 7. Selec	the vehicle. ct "Self Diagnostic Results"	" in "TRANSMISSION".	
@With G	ST		
Follow the	e procedure "With CONSU	JLT-III".	
<u>Is "P0744</u>	<u>A detected?</u>		
NO :	>> Go to <u>TM-117, "Diagno</u> >> INSPECTION END	sis Procedure".	
Diagno	sis Procedure		
			INFOID:00000005062457
<b>1.</b> CHEC	K LINE PRESSURE		
Perform I	ine pressure test. Refer to	TM-197, "Inspection and Judgment".	
Is the ins	pection result normal?		
YES :	>> GO TO 2.	and ports. Defer to TM 407 "Issuest	ion and Judament"
NU 3	>> Repair or replace dama	iged parts. Refer to <u>TM-197, "Inspect</u>	on and Judgment.

2. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

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### **P0744 TORQUE CONVERTER**

< DTC/CIRCUIT DIAGNOSIS >

- 1. Turn ignition switch OFF.
- 2. Disconnect CVT unit connector.
- Check torque converter clutch solenoid valve. Refer to <u>TM-118</u>, "Component Inspection (Torque Converter Clutch Solenoid Valve)".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Torque converter clutch solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223, "Exploded View"</u>.

### 3.CHECK LOCK-UP SELECT SOLENOID VALVE

Check lock-up select solenoid valve. Refer to <u>TM-118</u>, "Component Inspection (Lock-up Select Solenoid <u>Valve</u>)".

Is the inspection result normal?

- YES >> GO TO 4.
- NO >> Lock-up select solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223</u>. <u>"Exploded View"</u>.

**4.**CHECK PRIMARY SPEED SENSOR SYSTEM

Check primary speed sensor system. Refer to <u>TM-107. "DTC Logic"</u>.

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-110, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace damaged parts.

**6.**CHECK INTERMITTENT INCIDENT

Refer to GI-34, "Intermittent Incident".

#### Is the inspection result normal?

- YES >> Replace transaxle assembly. Refer to <u>TM-223</u>, "Exploded View".
- NO >> Repair or replace damaged parts.

Component Inspection (Torque Converter Clutch Solenoid Valve)

INFOID:000000005062458

#### 1.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check resistance between CVT unit harness connector terminal and ground.

CVT unit harness connector			Condition	Posistance (Approx.)
Connector	Terminal		Condition	Resistance (Approx.)
F24	Groun 12	Ground	CVT fluid temperature: 20°C (68°F)	5.60 – 6.60 Ω
			CVT fluid temperature: 50°C (122°F)	$6.76-6.87~\Omega$
			CVT fluid temperature: 80°C (176°F)	7.47 – 7.59 Ω

Is the inspection result normal?

YES >> INSPECTION END

NO >> Torque converter clutch solenoid valve is malfunctioning. Replace transaxle assembly. Refer to TM-223, "Exploded View".

#### Component Inspection (Lock-up Select Solenoid Valve)

INFOID:000000005062459

**1.**CHECK LOCK-UP SELECT SOLENOID VALVE

Check resistance between CVT unit harness connector terminal and ground.

### TM-118

### **P0744 TORQUE CONVERTER**

#### < DTC/CIRCUIT DIAGNOSIS >

#### [CVT: RE0F08B]

CVT unit harness connector			Condition	Posistanco (Approx)	А
Connector	Terminal		Condition	Resistance (Approx.)	
		Ground	CVT fluid temperature: 20°C (68°F)	12.3 – 13.5 Ω	
F24	13		CVT fluid temperature: 50°C (122°F)	13.7 – 15.1 Ω	В
			CVT fluid temperature: 80°C (176°F)	15.1 – 16.7 Ω	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Lock-up select solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223</u>. <u>"Exploded View"</u>.

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### **P0745 PRESSURE CONTROL SOLENOID A**

#### < DTC/CIRCUIT DIAGNOSIS >

### P0745 PRESSURE CONTROL SOLENOID A

### Description

- Line pressure solenoid valve is installed to control valve.
- Line pressure solenoid valve adjusts oil pump discharge pressure to optimum level according to the driving conditions.
- The adoption of an N/H type (normal high) line pressure solenoid valve enables generation of a control oil pressure when a voltage is not applied to the coil.

#### DTC Logic

INFOID:000000005062461

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0745	Pressure Control Solenoid A	<ul> <li>Monitor voltage value of TCM line pressure solenoid valve is less than 70% of the target voltage value of line pressure solenoid valve</li> <li>Current monitor value of the Line pressure solenoid valve differs from the TCM current command value of line pressure solenoid valve</li> </ul>	<ul> <li>Harness or connectors (Line pressure solenoid valve circuit is open or shorted.)</li> <li>Line pressure solenoid valve</li> </ul>

## DTC CONFIRMATION PROCEDURE

#### Always drive vehicle at a safe speed.

#### **1.**PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

#### >> GO TO 2.

### 2. PERFORM DTC CONFIRMATION PROCEDURE

#### (B) With CONSULT-III

- 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-III".

#### Is "P0745" detected?

- YES >> Go to TM-120. "Diagnosis Procedure".
- NO >> INSPECTION END

#### **Diagnosis Procedure**

INFOID:000000005062462

#### **1.**CHECK LINE PRESSURE SOLENOID VALVE CIRCUIT

#### 1. Turn ignition switch OFF.

2. Check resistance between TCM connector terminal and ground.

TCM connector			Condition	Basistonas (Approx.)
Connector	Terminal		Condition	Resistance (Approx.)
		Ground	CVT fluid temperature: 20°C (68°F)	$5.60-6.60~\Omega$
E18	1		CVT fluid temperature: 50°C (122°F)	$6.76-6.87~\Omega$
			CVT fluid temperature: 80°C (176°F)	7.47 – 7.59 Ω

P0745 PRESSURE CONTROL SOLENOI	) A (
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[CVT: RE0F08B] < DTC/CIRCUIT DIAGNOSIS > Is the inspection result normal? А YES >> Check intermittent incident. Refer to GI-34, "Intermittent Incident". NO >> GO TO 2. **2.**CHECK LINE PRESSURE SOLENOID VALVE В 1. Disconnect CVT unit connector. Check Line pressure solenoid valve. Refer to TM-121, "Component Inspection (Line Pressure Solenoid 2. Valve)". Is the inspection result normal? YES >> GO TO 3. >> Line pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to TM-223. NO ТΜ "Exploded View". **3.**CHECK HARNESS BETWEEN TCM AND CVT UNIT (LINE PRESSURE SOLENOID VALVE) (PART 1) Disconnect TCM connector. 1 Check continuity between TCM vehicle side harness connector terminal and CVT unit vehicle side har-2. ness connector terminal. F TCM vehicle side harness connector CVT unit vehicle side harness connector Continuity Connector Terminal Connector Terminal E18 F24 2 1 Existed Is the inspection result normal? YES >> GO TO 4. NO >> Repair or replace damaged parts. Н  ${f 4.}$ CHECK HARNESS BETWEEN TCM AND CVT UNIT (LINE PRESSURE SOLENOID VALVE) (PART 2) Check continuity between TCM vehicle side harness connector terminal and ground. TCM vehicle side harness connector Continuity Ground Connector Terminal E18 1 Not existed Is the inspection result normal? >> Check intermittent incident. Refer to GI-34, "Intermittent Incident". Κ YES NO >> Repair or replace damaged parts. Component Inspection (Line Pressure Solenoid Valve) INFOID:000000005062463 **1.**CHECK LINE PRESSURE SOLENOID VALVE Check resistance between CVT unit harness connector terminal and ground. Μ CVT unit harness connector Condition Resistance (Approx.) Connector Terminal Ν CVT fluid temperature: 20°C (68°F)  $5.60 - 6.60 \Omega$ Ground F24 2 CVT fluid temperature: 50°C (122°F) 6.76 - 6.87 Ω C CVT fluid temperature: 80°C (176°F) 7.47 – 7.59 Ω Is the inspection result normal? YES >> INSPECTION END Ρ NO >> Line pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to TM-223. "Exploded View".

### **P0746 PRESSURE CONTROL SOLENOID A**

#### < DTC/CIRCUIT DIAGNOSIS >

### P0746 PRESSURE CONTROL SOLENOID A

#### Description

- When an abnormal gear ratio is detected on the LOW side due to a low line pressure with the line pressure solenoid valve electrically normal, this phenomenon is judged as a malfunction.
- This DTC is not caused by an electrical malfunction (circuit open or short) but is caused by a mechanical malfunction (control valve clogging, solenoid valve sticking, and others).

### DTC Logic

INFOID:000000005062465

INFOID:000000005062464

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0746	Pressure Control Solenoid A Performance/Stuck Off	TCM detects a state that gear ratio is more than 2.9	<ul> <li>Line pressure control system</li> <li>Line pressure solenoid valve</li> <li>Primary speed sensor</li> <li>Secondary speed sensor</li> </ul>

### DTC CONFIRMATION PROCEDURE

#### CAUTION:

#### Always drive vehicle at a safe speed.

**1.**PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

#### >> GO TO 2.

### 2. PERFORM DTC CONFIRMATION PROCEDURE

#### With CONSULT-III

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "ENG SPEED", "PRI SPEED" and "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following conditions for 1 seconds or more.

ENG SPEED	: More than 600 rpm
PRI SPEED	: More than 500 rpm
VEHICLE SPEED	: More than 10 km/h (7 MPH)

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

With GST

Follow the procedure "With CONSULT-III".

#### Is "P0746" detected?

YES >> Go to TM-122, "Diagnosis Procedure".

NO >> INSPECTION END

#### Diagnosis Procedure

INFOID:000000005062466

#### **1.**CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-197, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts. Refer to <u>TM-197</u>, "Inspection and Judgment".

**2.**CHECK LINE PRESSURE SOLENOID VALVE

1. Turn ignition switch OFF.

### P0746 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS > [CVT: RE0F08B]	
<ol> <li>Disconnect CVT unit harness connector.</li> <li>Check line pressure solenoid valve. Refer to <u>TM-123</u>, "Component Inspection (Line Pressure Solenoid <u>Valve</u>)".</li> </ol>	А
Is the inspection result normal?	
YES >> GO TO 3. NO >> Line pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223</u> , <u>"Exploded View"</u> .	В
<b>3.</b> CHECK PRIMARY SPEED SENSOR SYSTEM	С
Check primary speed sensor system. Refer to TM-107, "DTC Logic".	
Is the inspection result normal?	
YES >> GO TO 4. NO >> Repair or replace damaged parts.	I IVI
4.CHECK SECONDARY SPEED SENSOR SYSTEM	E
Check secondary speed sensor system. Refer to TM-110, "DTC Logic".	
Is the inspection result normal?	
YES >> GO TO 5.	F
NO >> Repair or replace damaged parts.	
	G
Refer to GI-34, "Intermittent Incident".	0
Is the inspection result normal?	
YES >> Replace transaxle assembly. Refer to <u>TM-223, "Exploded View"</u> . NO >> Repair or replace damaged parts.	Н
Component Inspection (Line Pressure Solenoid Valve)	
1. CHECK LINE PRESSURE SOLENOID VALVE	

Check resistance between CVT unit harness connector terminal and ground.

CVT unit harness connector			Condition	Registeres (Approx.)	
Connector	Terminal	_	Condition	Resistance (Approx.)	L
		Ground	CVT fluid temperature: 20°C (68°F)	5.60 – 6.60 Ω	r
F24	2		CVT fluid temperature: 50°C (122°F)	6.76 – 6.87 Ω	
			CVT fluid temperature: 80°C (176°F)	7.47 – 7.59 Ω	L

Is the inspection result normal?

YES >> INSPECTION END

NO >> Line pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223</u>. M <u>"Exploded View"</u>.

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### **P0776 PRESSURE CONTROL SOLENOID B**

#### < DTC/CIRCUIT DIAGNOSIS >

### P0776 PRESSURE CONTROL SOLENOID B

#### Description

- This is detected when secondary pressure solenoid valve is electrically normal and secondary pressure is low.
- This DTC is not caused by an electrical malfunction (circuit open or short) but is caused by a mechanical malfunction (control valve clogging, solenoid valve sticking, and others).

### DTC Logic

INFOID:000000005062469

INFOID:000000005062468

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0776	Pressure Control Solenoid B Performance/Stuck Off	Difference of secondary pressure target val- ue of TCM and secondary pressure actual value is more than 1.2 MPa	<ul> <li>Secondary pressure solenoid valve system</li> <li>Line pressure control system</li> <li>Secondary pressure solenoid valve</li> <li>Secondary pressure sensor</li> </ul>

# DTC CONFIRMATION PROCEDURE CAUTION:

#### Always drive vehicle at a safe speed.

**1.**PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

#### >> GO TO 2.

### 2. PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT-III

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "RANGE", "VIGN SEN", "ATF TEMP SEN", "ACC PEDAL OPEN" and "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following conditions for 30 seconds or more.

RANGE	: D
VIGN SEN	: More than 10 V
ATF TEMP SEN	: 2.03 – 0.16 V
ACC PEDAL OPEN	: More than 1.0/8
VEHICLE SPEED	: More than 10 km/h (7 MPH)

6. Stop the vehicle.

7. Select "Self Diagnostic Results" in "TRANSMISSION".

With GST

Follow the procedure "With CONSULT-III".

Is "P0776" detected?

YES >> Go to <u>TM-124, "Diagnosis Procedure"</u>. NO >> INSPECTION END

#### **Diagnosis Procedure**

**1.**CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-197, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.

### P0776 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >	[CVT: RE0F08B]	
NO >> Repair or replace damaged parts. Refer to TM-197, "Inspection and Judgmen	<u>t"</u> .	
2. CHECK SECONDARY PRESSURE SOLENOID VALVE		А
<ol> <li>Turn ignition switch OFF.</li> <li>Disconnect CVT unit harness connector.</li> <li>Check secondary pressure solenoid valve. Refer to <u>TM-125. "Component Inspectio</u> <u>sure Solenoid Valve)"</u>.</li> </ol>	n (Secondary Pres-	В
Is the inspection result normal?		C
<ul> <li>YES &gt;&gt; GO TO 3.</li> <li>NO &gt;&gt; Secondary pressure solenoid valve is malfunctioning. Replace transaxle assorted assorted assorted as a second secon</li></ul>	embly. Refer to <u>TM-</u>	C
<b>3.</b> CHECK SECONDARY PRESSURE SENSOR SYSTEM		ТМ
Check secondary pressure sensor system. Refer to <u>TM-128. "DTC Logic"</u> . <u>Is the inspection result normal?</u> YES >> GO TO 4.		E
4.CHECK INTERMITTENT INCIDENT		F
Refer to GI-34, "Intermittent Incident".         Is the inspection result normal?         YES       >> Replace transaxle assembly. Refer to TM-223, "Exploded View".         NO       >> Repair or replace damaged parts.		G
Component Inspection (Secondary Pressure Solenoid Valve)	INFOID:000000005062471	Н
1. CHECK SECONDARY PRESSURE SOLENOID VALVE		
Check resistance between CVT unit harness connector terminal and ground.		
CVT unit harness connector		

CVT unit har	ness connector		Condition	Posistance (Approx.)	
Connector	Terminal		Condition	Resistance (Approx.)	J
		Ground	CVT fluid temperature: 20°C (68°F)	$5.60-6.60~\Omega$	
F24	3		CVT fluid temperature: 50°C (122°F)	$6.76-6.87~\Omega$	K
			CVT fluid temperature: 80°C (176°F)	7.47 – 7.59 Ω	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Secondary pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-</u> <u>223. "Exploded View"</u>.

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### **P0778 PRESSURE CONTROL SOLENOID B**

#### < DTC/CIRCUIT DIAGNOSIS >

### P0778 PRESSURE CONTROL SOLENOID B

#### Description

- · Secondary pressure solenoid valve is installed to control valve.
- Secondary pressure solenoid valve adjusts oil pump discharge pressure to optimum level according to the driving conditions.
- The adoption of an N/H type (normal high) secondary pressure solenoid valve enables generation of a control oil pressure when a voltage is not applied to the coil.

#### DTC Logic

INFOID:000000005062473

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0778	Pressure Control Solenoid B Electrical	<ul> <li>Current monitor value of the secondary pressure solenoid valve differs from the TCM current command value of secondary pressure solenoid valve</li> <li>Secondary pressure solenoid valve current command value of TCM and secondary pressure solenoid valve current monitor value is deviated</li> </ul>	<ul> <li>Harness or connectors (secondary pressure solenoid valve cir- cuit is open or shorted.)</li> <li>Secondary pressure solenoid valve</li> </ul>

## DTC CONFIRMATION PROCEDURE

#### Always drive vehicle at a safe speed.

#### **1.**PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

#### >> GO TO 2.

### 2. PERFORM DTC CONFIRMATION PROCEDURE

#### (I) With CONSULT-III

- 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-III".

#### Is "P0778" detected?

- YES >> Go to TM-126. "Diagnosis Procedure".
- NO >> INSPECTION END

#### **Diagnosis Procedure**

INFOID:000000005062474

#### **1.**CHECK SECONDARY PRESSURE SOLENOID VALVE CIRCUIT

#### 1. Turn ignition switch OFF.

2. Check resistance between TCM connector terminal and ground.

TCM connector			Condition	Posistance (Approx.)	
Connector	Terminal		Condition	Resistance (Approx.)	
		Ground	CVT fluid temperature: 20°C (68°F)	5.60 – 6.60 Ω	
E18	2		CVT fluid temperature: 50°C (122°F)	6.76 – 6.87 Ω	
			CVT fluid temperature: 80°C (176°F)	7.47 – 7.59 Ω	

### DA770 DDESSUDE CONTROL SOLENOID D

< DTC/CIRCUIT DI	AGNOSIS >	, ,			[CVT: RE0F08B]
Is the inspection resu	It normal?				
YES >> Check in NO >> GO TO 2	termittent in	ncident. Refer t	to <u>GI-34, "Intern</u>	nittent Incident".	
2.CHECK SECOND	ARY PRES	SURE SOLEN			
<ol> <li>Disconnect CVT</li> <li>Check secondar sure Solenoid Va</li> </ol>	unit harnes y pressure alve)".	s connector. solenoid valve	e. Refer to <u>TM-</u>	127, "Component Insp	ection (Secondary Pres-
Is the inspection resu	<u>ilt normal?</u>				
YES >> GO TO 3 NO >> Seconda 223, "Ex	3. Iry pressure ploded Viev	e solenoid valv v".	e is malfunctior	ing. Replace transaxle	e assembly. Refer to <u>TM-</u>
3.CHECK HARNES	S BETWE	EN TCM AND	CVT UNIT SI	ECONDARY PRESSL	RE SOLENOID VALVE
(PART 1)					,
<ol> <li>Disconnect TCM</li> <li>Check continuity ness connector t</li> </ol>	connector. between T erminal.	CM vehicle si	de harness con	nector terminal and C	VT unit vehicle side har-
	namess conr	minal	Connector		Continuity
	ien	IIIIIai	Connector	Terminal	
E18 <u>S the inspection resu</u> YES >> GO TO 4 NO >> Repair o	<u>It normal?</u> I. r replace da	amaged parts.		3	
E18 <u>Is the inspection resu</u> YES >> GO TO 4 NO >> Repair o <b>4.</b> CHECK HARNES (PART 2) Check continuity betw	<u>Ilt normal?</u> I. r replace da SS BETWER ween TCM v	2 Imaged parts. EN TCM AND vehicle side ha	F24 CVT UNIT (Si irness connecto	3 ECONDARY PRESSU	Existed
E18 E18 Is the inspection result YES >> GO TO 4 NO >> Repair o 4.CHECK HARNES (PART 2) Check continuity betw TCM vehi	ult normal? I. r replace da SS BETWEB ween TCM v	2 maged parts. EN TCM AND vehicle side ha	F24 CVT UNIT (S urness connecto	3 ECONDARY PRESSL r terminal and ground.	Existed
E18 Is the inspection result YES >> GO TO 4 NO >> Repair o 4.CHECK HARNES (PART 2) Check continuity betw TCM vehit Connector	ult normal? I. r replace da S BETWEI ween TCM v cle side harnes	2 amaged parts. EN TCM AND vehicle side ha ss connector Terminal	F24 CVT UNIT (S	3 ECONDARY PRESSL rr terminal and ground. Ground	Existed
E18 Is the inspection resurverse of the second sec	<u>ult normal?</u> 4. r replace da S BETWEI ween TCM v cle side harnes	2 amaged parts. EN TCM AND vehicle side ha ss connector Terminal 2	F24 CVT UNIT (Si irness connecto	3 ECONDARY PRESSL r terminal and ground. Ground	Existed URE SOLENOID VALVE) Continuity Not existed
E18 Is the inspection resurves YES >> GO TO 4 NO >> Repair o 4.CHECK HARNES (PART 2) Check continuity betw TCM vehi Connector E18 Is the inspection resurves YES >> Check in NO >> Repair o Component Insp 1 CHECK SECOND	It normal? I. r replace da S BETWEI ween TCM v cle side harnes It normal? termittent in r replace da ection (S	2 amaged parts. EN TCM AND vehicle side ha ss connector Terminal 2 ncident. Refer to maged parts. Secondary F	F24 CVT UNIT (Si arness connecto	ECONDARY PRESSL r terminal and ground. Ground hittent Incident". enoid Valve)	IRE SOLENOID VALVE) Continuity Not existed
E18 Is the inspection resurves YES >> GO TO 4 NO >> Repair o 4.CHECK HARNES (PART 2) Check continuity between TCM vehits Connector E18 Is the inspection resurves YES >> Check in NO >> Repair o Component Inspection Component Inspection Check resistance between Check resistance between Check resistance between State of the state of the st	It normal? I. r replace da S BETWEI ween TCM cle side harnes It normal? termittent in r replace da ection (S ARY PRES ween CVT	2 amaged parts. EN TCM AND vehicle side ha ss connector Terminal 2 ncident. Refer to maged parts. Secondary F SURE SOLEN unit harness co	F24 CVT UNIT (Since the second	ECONDARY PRESSL r terminal and ground. Ground hittent Incident". enoid Valve) al and ground.	IRE SOLENOID VALVE) Continuity Not existed
E18 Is the inspection result YES >> GO TO 4 NO >> Repair of 4. CHECK HARNES (PART 2) Check continuity bether TCM vehit Connector E18 Is the inspection result YES >> Check in NO >> Repair of Component Inspection Component Inspec	ult normal? I. r replace da S BETWEI ween TCM cle side harnes ult normal? termittent in r replace da ection (S ARY PRES ween CVT onnector	2 maged parts. EN TCM AND vehicle side ha ss connector Terminal 2 ncident. Refer to maged parts. Secondary F SURE SOLEN unit harness co	F24 CVT UNIT (Si Trness connecto To GI-34, "Intern Pressure Sol IOID VALVE Tonnector termin	ECONDARY PRESSU r terminal and ground. Ground hittent Incident". enoid Valve) al and ground.	IRE SOLENOID VALVE) Continuity Not existed
E18 Is the inspection result YES >> GO TO 4 NO >> Repair o 4.CHECK HARNES (PART 2) Check continuity betw TCM vehit Connector E18 Is the inspection result YES >> Check in NO >> Repair of Component Insp 1.CHECK SECONE Check resistance betw CVT unit harness of COnnector	It normal? I. r replace da S BETWEI ween TCM v cle side harnes It normal? termittent in r replace da ection (S ARY PRES ween CVT onnector Terminal	2 amaged parts. EN TCM AND vehicle side ha ss connector Terminal 2 ncident. Refer to maged parts. Secondary F SURE SOLEN unit harness co	F24 CVT UNIT (Since the connector of the connector termined by the con	ECONDARY PRESSL r terminal and ground. Ground hittent Incident". enoid Valve) al and ground. Condition	IRE SOLENOID VALVE) Continuity Not existed INFOID:000000005062473 Resistance (Approx.)
E18  Is the inspection resu YES >> GO TO 4 NO >> Repair o 4.CHECK HARNES (PART 2) Check continuity betw Connector E18 Is the inspection resu YES >> Check in NO >> Repair o Component Insp 1.CHECK SECONE Check resistance betw CVT unit harness of Connector	It normal? I. r replace da S BETWER ween TCM cle side harnes It normal? termittent in r replace da ection (S ARY PRES ween CVT onnector Terminal	2 amaged parts. EN TCM AND vehicle side ha ss connector Terminal 2 ncident. Refer to maged parts. SURE SOLEN unit harness co Ground	F24 CVT UNIT (Since the connector of the connector termined by the con	ECONDARY PRESSL r terminal and ground. Ground hittent Incident". enoid Valve) al and ground. Condition erature: 20°C (68°F)	Existed         URE SOLENOID VALVE)         Continuity         Not existed         INFOID:000000000000000000000000000000000000
E18 Is the inspection result YES >> GO TO 4 NO >> Repair of 4. CHECK HARNES (PART 2) Check continuity beth TCM vehit Connector E18 Is the inspection result YES >> Check in NO >> Repair of Component Insp 1. CHECK SECONE Check resistance beth CVT unit harness of COnnector F24	ult normal? 4. r replace da S BETWER ween TCM v cle side harnes ult normal? termittent in r replace da ection (S ARY PRES ween CVT onnector Terminal	2 amaged parts. EN TCM AND vehicle side ha ss connector Terminal 2 ncident. Refer to maged parts. SURE SOLEN unit harness co Ground	F24 CVT UNIT (Si Triness connecto To GI-34, "Intern Pressure Sol NOID VALVE Tonnector termin CVT fluid temp CVT fluid temp CVT fluid temp	ECONDARY PRESSU r terminal and ground. Ground hittent Incident". enoid Valve) al and ground. Condition erature: 20°C (68°F) erature: 50°C (122°F)	Existed           URE SOLENOID VALVE)           Continuity           Not existed           INFOID:000000000000000000000000000000000000

YES >> INSPECTION END

>> Secondary pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223. "Exploded View"</u>. NO

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

#### < DTC/CIRCUIT DIAGNOSIS >

### P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

#### Description

INFOID:000000005062476

[CVT: RE0F08B]

- Secondary pressure sensor is installed to control valve.
- Secondary pressure sensor detects pressure that is applied to secondary pulley.
- Secondary pressure sensor converts pressure that is applied to secondary pulley to output voltage and transmits the signal to TCM.
- Secondary pressure sensor changes voltage according to pressure change. The voltage increases as the
  pressure increases.

#### DTC Logic

INFOID:000000005062477

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0840	Transmission Fluid Pressure Sensor/Switch A Circuit	<ul> <li>Secondary pressure sensor voltage that TCM receives is more than 4.7 V</li> <li>Secondary pressure sensor voltage that TCM receives is less than 0.9 V</li> </ul>	<ul> <li>Harness or connectors (Secondary pressure sensor circuit is open or shorted.)</li> <li>Secondary pressure sensor</li> </ul>

#### DTC CONFIRMATION PROCEDURE

#### 1.PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

#### >> GO TO 2.

### 2. PERFORM DTC CONFIRMATION PROCEDURE

#### With CONSULT-III

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "ATF TEMP SEN".
- 4. Maintain the following conditions 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-III".

Is "P0840" detected?

YES >> Go to TM-128, "Diagnosis Procedure".

NO >> INSPECTION END

#### Diagnosis Procedure

### **1.**CHECK TCM INPUT SIGNAL

- 1. Turn ignition switch OFF.
- 2. Start the engine.

3. Check voltage between TCM vehicle side harness connector terminals.

TCM connector			Condition	Voltage (Approx.)	
Connector	Terr	ninal	Condition	voltage (Approx.)	
E19	37	42	<ul><li>Selector lever: "N" position</li><li>Idle speed</li></ul>	0.8 V	

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-34, "Intermittent Incident".

### P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

< DTC/CIRCUIT DIAGNOSIS >

NO >> GO TO 2.

[CVT: RE0F08B]

	TCM connector					
Connector	Ter	minal		Condition		
F10	42	40	Ignition switch: OI	Ignition switch: ON		
E19	42	40	Ignition switch: Of	F	0 V	
CHECK HAR Turn ignitior Disconnect Check continess conne	Tesuit normal? TO 3. to <u>TM-135. "Diac</u> NESS BETWEE switch OFF. TCM connector a nuity between T	nosis Proced N TCM AND and CVT unit CM vehicle s	dure". CVT UNIT (SECON t harness connector. side harness connec	IDARY PRESSURE S	ENSOR) (PART 1) unit vehicle side ha	
TCM vehic	le side harness conr	ector	CVT unit vehicle sic	le harness connector	Continuity	
Connector	Terr	minal	Connector	Terminal	Continuity	
	:	37		23		
E19		12	F24	19	Existed	
s the inspection	result normal?					
the inspection YES >> GO NO >> Rep	TO 4. air or replace da	maged parts				
the inspection YES >> GO NO >> Rep CHECK HAR	TO 4. air or replace da NESS BETWEE	maged parts N TCM AND /ehicle side h	CVT UNIT (SECON narness connector te	IDARY PRESSURE S	ENSOR) (PART 2)	
the inspection     YES >> GO     NO >> Rep     CHECK HAR     Check continuity     TCM	TO 4. air or replace da NESS BETWEE between TCM v	maged parts N TCM AND rehicle side h	CVT UNIT (SECON narness connector te	IDARY PRESSURE S	ENSOR) (PART 2)	
the inspection YES >> GO NO >> Rep CHECK HAR heck continuity TCM	TO 4. air or replace da NESS BETWEE between TCM v vehicle side harnes	maged parts N TCM AND rehicle side h as connector Terminal	CVT UNIT (SECON narness connector te	IDARY PRESSURE S rminals and ground.	ENSOR) (PART 2) Continuity	
the inspection YES >> GO NO >> Rep CHECK HAR heck continuity TCM	TO 4. air or replace da NESS BETWEE between TCM v vehicle side harnes	maged parts N TCM AND vehicle side h ss connector Terminal 37	CVT UNIT (SECON narness connector te	IDARY PRESSURE S rminals and ground.	ENSOR) (PART 2) Continuity	
the inspection YES >> GO NO >> Rep CHECK HAR heck continuity TCM Connec	TO 4. air or replace da NESS BETWEE between TCM v vehicle side harnes	maged parts N TCM AND vehicle side h ss connector Terminal 37 42	arness connector te	IDARY PRESSURE S rminals and ground.	ENSOR) (PART 2) Continuity Not existed	
the inspection YES >> GO NO >> Rep •.CHECK HAR heck continuity TCM Connec	TO 4. air or replace da NESS BETWEE between TCM v vehicle side harnes tor	maged parts N TCM AND rehicle side h ss connector Terminal 37 42 46	CVT UNIT (SECON narness connector te	IDARY PRESSURE S rminals and ground. Ground	ENSOR) (PART 2) Continuity Not existed	

### P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

#### < DTC/CIRCUIT DIAGNOSIS >

### P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

#### Description

A malfunction of oil pressure sensor function is detected by mutual monitoring between secondary pressure sensor and line pressure.

### DTC Logic

INFOID:000000005062480

INFOID:000000005062479

[CVT: RE0F08B]

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0841	Transmission Fluid Pressure Sensor/Switch A Circuit Range/Performance	Secondary pressure sensor value exceeds line pressure value	<ul> <li>Harness or connectors (secondary pressure sensor circuit is open or shorted.)</li> <li>Secondary pressure sensor</li> </ul>

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

#### >> GO TO 2.

#### 2. PERFORM DTC CONFIRMATION PROCEDURE

#### With CONSULT-III

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following conditions for 5 seconds or more.

VEHICLE SPEED

: More than 30 km/h (19 MPH)

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

Is "P0841" detected?

YES >> Go to TM-130, "Diagnosis Procedure".

NO >> INSPECTION END

#### Diagnosis Procedure

#### INFOID:000000005062481

#### **1.**CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-197, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts. Refer to <u>TM-197</u>, "Inspection and Judgment".

**2.**CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check secondary pressure sensor system. Refer to <u>TM-128, "DTC Logic"</u>.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

 $\mathbf{3.}$ CHECK SECONDARY PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to TM-131, "Component Inspection (Line Pressure Solenoid Valve)".

#### TM-130

### P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

< DTC/CIRCUIT DIAGNOSIS > [CVT: RE0F08	3B]
Is the inspection result normal?	
YES >> GO TO 4.	A
NO >> Line pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-2</u> <u>"Exploded View"</u> .	<u>223.</u>
4. CHECK SECONDARY PRESSURE SOLENOID VALVE	В
Check secondary pressure solenoid valve. Refer to <u>TM-131</u> , "Component Inspection (Secondary Press Solenoid Valve)".	sure
Is the inspection result normal?	C
YES >> GO TO 5.	
NO >> Secondary pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to 223. "Exploded View".	TM- TM
5. CHECK STEP MOTOR SYSTEM	
Check step motor system. Refer to TM-146, "DTC Logic".	E
Is the inspection result normal?	
YES >> GO TO 6.	
NO >> Repair or replace damaged parts.	F
6. CHECK INTERMITTENT INCIDENT	
Refer to GI-34, "Intermittent Incident".	G
Is the inspection result normal?	0
YES >> Replace transaxle assembly. Refer to <u>TM-223, "Exploded View"</u> . NO >> Repair or replace damaged parts.	Н
Component Inspection (Line Pressure Solenoid Valve)	6062482
1. CHECK LINE PRESSURE SOLENOID VALVE	I

Check resistance between CVT unit harness connector terminal and ground.

CVT unit harr	CVT unit harness connector		Condition	Posistanco (Approx)	,
Connector	Terminal		Condition	Resistance (Approx.)	
		Ground	CVT fluid temperature: 20°C (68°F)	5.60 – 6.60 Ω	
F24	2		CVT fluid temperature: 50°C (122°F)	6.76 – 6.87 Ω	
			CVT fluid temperature: 80°C (176°F)	7.47 – 7.59 Ω	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Line pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223</u>. <u>"Exploded View"</u>.

Component Inspection (Secondary Pressure Solenoid Valve)

INFOID:000000005062483

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### 1.CHECK SECONDARY PRESSURE SOLENOID VALVE

Check resistance between CVT unit harness connector terminal and ground.

CVT unit har	ness connector		Condition	Desistance (Annrey)	С
Connector	Terminal	-	Condition	Resistance (Approx.)	
		Ground	CVT fluid temperature: 20°C (68°F)	5.60 – 6.60 Ω	Ρ
F24	3		CVT fluid temperature: 50°C (122°F)	$6.76-6.87~\Omega$	
			CVT fluid temperature: 80°C (176°F)	7.47 – 7.59 Ω	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Secondary pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-</u> <u>223, "Exploded View"</u>.

### TM-131

#### < DTC/CIRCUIT DIAGNOSIS >

### P0868 TRANSMISSION FLUID PRESSURE

#### Description

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:000000005062485

INFOID:000000005062484

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P0868	Transmission Fluid Pressure Low	TCM detects that secondary pressure is ex- cessively low against target secondary pressure while the vehicle is in ordinary driving	<ul> <li>Harness or connectors (Sensor circuit is open or shorted.)</li> <li>Secondary pressure solenoid valve system</li> <li>Line pressure control system</li> <li>Secondary pressure sensor</li> </ul>

#### DTC CONFIRMATION PROCEDURE

CAUTION:

#### Always drive vehicle at a safe speed.

**1.**PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

#### >> GO TO 2.

#### 2. PERFORM DTC CONFIRMATION PROCEDURE

#### With CONSULT-III

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "RANGE", "ATF TEMP SEN", "ACC PEDAL OPEN", "BRAKESW" and "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following conditions for 30 seconds or more.

RANGE	: D
ATF TEMP SEN	: 2.41 V or less
ACC PEDAL OPEN	: 0.5/8 – 1.0/8
BRAKESW	: Off
VEHICLE SPEED	: More than 40 km/h (25 MPH)

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

#### Is "P0868" detected?

YES >> Go to TM-132, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:000000005062486

### **1.**CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-197, "Inspection and Judgment".

Is the inspection result normal?

- YES >> GO TO 2.
- NO >> Repair or replace damaged parts. Refer to <u>TM-197</u>, "Inspection and Judgment".

2. CHECK LINE PRESSURE SOLENOID VALVE

1. Turn ignition switch OFF.

### P0868 TRANSMISSION FLUID PRESSURE

< DTC/CIRCUIT DIAGNOSIS > [CVT: R]	E0F08B]
<ol> <li>Disconnect CVT unit harness connector.</li> <li>Check line pressure solenoid valve. Refer to <u>TM-133</u>, "Component Inspection (Line Pressure <u>Valve)</u>".</li> </ol>	Solenoid A
Is the inspection result normal?	
YES >> GO TO 3. NO >> Line pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>"Exploded View"</u> .	B ) <u>TM-223,</u>
3.CHECK SECONDARY PRESSURE SOLENOID VALVE	С
Check secondary pressure solenoid valve. Refer to <u>TM-133, "Component Inspection (Secondary Solenoid Valve)"</u> .	Pressure
Is the inspection result normal?	
<ul> <li>YES &gt;&gt; GO TO 4.</li> <li>NO &gt;&gt; Secondary pressure solenoid valve is malfunctioning. Replace transaxle assembly. Ref</li> <li><u>223. "Exploded View"</u>.</li> </ul>	fer to <u>TM-</u> E
T.CHECK SECONDART PRESSURE SENSOR STSTEM	
Check secondary pressure sensor system. Refer to <u>TM-128, "DTC Logic"</u> .	F
Is the inspection result normal?	
YES >> GO TO 5. NO >> Repair or replace damaged parts.	G
<b>J.</b> CHECK INTERMITTENT INCIDENT	
Refer to <u>GI-34, "Intermittent Incident"</u> . Is the inspection result normal?	Н
YES >> Replace transaxle assembly. Refer to <u>TM-223, "Exploded View"</u> . NO >> Repair or replace damaged parts.	I
Component Inspection (Line Pressure Solenoid Valve)	:000000005062487

### 1.CHECK LINE PRESSURE SOLENOID VALVE

Check resistance between CVT unit harness connector terminal and ground.

CVT unit harr	ness connector		Condition	Posistance (Approx.)	k
Connector	Terminal		Conduon	Resistance (Approx.)	
		Ground	CVT fluid temperature: 20°C (68°F)	5.60 – 6.60 Ω	
F24	2		CVT fluid temperature: 50°C (122F)	6.76 – 6.87 Ω	L
			CVT fluid temperature: 80°C (176°F)	7.47 – 7.59 Ω	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Line pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223</u>. <u>"Exploded View"</u>.

### Component Inspection (Secondary Pressure Solenoid Valve)

## 1.CHECK SECONDARY PRESSURE SOLENOID VALVE

Check resistance between CVT unit harness connector terminal and ground.

CVT unit harr	ness connector		Condition	Posistanco (Approx.)	
Connector	Terminal		Condition	Resistance (Approx.)	
		Ground	CVT fluid temperature: 20°C (68°F)	5.60 – 6.60 Ω	
F24	3		CVT fluid temperature: 50°C (122°F)	6.76 – 6.87 Ω	
			CVT fluid temperature: 80°C (176°F)	7.47 – 7.59 Ω	

Is the inspection result normal?

INFOID:000000005062488

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### P0868 TRANSMISSION FLUID PRESSURE

< DTC/CIRCUIT DIAGNOSIS >

- YES >> INSPECTION END
- NO >> Secondary pressure solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-</u> <u>223, "Exploded View"</u>.

#### < DTC/CIRCUIT DIAGNOSIS >

### P1701 TCM

#### Description

This malfunction is detected when power (backup) is not supplied to TCM and the learning function stops. **CAUTION:** 

Immediately after TCM is replaced or after control valve or transaxle assembly is replaced (after TCM initialization is complete), self-diagnosis result of "P1701" may be displayed. In this case, erase self-diagnosis result using CONSULT-III. After erasing self-diagnosis, perform reproduction procedures of CDTC P1701 and check that a malfunction is not detected.

#### DTC Logic

INFOID:0000000005062494

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1701	Power Supply Circuit	Power supply (backup) of TCM is not sup- plied and learning function stops	Harness or connectors (TCM power source circuit is open or short- ed.)
отс со	NFIRMATION PROCED	URE	
CAUTIO	N:		
Always o 1	drive vehicle at a safe spe	eed.	
I.PREC	ONDITIONING		
Immediat	ely after performing any "	DTC CONFIRMATION PROCEDUR	E", always turn ignition switch OFF.
inen wai	t at least 10 seconds befor	e performing the next test.	
	>> GO TO 2.		
2.PFRF	ORM DTC CONFIRMATIO		
			_
1. Start	the engine.		
2. Main	tain idling state for 10 seco	onds or more.	
3. Drive	e the vehicle for 10 seconds	s or more.	
5. Turn	ignition switch OFF.		
6. Wait	for 2 seconds or more.		
7. Start 8 Sele	the engine. ct "Self Diagnostic Results"	' in "TRANSMISSION"	
ls "P1701	" detected?		
YES	>> Go to <u>TM-135, "Diagnos</u>	sis Procedure".	
NO	>> INSPECTION END		
Diagno	sis Procedure		INFOID:000000005062495
<b>1</b> онго			
I.CHEC	K TCM POWER CIRCUIT	(PART 1)	
1. Turn	ignition switch OFF.		
2. Disco 3. Turn	ignition switch ON.		
4. Chec	k voltage between TCM ve	ehicle side harness connector termina	als and ground.

INFOID:000000005062493

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### P1701 TCM

#### < DTC/CIRCUIT DIAGNOSIS >

TCM vehicle side	harness connector		Cond	lition	Voltage (Approx)	
Connector	Terminal		Cond	illion	voliage (Approx.)	
	10	Ground	Ignition switch: ON		Battery voltage	
F18	10	Cround	Ignition switch: OFF		0 V	
LIO	E10 40		Ignition switch: ON		Battery voltage	
	15		Ignition switch: OFF		0 V	
Is the inspection res	sult normal?					
YES >> GO TO	2.					
$\mathbf{N}$ >> GO IO						
	JWER CIRCUIT (P	ART 2)				
1. Turn ignition sw	vitch OFF.	la aida harraaa a				
2. Check voltage	between TCM venic	sie side namess d	connector terminar	and ground.		
TCM vehicle side	harness connector					
Connector	Terminal	Ground	Condition	Voltage (Approx.)		
E19	28		Alw	ays	Battery voltage	
Is the inspection res	sult normal?	L				
YES >> GO TO	9.					
NO >> GO TO	6.					
<b>3.</b> CHECK HARNE	SS BETWEEN TC	/I AND IPDM E/R	(PART 1)			
1. Turn ignition sw	vitch OFF.					
2. Disconnect IPD	M E/R connector.	hiele eide hennes			Duchiele eide her	
a. Check continuit	terminal.	nicle side names	s connector termin	iais and ipdivie	R vehicle side har-	
TCM vehicle si	de harness connector	IPDM E/R vehicle side harness connector		s connector	Continuity	
Connector	Terminal	Conne	ector	Terminal	Continuity	
F18	10	E1	5	58	Existed	
	19			30	Existed	
Is the inspection res	sult normal?					
YES >> GO TO	4.					
NO >> Repair	or replace damage	a parts.	(			
4.CHECK HARNE	SS BETWEEN TC	M AND IPDM E/R	(PART 2)			

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

TCM vehicle side harness connector			Continuity
Connector	Terminal	Ground	Continuity
	10	Giodila	Not ovisted
EIO	19		NOT EXISTED

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace damaged parts.

### 5. DETECT MALFUNCTIONING ITEMS

#### Check the following.

- IPDM E/R
- 10A fuse (No.55, located in the IPDM E/R)
- Harness for short or open between IPDM E/R and ignition switch (Refer to <u>PG-38</u>, "Wiring Diagram IGNI-<u>TION POWER SUPPLY -"</u>.)
- Ignition switch

J.CHECK HARNES	S BETWEEN TCM AN	D IPDM E/R (PART	1)	
<ol> <li>Turn ignition swit</li> <li>Disconnect IPDN</li> <li>Check continuity ness connector te</li> </ol>	ch OFF. l E/R connector. between TCM vehicle erminal.	side harness conn	ector terminal and I	PDM E/R vehicle side ha
TCM vehicle side	harness connector	connector IPDM E/R vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E19	28	E14	45	Existed
NO >> Repair or CHECK HARNES Check continuity betw	replace damaged par S BETWEEN TCM AN veen TCM vehicle side	ts. D IPDM E/R (PART harness connector	2) terminal and groun	d.
TCM vehic	le side harness connector	-1	Oneverd	Continuity
E10			Ground	Not ovisted
B.DETECT MALFUN Check the following.	cated in the IPDM E/R	)		
20A tuse (No.43, lo Harness for short of <u>POWER SUPPLY</u> - Battery s the inspection resu	or open between IPDN ') It normal?	A E/R and battery	(Refer to <u>PG-6, "W</u>	iring Diagram - BATTER
20A fuse (No.43, lo Harness for short of <u>POWER SUPPLY</u> - Battery <u>s the inspection resu</u> YES >> Check inf NO >> Repair or <b>D</b> .CHECK HARNES	or open between IPDN '.) I <u>t normal?</u> remittent incident. Ref replace damaged par S BETWEEN TCM AN	∬ E/R and battery er to <u>GI-34. "Interm</u> ts. D GROUND	(Refer to <u>PG-6, "W</u> ittent Incident".	<u>iring Diagram - BATTER</u>
20A fuse (No.43, lo Harness for short of POWER SUPPLY - Battery s the inspection resu YES >> Check inf NO >> Repair or CHECK HARNES Check continuity betw	or open between IPDN <u>'</u> .) <u>It normal?</u> cermittent incident. Ref replace damaged par S BETWEEN TCM AN veen TCM vehicle side	A E/R and battery er to <u>GI-34, "Interm</u> ts. D GROUND harness connector	(Refer to <u>PG-6, "W</u> ittent Incident". terminal and groun	<u>'iring Diagram - BATTER</u>
20A tuse (No.43, lo Harness for short of <u>POWER SUPPLY</u> - Battery <u>s the inspection resu</u> YES >> Check int NO >> Repair or <b>)</b> .CHECK HARNES Check continuity betw TCM vehic	or open between IPDN <u>It normal?</u> cermittent incident. Ref replace damaged par S BETWEEN TCM AN veen TCM vehicle side	A E/R and battery er to <u>GI-34, "Interm</u> ts. D GROUND harness connector	(Refer to <u>PG-6, "W</u> ittent Incident". terminal and groun	d.
20A fuse (No.43, lo Harness for short ( <u>POWER SUPPLY</u> - Battery <u>s the inspection resu</u> YES >> Check int NO >> Repair or <b>D</b> .CHECK HARNES Check continuity betw TCM vehic Connector	or open between IPDN ) It normal? remittent incident. Ref replace damaged par S BETWEEN TCM AN veen TCM vehicle side le side harness connector Termina	A E/R and battery er to <u>GI-34, "Interm</u> ts. D GROUND harness connector	(Refer to <u>PG-6, "W</u> ittent Incident". terminal and groun	d. Continuity

P1701 TCM

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F08B]

### P1705 TP SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

### P1705 TP SENSOR

### Description

- Accelerator position sensor is installed to upper of accelerator pedal.
- Accelerator position sensor detects depressing amount of accelerator pedal.
- Accelerator position sensor converts depressing amount of accelerator pedal to voltage signal and transmits the signal to ECM.
- TCM receives throttle opening signal fro ECM via CAN communication.

#### DTC Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1705	Accelerator Pedal Position Sensor Signal Circuit	TCM detects that difference between 2 throttle opening signals (CAN communica- tion) from ECM is 1/8 or more	<ul> <li>Harness or connectors (CAN communication line is open or shorted.) (Accelerator pedal position signal circuit is open or shorted.)</li> <li>ECM</li> </ul>

#### DTC CONFIRMATION PROCEDURE

#### 1.PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

>> GO TO 2.

### 2. PERFORM DTC CONFIRMATION PROCEDURE

### With CONSULT-III

- 1. Start the engine.
- 2. Apply parking brake.
- 3. Fully depress accelerator pedal.
- 4. Release accelerator pedal.
- 5. Select "Self Diagnostic Results" in "TRANSMISSION".

#### Is "P1705" detected?

- YES >> Go to TM-138, "Diagnosis Procedure".
- NO >> INSPECTION END

#### **Diagnosis** Procedure

#### **1.**CHECK DTC WITH ECM

#### With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Perform "Self Diagnostic Results" in "ENGINE".

#### Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-34, "Intermittent Incident".
- NO >> Check DTC detected item. Refer to <u>EC-448, "DTC Index"</u>.

INFOID:000000005062496

INFOID:000000005062497

#### < DTC/CIRCUIT DIAGNOSIS >

### P1722 VEHICLE SPEED

### Description

INFOID:000000005062499

### TCM receives vehicle speed signal from ABS actuator and electric unit (control unit) via CAN communication. $_{\sf B}$

DTC Logic

INFOID:000000005062500

### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause	
P1722	Vehicle Speed Signal Circuit	<ul> <li>TCM detects a malfunction of CAN communication between ABS actuator and electric unit (control unit)</li> <li>When vehicle speed that TCM detects is 10 km/h (7 MPH) or more, vehicle speed signal (CAN signal) that is received from ABS actuator and electric unit (control unit) is less than 2 km/h (1 MPH)</li> <li>Change of vehicle speed signal (CAN communication) that TCM receives is large</li> </ul>	<ul> <li>Harness or connectors (CAN communication line is open or shorted.) (Vehicle speed signal circuit is open or shorted.)</li> <li>ABS actuator and electric unit (control unit)</li> </ul>	E F
DTC CO	NFIRMATION PROCED	URE		G
CAUTION Always d	I: Irive vehicle at a safe spe	eed.		Н
Immediate Then wait	ely after performing any " at least 10 seconds befor	DTC CONFIRMATION PROCEDUR e performing the next test.	E", always turn ignition switch OFF.	I
,	>> GO TO 2.			1
2.PERF	ORM DTC CONFIRMATIO	N PROCEDURE		J
With Constant 1. Start 2. Select 3. Select	ONSULT-III the engine. ct "Data Monitor" in "TRAN ct "VSP SENSOR".	SMISSION".		K
4. Drive 5. Maint	the vehicle. ain the following condition	s for 5 seconds or more.		L
VS	P SENSOR :	More than 10 km/h (7 MPH)		
6. Stop 7. Selec	the vehicle. ct "Self Diagnostic Results'	' in "TRANSMISSION".		Μ
<u>ls "P1722</u>	" detected?			N
YES > NO >	>> Go to <u>TM-139, "Diagno:</u> >> INSPECTION END	<u>sis Procedure"</u> .		IN
Diagnos	sis Procedure		INFOID:00000005062501	0
<b>1.</b> CHEC	K DTC WITH ABS			
With Control I. Turn 2. Perform	ONSULT-III ignition switch ON. rm "Self Diagnostic Result	s" in "ABS".		Ρ

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-34, "Intermittent Incident".

NO >> Check DTC detected item. Refer to BRC-86, "DTC Index".

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### P1723 SPEED SENSOR

#### Description

INFOID:000000005062502

[CVT: RE0F08B]

When noise (pulse) that is generated because of connection malfunction caused by primary speed sensor and secondary speed sensor harness and others is detected, it is judged that a malfunction occurs.

#### DTC Logic

INFOID:000000005062503

## DTC DETECTION LOGIC

#### Either "P0715" or "P0720" is displayed simultaneously.

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1723	Speed Sensor Circuit	TCM detects that high frequency elements 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.**PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

#### >> GO TO 2.

#### **2.** PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT-III

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "RANGE" and "VEHICLE SPEED".
- 4. Drive the vehicle.
- 5. Maintain the following conditions for 1 seconds or more.

RANGE	: D
VEHICLE SPEED	: More than 20 km/h (12 MPH)

6. Stop the vehicle.

7. Select "Self Diagnostic Results" in "TRANSMISSION".

#### Is "P1723" detected?

- YES >> Go to TM-140, "Diagnosis Procedure".
- NO >> INSPECTION END

#### Diagnosis Procedure

1.CHECK SECONDARY SPEED SENSOR SYSTEM

Check secondary speed sensor system. Refer to TM-110, "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-107, "DTC Logic".

Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-34, "Intermittent Incident".

#### TM-140

#### < DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace damaged parts.

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#### < DTC/CIRCUIT DIAGNOSIS >

### P1726 THROTTLE CONTROL SIGNAL

#### Description

INFOID:000000005062505

[CVT: RE0F08B]

Electric throttle control system consists of throttle control motor, accelerator position sensor, throttle position sensor, and others. Electric throttle control system transmits signal to ECM and ECM transmits signal to TCM via CAN communication.

#### DTC Logic

INFOID:000000005062506

INFOID:000000005062507

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1726	Throttle Cotrol Signal Circuit	TCM receives a malfunction signal of en- gine system from ECM	Harness or connectors (Electric throttle sensor signal circuit is open or shorted.)

#### DTC CONFIRMATION PROCEDURE

#### 1.PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

#### >> GO TO 2.

#### 2. PERFORM DTC CONFIRMATION PROCEDURE

#### With CONSULT-III

- 1. Start the engine.
- 2. Maintain idling state for 10 seconds or more.
- 3. Select "Self Diagnostic Results" in "TRANSMISSION".

#### Is "P1726" detected?

- YES >> Go to GI-34, "Intermittent Incident".
- NO >> INSPECTION END

#### **Diagnosis Procedure**

#### **1.**CHECK DTC WITH ECM

#### (B) With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Perform "Self Diagnostic Results" in "ENGINE".

#### Is the inspection result normal?

- YES >> Check intermittent incident. Refer to <u>GI-34, "Intermittent Incident"</u>.
- NO >> Check DTC detected item. Refer to EC-448. "DTC Index".

### P1740 SELECT SOLENOID

#### < DTC/CIRCUIT DIAGNOSIS >

### P1740 SELECT SOLENOID

### Description

- Lock-up select solenoid valve is installed to control valve.
- Lock-up select solenoid valve switches among lock-up oil pressure, forward clutch oil pressure, and reverse brake oil pressure.
- Lock-up select solenoid valve is an ON/OFF solenoid valve.

### DTC Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause	
P1740	Lock-up Select Solenoid Valve Circuit	<ul> <li>Lock-up select solenoid valve monitor value is OFF when lock-up select sole- noid valve command value of TCM is ON</li> <li>Lock-up select solenoid valve monitor value is ON when lock-up select solenoid valve command value of TCM is OFF</li> <li>Harness or connectors (Lock-up select solenoid valve of open or shorted.)</li> <li>Lock-up select solenoid valve open or shorted.)</li> </ul>		
DTC CC CAUTIO	NFIRMATION PROCED	URE		
<b>1.</b> PREC	drive venicle at a safe spe CONDITIONING	eed.		
Immedia Then wa	tely after performing any " it at least 10 seconds befor	DTC CONFIRMATION PROCEDUR e performing the next test.	E", always turn ignition switch OFF	
	>> GO TO 2.			
2.perf	ORM DTC CONFIRMATIO	N PROCEDURE (PART 1)		
<ol> <li>Start</li> <li>Sele</li> <li>Sele</li> <li>Sele</li> <li>Mair</li> <li>R</li> </ol>	the engine. ct "Data Monitor" in "TRAN ct "RANGE". ntain the following condition ANGE	SMISSION". s for 1 seconds or more. N·P		
5. Sele With G Follow th Is "P1740 YES NO	ct "Self Diagnostic Results" SST he procedure "With CONSU <u>0" detected?</u> >> Go to <u>TM-144, "Diagnos</u> >> GO TO 3	' in "TRANSMISSION". LT-III". <u>sis Procedure"</u> .		
3.PERF	ORM DTC CONFIRMATIO	N PROCEDURE (PART 2)		
With C 1. Sele 2. Sele 3. Mair	CONSULT-III ct "Data Monitor" in "TRAN ct "RANGE". ntain the following state for "	SMISSION". 1 second or more.		
R	ANGE :	R·D		
4. Sele With C Follow th	ct "Self Diagnostic Results" SST he procedure "With CONSU	' in "TRANSMISSION". LT-III".		
<u>ls "P174</u>	0" detected?			
YES	>> Go to TM-144, "Diagnos	sis Procedure".		

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### P1740 SELECT SOLENOID

#### < DTC/CIRCUIT DIAGNOSIS >

#### NO >> INSPECTION END

#### Diagnosis Procedure

### 1.CHECK LOCK-UP SELECT SOLENOID VALVE CIRCUIT

#### 1. Turn ignition switch OFF.

2. Check resistance between TCM connector terminal and ground.

TCM connector			Condition	Pasistanaa (Approx.)
Connector	Terminal		Condition	Resistance (Approx.)
		Ground	CVT fluid temperature: 20°C (68°F)	12.3 – 13.5 Ω
E18	4		CVT fluid temperature: 50°C (122°F)	13.7 – 15.1 Ω
			CVT fluid temperature: 80°C (176°F)	15.1 – 16.7 Ω

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-34, "Intermittent Incident"</u>.

NO >> GO TO 2.

**2.**CHECK LOCK-UP SELECT SOLENOID VALVE

- 1. Disconnect CVT unit harness connector.
- Check lock-up select solenoid valve. Refer to <u>TM-144</u>, "Component Inspection (Lock-up Select Solenoid <u>Valve</u>)".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Lock-up select solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223</u>, <u>"Exploded View"</u>.

**3.** CHECK HARNESS BETWEEN TCM AND CVT UNIT (LOCK-UP SELECT SOLENOID VALVE) (PART 1)

1. Disconnect TCM connector.

2. Check continuity between TCM vehicle side harness connector terminal and CVT unit vehicle side harness connector terminal.

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
E18	4	F24	13	Existed	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

**4.**CHECK HARNESS BETWEEN TCM AND CVT UNIT (LOCK-UP SELECT SOLENOID VALVE) (PART 2)

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

TCM vehicle side	harness connector		Continuity
Connector	Terminal	Ground	
E18	4		Not existed

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-34, "Intermittent Incident"</u>.

NO >> Repair or replace damaged parts.

#### Component Inspection (Lock-up Select Solenoid Valve)

**1.**CHECK LOCK-UP SELECT SOLENOID VALVE

Check resistance between CVT unit harness connector terminal and ground.
## P1740 SELECT SOLENOID

#### < DTC/CIRCUIT DIAGNOSIS >

## [CVT: RE0F08B]

CVT unit harness connector			Condition	Pasistance (Approx.)	А
Connector	Terminal		Condition	Resistance (Approx.)	
		Ground	CVT fluid temperature: 20°C (68°F)	12.3 – 13.5 Ω	_
F24	13		CVT fluid temperature: 50°C (122°F)	13.7 – 15.1 Ω	В
			CVT fluid temperature: 80°C (176°F)	15.1 – 16.7 Ω	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Lock-up select solenoid valve is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223</u>. <u>"Exploded View"</u>.

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#### < DTC/CIRCUIT DIAGNOSIS >

## P1777 STEP MOTOR

## Description

- 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.

## DTC Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1777	Step Motor Circuit	<ul> <li>Step motor monitor value is OFF when step motor command value of TCM is ON</li> <li>Step motor monitor value is ON when step motor command value of TCM is OFF</li> </ul>	<ul> <li>Harness or connectors (Step motor circuit is open or shorted.)</li> <li>Step motor</li> </ul>

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

Immediately after performing any "DTC CONFIRMATION PROCEDURE", always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

#### >> GO TO 2.

#### 2 . PERFORM DTC CONFIRMATION PROCEDURE

#### (P)With CONSULT-III

- 1. Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- 3. Select "RANGE" and "VEHICLE SPEED".
- 4. Maintain the following conditions for 1 seconds or more.

RANGE : D VEHICLE SPEED

: More than 20 km/h (12 MPH)

Stop the vehicle. 5.

Select "Self Diagnostic Results" in "TRANSMISSION". 6.

With GST

Follow the procedure "With CONSULT-III".

Is "P1777" detected?

YES >> Go to TM-146, "Diagnosis Procedure". >> INSPECTION END NO

## Diagnosis Procedure

## 1.CHECK STEP MOTOR CIRCUIT (PART 1)

- 1. Turn ignition switch OFF.
- 2. Disconnect TCM connector.
- 3 Check resistance between TCM vehicle side harness connector terminals.

1	Posistance (Approx)		
Connector	Terr		
E10	11	12	30.0.0
LIO	20	21	

#### Is the inspection result normal?

YES >> GO TO 2. INFOID:000000005062514

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## **P1777 STEP MOTOR**

## < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F08B]

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## 2.CHECK STEP MOTOR CIRCUIT (PART 2)

Check resistance between TCM vehicle side harness connector terminals and ground.

TCM vehic	le side harness connector			Resistance (Approx.)	
Connector	Termina	al		Acolorance (Approx.)	
	11		Ground		
E19	12		Glound	15.0.0	
EIO	20			15.0 12	
	21				
s the inspection resul	t normal?				
YES >> Check int	ermittent incident. Ref	er to <u>GI-34, "Intermitte</u>	ent Incident".		
NO >> GO TO 3.					
CHECK STEP MO	TOR				
. Disconnect CVT	unit connector.	omponent Inspection (	(Stop Motor)"		
the inspection result	. Relef 10 <u>110-147, C</u> t normal?	omponent inspection (			
$\frac{5 \text{ crosses}}{2 \text{ FS}} \xrightarrow{5} \text{ GO TO } 4$					
NO >> Step moto	or is malfunctioning. R	eplace transaxle asse	mbly. Refer to TM	223, "Exploded View".	
LCHECK HARNESS	BETWEEN TCM AN	D CVT UNIT (STEP N	IOTOR) (PART 1)		
Check continuity betw	een TCM vehicle side	e harness connector t	erminals and CVT	unit vehicle side harnes	
connector terminals.					
<b>TOM</b> 111 11					
I CM vehicle side	harness connector	CVI unit vehicle side harness connector		Continuity	
Connector	Ierminal	Connector	Ierminal		
	11		6		
E18	12	F24	7	Existed	
	20	-	8		
	21		9		
s the inspection resul	t normal?				
YES >> GO TO 5.	renlace damaged par	te			
check continuity betw	een TCM vehicle side	e harness connector te	rminals and groun	d.	
TCM vehic	le side harness connector			<b>-</b>	
Connector	Termina	al		Continuity	
	11		_		
	12		Ground		
E18	20			Not existed	
	21				
s the inspection resul	t normal?				
YES >> Check int	ermittent incident. Ref	er to GI-34, "Intermitte	ent Incident".		
NO >> Repair or	replace damaged par	ts.			
Component Inspe	ection (Step Moto	or)		INFOID 000000000000000000000000000000000000	
· · · · · · · · · · · · · · · · · · ·		,			
.CHECK STEP MO	TOR (PART 1)				

## P1777 STEP MOTOR

#### < DTC/CIRCUIT DIAGNOSIS >

	Posistanco (Approx)				
Connector	Connector Terminal				
E24	6	7	30.0.0		
124	8	9	50.0 22		

Is the inspection result normal?

YES >> GO TO 2.

NO >> Step motor is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223, "Exploded View"</u>.

2.CHECK STEP MOTOR (PART 2)

Check resistance between CVT unit connector terminals and ground.

CVT unit	connector		Posistance (Approx)
Connector	Terminal		
F24	6	Ground	
	7	Giouna	15.0.0
	8		15.0 22
	9	_	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Step motor is malfunctioning. Replace transaxle assembly. Refer to <u>TM-223, "Exploded View"</u>.

## P1778 STEP MOTOR

#### < DTC/CIRCUIT DIAGNOSIS >

## P1778 STEP MOTOR

## Description

• Step motor changes step by turning 4 coils ON or OFF according to signal from TCM.

- В • 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.
- This DTC is not caused by an electrical malfunction (circuit open or short) but is caused by a mechanical malfunction (control valve clogging, solenoid valve sticking, and others).

## **DTC Logic**

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if	Possible cause
P1778	Step Motor Circuit Intermittent	TCM detects that primary speed sensor value and primary pulley speed estimated from secondary speed sensor are in a deviated state, and target pulley ratio and actual pul- ley ratio are in a deviated state	Step motor
DTC CO	NFIRMATION PROCED	URE	
CAUTION • Always • Before • It is fix 1_PREC	N: s drive vehicle at a safe s starting "DTC confirmati ed in high speed range. ( CONDITIONING	peed. on procedure", check primary pulley speed ar Go to <u>TM-107, "Diagnosis Procedure"</u> .	nd vehicle speed.
Immediat	tely after performing any "	DTC CONFIRMATION PROCEDURE" always t	urn ignition switch OFF
Then wai	it at least 10 seconds befor	e performing the next test.	
	00 70 0		
<b>೧</b>	>> GO TO 2.		
∠.PERF	ORM DTC CONFIRMATIO	N PROCEDURE	
<ol> <li>Sele</li> <li>Sele</li> <li>Sele</li> <li>Drive</li> <li>Main</li> </ol>	ct "Data Monitor" in "TRAN ct "RANGE", "ATF TEMP S e the vehicle. tain the following condition	SMISSION <sup>2</sup> . EN", "ACC PEDAL OPEN", "PRI SPEED" and "VI s for 5 seconds or more.	EHICLE SPEED".
R	ANGE :	D	
A	IF TEMP SEN :	2.03 – 0.16 V	
A	CC PEDAL OPEN :	More than 1.0/8	
PI	RI SPEED :	More than 1,000 rpm	
		More than 10 km/h (7 MPH)	
5. Stop 6. Sele @With G	the venicle. ct "Self Diagnostic Results' ST	in "TRANSMISSION".	
Follow th	e procedure "With CONSU	LT-III".	
<u>ls "P1778</u>	<u>3" detected?</u>		
YES	>> Go to <u>TM-149, "Diagno</u>	sis Procedure".	
NO	>> INSPECTION END		
Diagno	sis Procedure		INFOID:00000000506251
1.снес	K STEP MOTOR SYSTEM	1	
Check st	en motor system Refer to	TM-146 "DTC Logic"	
Is the ins	pection result normal?	The Free Dife Logic.	
	$\sim$ CO TO 2		

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< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace damaged parts.

2. CHECK PRIMARY SPEED SENSOR SYSTEM

Check primary speed sensor system. Refer to TM-107, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

**3.**CHECK SECONDARY SPEED SENSOR SYSTEM

Check secondary speed sensor system. Refer to <u>TM-110. "DTC Logic"</u>.

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace damaged parts.

**4.** CHECK INTERMITTENT INCIDENT

Refer to GI-34, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace transaxle assembly. Refer to <u>TM-223, "Exploded View"</u>.

NO >> Repair or replace damaged parts.

## **OVERDRIVE CONTROL SWITCH**

## < DTC/CIRCUIT DIAGNOSIS >

## **OVERDRIVE CONTROL SWITCH**

## Description

- The overdrive control switch is installed to the selector lever knob.
- When turning ON the overdrive control switch (OD OFF indicator lamp turns ON), the driving condition becomes overdrive OFF.
- When turning OFF the overdrive control switch (OD OFF indicator lamp turns OFF), the driving condition changes to "D" position.

#### Component Function Check

## **1.**CHECK OVERDRIVE CONTROL SWITCH SIGNAL

#### With CONSULT-III

- 1. Turn ignition switch ON.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "SPORT MODE SW".
- 4. Check display of "SPORT MODE SW".

Monitor item	Condition	Status	
	Press and hold overdrive control switch	On	G
SPORT MODE SW	Other conditions	Off	G
Is the inspection result no	ormal?		

YES >> INSPECTION END

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

## Diagnosis Procedure

## 1. CHECK OVERDRIVE CONTROL SWITCH POWER CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect CVT shift selector connector.
- 3. Turn ignition switch ON.
- 4. Check voltage between CVT shift selector vehicle side harness connector terminals.

With intelligent ke	ey system			
CVT shift selector vehicle side harness connector		Quadities	Voltage (Approx)	
Connector	Terr	minal	Condition	vollage (Approx.)
MEQ	4	2	Ignition switch: ON	5 V
BGINI	I	2	Ignition switch: OFF	0 V
Without intelligent	t key system			
CVT shift selec	tor vehicle side har	ness connector	Condition	Voltage (Approx.)
Connector	Terr	minal	Condition	vollage (Approx.)
			Ignition switch: ON	5 V

Ignition switch: OFF

Is the inspection result normal?

YES >> GO TO 2.

M57

NO >> GO TO 3.

2.CHECK OVERDRIVE CONTROL SWITCH

1

Check overdrive control switch. Refer to <u>TM-153</u>, "Component Inspection (Overdrive Control Switch)". Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-34, "Intermittent Incident"</u>.

2

NO >> Repair or replace damaged parts.

**3.** CHECK GROUND CIRCUIT

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## **OVERDRIVE CONTROL SWITCH**

#### < DTC/CIRCUIT DIAGNOSIS >

#### 1. Turn ignition switch OFF.

2. Check continuity between CVT shift selector vehicle side harness connector terminal and ground.

	vehicle side harness conner	ector		Continuity
Connector	Termina	al	Ground	Continuity
M58	2			Existed
Without intelligent key s	ystem			
CVT shift selector	vehicle side harness conn	ector		Continuity
Connector	Termina	al	Ground	Continuity
M57	2			Existed
the inspection result (ES >> GO TO 4. NO >> Repair or r . CHECK HARNESS NATION METER (PA Disconnect combin Check continuity b	normal? replace damaged part S BETWEEN CVT SH ART 1) nation meter connecto petween CVT shift se	is. IIFT SELECTOR (C or. elector vehicle side	VERDRIVE CONTR	OL SWITCH) AND C
meter vehicle side	harness connector te	erminal.		
With intelligent key syste	em	O		4
	shift selector vehicle side harness connector			Continuity
Connector	Terminai	Connector	rerminal	Eviated
OCIVI		10134	0	Existed
CVT shift selector vehicle	ystem	Combination meter ve	hicle side harness conner	rtor
CVT shift selector vehicle side harness connector		Connector Terminal		Continuity
Connector	Terminal	Connector	Terminal	Continuity
Connector M57 the inspection result	Terminal 1	Connector M34	Terminal 8	Existed
Connector M57 the inspection result (ES >> GO TO 5. JO >> Repair or r .CHECK HARNESS ATION METER (PAR beck continuity between	Terminal 1 normal? replace damaged part BETWEEN CVT SHI T 2) een CVT shift selector	Connector M34 S. FT SELECTOR (OV	Terminal 8 ERDRIVE CONTRO	L SWITCH) AND CO
Connector M57 the inspection result (ES >> GO TO 5. NO >> Repair or r .CHECK HARNESS ATION METER (PAR neck continuity between th intelligent key system	Terminal 1 normal? replace damaged part BETWEEN CVT SHI T 2) een CVT shift selector	Connector M34 S. FT SELECTOR (OV	Terminal       8       ERDRIVE CONTRO       ss connector terminal	Existed
Connector M57 the inspection result YES >> GO TO 5. NO >> Repair or r CHECK HARNESS ATION METER (PAR heck continuity between th intelligent key system CVT shift selector	Terminal 1 normal? replace damaged part BETWEEN CVT SHI T 2) een CVT shift selector vehicle side harness conn	Connector M34 s. FT SELECTOR (OV vehicle side harnes	Terminal 8 ERDRIVE CONTRO ss connector termina	L SWITCH) AND CO
Connector M57 the inspection result YES >> GO TO 5. NO >> Repair or r CHECK HARNESS ATION METER (PAR heck continuity between th intelligent key system CVT shift selector Connector	Terminal 1 normal? replace damaged part BETWEEN CVT SHI T 2) een CVT shift selector vehicle side harness conne	Connector M34 SS. FT SELECTOR (OV vehicle side harnes ector	Terminal 8 ERDRIVE CONTRO ss connector termina Ground	Existed L SWITCH) AND CO I and ground. Continuity
Connector M57 the inspection result YES >> GO TO 5. NO >> Repair or r CHECK HARNESS ATION METER (PAR heck continuity between ith intelligent key system CVT shift selector Connector M58	Terminal 1 normal? replace damaged part BETWEEN CVT SHI T 2) een CVT shift selector vehicle side harness conne Termina 1	Connector M34 Ss. FT SELECTOR (OV vehicle side harnes ector	Terminal       8       ERDRIVE CONTRO       Ss connector terminal       Ground	Existed L SWITCH) AND CO I and ground. Continuity Not existed
Connector M57 the inspection result (ES >> GO TO 5. NO >> Repair or r .CHECK HARNESS ATION METER (PAR neck continuity between th intelligent key system CVT shift selector Connector M58 thout intelligent key system	Terminal 1 normal? replace damaged part BETWEEN CVT SHI T 2) een CVT shift selector vehicle side harness connu 1	Connector M34 SS. FT SELECTOR (OV vehicle side harnes ector	Terminal       8       ERDRIVE CONTRO       ss connector terminal       Ground	Existed L SWITCH) AND CO I and ground. Continuity Not existed
Connector M57 the inspection result (ES >> GO TO 5. NO >> Repair or r CHECK HARNESS ATION METER (PAR heck continuity between th intelligent key system CVT shift selector M58 thout intelligent key system CVT shift selector	Terminal 1 normal? replace damaged part BETWEEN CVT SHI T 2) een CVT shift selector vehicle side harness connue 1 vehicle side harness connue 1	Connector M34 ss. FT SELECTOR (OV r vehicle side harnes ector	Terminal       8       ERDRIVE CONTRO       Ss connector terminal       Ground	Existed L SWITCH) AND CO I and ground. Continuity Not existed
Connector M57 the inspection result YES >> GO TO 5. NO >> Repair or r CHECK HARNESS ATION METER (PAR heck continuity between ith intelligent key system CVT shift selector M58 ithout intelligent key system CVT shift selector M58	Terminal 1 normal? replace damaged part BETWEEN CVT SHI T 2) een CVT shift selector vehicle side harness conne 1 vehicle side harness conne Termina	Connector M34 SS. FT SELECTOR (OV r vehicle side harnes ector al ector	Terminal       8       ERDRIVE CONTRO       ss connector terminal       Ground	Existed Existed L SWITCH) AND CO I and ground. Continuity Not existed Continuity

**O.**CHECK INTERMITTENT INCIDENT

Refer to GI-34, "Intermittent Incident".

Is the inspection result normal?

YES >> Check input and output signals of combination meter. Refer to MWI-49. "Reference Value".

NO >> Repair or replace damaged parts.

## TM-152

## Connector Terminal Prev

M59 1		2	Press and hold overdrive control switch	Existed	
8CIVI	I	2	Other conditions	Not existed	
Without intelligent key	/ system				Т
CV	T shift selector conne	ector	Condition	Continuity	
Connector	Terminal		Condition	Continuity	
NACZ.		2	Press and hold overdrive control switch	Existed	
M57 1	I	2	Other conditions	Not existed	

Condition

#### Is the inspection result normal?

< DTC/CIRCUIT DIAGNOSIS >

With intelligent key system

1. CHECK OVERDRIVE CONTROL SWITCH

CVT shift selector connector

YES >> INSPECTION END

NO >> Repair or replace damaged parts.

## **OVERDRIVE CONTROL SWITCH**

## Component Inspection (Overdrive Control Switch)

Check continuity between CVT shift selector vehicle connector terminals.

[CVT: RE0F08B]

Continuity

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## SHIFT POSITION INDICATOR CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

## SHIFT POSITION INDICATOR CIRCUIT

### Description

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

## **Component Function Check**

1. CHECK SHIFT POSITION INDICATOR

1. Start the engine.

2. Shift selector lever.

3. Check that the selector lever position and shift position indicator on combination meter are equivalent.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to <u>TM-154</u>, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:000000005062525

## **1.**CHECK TCM INPUT AND OUTPUT SIGNALS

With CONSULT-III

- 1. Start the engine.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 3. Select "RANGE".
- 4. Shift selector lever.
- 5. Check that selector lever position, "RANGE" on CONSULT-III screen, and shift position indicator display on combination meter are identical.

Is the inspection result normal?

YES >> INSPECTION END

- NO-1 ("RANGE" is changed but is not displayed on shift position indicator.)>>Select "Self Diagnostic Results" in "TRANSMISSION".
- NO-2 ("RANGE" differs from shift position indicator.)>>Select "Self Diagnostic Results" in "TRANSMISSION".
- NO-3 (Specific"RANGE" is not displayed on shift position indicator.)>>Select "Self Diagnostic Results" in "METER/M&A".

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## < DTC/CIRCUIT DIAGNOSIS >

## SHIFT LOCK SYSTEM

## Description

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Component	Function	
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.	С
Lock lever	<ul> <li>It is rotated according to shift lock solenoid activation and shift lock is released.</li> <li>If shift lock solenoid does not activate, lock lever can be rotated when shift lock release button is pressed and shift lock is released.</li> </ul>	ТМ
Detent plate	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	It moves the lock lever forcibly.	E

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[CVT: RE0F08B]

## < DTC/CIRCUIT DIAGNOSIS >

## Wiring Diagram - SHIFT LOCK SYSTEM -

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[CVT: RE0F08B]



SHIFT LOCK SYSTEM

2009/02/27

JCDWM0583GB



## **Component Function Check**

**1.**CHECK CVT SHIFT LOCK OPERATION (PART 1)

- 1. Turn ignition switch ON.
- 2. Shift selector lever to "P" position.
- Attempt to shift the selector lever to any other position with the brake pedal released. 3.

Can the selector lever be shifted to any other position?

## TM-157

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< DTC/CIRCUIT DIAGNOSIS >

#### YES >> Go to <u>TM-158</u>, "Diagnosis Procedure".

NO >> GO TO 2.

2. CHECK CVT SHIFT LOCK OPERATION (PART 2)

1. Shift selector lever to "P" position.

2. Attempt to shift the selector lever to any other position with the brake pedal depressed.

Can the selector lever be shifted to any other position?

YES >> INSPECTION END

NO >> Go to TM-158, "Diagnosis Procedure".

#### Diagnosis Procedure

INFOID:000000005062529

## 1. CHECK CVT SHIFT SELELCTOR POWER CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect CVT shift selector connector.
- 3. Turn ignition switch ON.
- 4. Check voltage between CVT shift selector vehicle side harness connector terminal and ground.

With intelligent key system

CVT shift selector vehicle side harness connector			Condition	Voltage (Approx.)	
Connector	tor Terminal		Condition		
	M58 5		Depressed brake pedal	Battery voltage	
			Brake pedal not depressed	0 V	

#### Without intelligent key system

CVT shift selector vehicle side harness connector			Condition	Voltage (Approx.)	
Connector	Terminal	Ground	Condition	vollage (Applox.)	
	Б	Giodila	Depressed brake pedal	Battery voltage	
M57 5			Brake pedal not depressed	0 V	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 6.

#### 2.CHECK GROUND CIRCUIT

Check continuity between CVT shift selector vehicle side harness connector terminal and ground.

With intelligent key system

CVT shift selector vehicle side harness connector			Continuity
Connector	Terminal	Ground	Conunally
M58	6		Existed
Without intelligent key system			
CVT shift selector vehicl	e side harness connector		Continuity
Connector	Terminal	Ground	Continuity
M57	6		Existed

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3.CHECK CVT SHIFT SELELCTOR

1. Shift selector lever to "P" position.

2. Check continuity between CVT shift selector connector terminals.

#### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F08B]

CVT sh					
	ift selector conne	ector		Condition	Continuity
Connector	Terr	minal		Condition	Continuity
M58	5	6	Selector lever: "P	" position	Existed
WJO	5	0	Other conditions		Not existed
Without intelligent ke	y system				
CVT sh	ift selector conne	ector		Condition	Continuity
Connector	Terr	minal		Condition	Continuity
M57	5	6	Selector lever: "P	" position	Existed
WOT	5	0	Other conditions		Not existed
NO >> Repair of . CHECK PARK P . Disconnect park . Check park pos s the inspection res YES >> GO TO NO >> Replace . CHECK SHIFT L Check shift lock sole s the inspection res YES >> Check i	or replace dar OSITION SW or position switt ition switch. F sult normal? 5. e park position OCK SOLEN enoid. Refer to sult normal? ntermittent inco	maged parts. ITCH cch connecto Refer to <u>TM-1</u> n switch. Ref OID o <u>TM-161, "C</u> cident. Refer	r. 161. "Component Ins er to <u>TM-204. "Explo</u> <u>Component Inspection</u> to <u>GI-34. "Intermitte</u>	spection (Park Positi oded View". on (Shift Lock Solence	<u>on Switch)"</u> . <u>pid)"</u> .
CHECK HARNE . Turn ignition sw . Disconnect stop . Check continuit	SS BETWEEN vitch OFF. b lamp switch ty between C	CVT SHIF	to <u>TM-204, "Explod</u> T SELELCTOR AND ector vehicle side h	ed View". STOP LAMP SWIT	CH (PART 1) terminal and stop lamp
CHECK HARNE . Turn ignition sw . Disconnect stop . Check continuit switch vehicle s With intelligent key s	SS BETWEEN vitch OFF. b lamp switch ty between C vide harness c vstem	connector.	to <u>TM-204, "Explod</u> T SELELCTOR AND ector vehicle side h minal.	ed View". STOP LAMP SWIT	CH (PART 1)
CHECK HARNE     Turn ignition sw     Disconnect stop     Check continuit     switch vehicle s     With intelligent key s     CVT shift selector veh	SS BETWEEN itch OFF. lamp switch ty between C ide harness c ystem icle side harness	CONNECTOR REFER	to <u>TM-204, "Explod</u> T SELELCTOR AND ector vehicle side h minal. Stop lamp switch vehicle	ed View". STOP LAMP SWIT harness connector f e side harness connector	CH (PART 1)
CHECK HARNE . Turn ignition sw . Disconnect stop . Check continuit switch vehicle s With intelligent key s CVT shift selector veh Connector	SS BETWEEN vitch OFF. b lamp switch ty between C ide harness c ystem icle side harness	CONNECTOR REFER	to <u>TM-204, "Explod</u> T SELELCTOR AND ector vehicle side h minal. Stop lamp switch vehicle Connector	ed View". STOP LAMP SWIT narness connector f e side harness connector Terminal	CH (PART 1)
CVT shift selector veh	SS BETWEEN vitch OFF. b lamp switch ty between C ide harness c ystem icle side harness Term	CONNECTOR REFER	to <u>TM-204, "Explod</u> T SELELCTOR AND ector vehicle side h minal. Stop lamp switch vehicle Connector E115	ed View". STOP LAMP SWIT harness connector f e side harness connector Terminal 4	CH (PART 1)
CHECK HARNE Turn ignition sw Disconnect stop Check continuit switch vehicle s With intelligent key s CVT shift selector veh Connector M58 Without intelligent ke	SS BETWEEN vitch OFF. b lamp switch ty between C ide harness c ystem icle side harness Term 5 sy system	CONNECTOR REFER	to <u>TM-204, "Explod</u> T SELELCTOR AND ector vehicle side h minal. Stop lamp switch vehicle Connector E115	ed View". STOP LAMP SWIT harness connector f side harness connector Terminal 4	CH (PART 1) terminal and stop lamp Continuity Existed
CHECK HARNE     Turn ignition sw     Disconnect stop     Check continuit     switch vehicle s     With intelligent key s     CVT shift selector veh     Connector     M58     Without intelligent ke     CVT shift selector veh	SS BETWEEN vitch OFF. b lamp switch ty between C ide harness c ystem icle side harness Term sy system icle side harness	CONNECTOR REFERENCE IN CVT SHIF	to <u>TM-204, "Explod</u> T SELELCTOR AND ector vehicle side f minal. Stop lamp switch vehicle Connector E115 Stop lamp switch vehicle	ed View". STOP LAMP SWIT harness connector f e side harness connector Terminal 4 e side harness connector	CCH (PART 1)
CHECK HARNE     Turn ignition sw     Disconnect stop     Check continuir     switch vehicle s     With intelligent key s     CVT shift selector veh     Connector     M58     Without intelligent ke     CVT shift selector veh     Connector	SS BETWEEN itch OFF. b lamp switch ty between C ide harness c ystem icle side harness ysystem icle side harness rerm icle side harness Term	Connector.	to <u>TM-204, "Explod</u> T SELELCTOR AND ector vehicle side h minal. Stop lamp switch vehicle Connector E115 Stop lamp switch vehicle Connector	ed View". STOP LAMP SWIT harness connector f e side harness connector Terminal 4 e side harness connector Terminal	CH (PART 1) terminal and stop lamp Continuity Existed Continuity
CHECK HARNE Turn ignition sw Disconnect stop Check continuir switch vehicle s With intelligent key s CVT shift selector veh Connector M58 Without intelligent ke CVT shift selector veh Connector M57 the inspection res	SS BETWEEN itch OFF. b lamp switch ty between C ide harness c ystem icle side harness icle side harnes icl	connector.	to <u>TM-204, "Explod</u> T SELELCTOR AND ector vehicle side h minal. Stop lamp switch vehicle Connector E115 Stop lamp switch vehicle Connector E115	ed View". STOP LAMP SWIT harness connector f e side harness connector Terminal 4 e side harness connector Terminal 4	CH (PART 1) terminal and stop lamp Continuity Existed Continuity Existed Existed
A CHECK HARNE     Disconnect stop     Disconnect stop     Check continuit     switch vehicle s     With intelligent key s     CVT shift selector veh     Connector     M58     Without intelligent ke     CVT shift selector veh     Connector     M57     s the inspection res     YES >> GO TO     NO >> Repair of     CHECK HARNES     Check continuity be     //th intelligent key system     CVT shift selector	SS BETWEEN itch OFF. b lamp switch ty between C ide harness c ystem icle side harness icle side harnes	Connector.	to <u>TM-204, "Explod</u> T SELELCTOR AND ector vehicle side h minal. Stop lamp switch vehicle Connector E115 Stop lamp switch vehicle Connector E115 T SELELCTOR AND rehicle side harness	ed View". STOP LAMP SWIT harness connector for e side harness connector Terminal 4 e side harness connector Terminal 4 0 STOP LAMP SWIT connector terminal a	CH (PART 1)
CVT shift selector veh	SS BETWEEN itch OFF. b lamp switch ty between C ide harness c ystem icle side harness icle side harness icle side harness icle side harness sult normal? 7. br replace dar SS BETWEEN tween CVT sh br tor vehicle side harness	arness connector v arness connector v	to <u>TM-204, "Explod</u> T SELELCTOR AND ector vehicle side h minal. Stop lamp switch vehicle Connector E115 Stop lamp switch vehicle Connector E115 T SELELCTOR AND rehicle side harness tor	ed View". STOP LAMP SWIT harness connector for a side harness connector Terminal 4 side harness connector Terminal 4 STOP LAMP SWIT connector terminal a Ground	CH (PART 1) terminal and stop lamp Continuity Existed Continuity Existed COntinuity CH (PART 2) and ground. Continuity

#### < DTC/CIRCUIT DIAGNOSIS >

#### Without intelligent key system

CVT shift selector vehicle side harness connector			Continuity
Connector	Terminal	Ground	Continuity
M57	5		Not existed

Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace damaged parts.

**8.**CHECK STOP LAMP SWITCH (PART 1)

Check stop lamp switch. Refer to TM-160. "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 11.

NO >> GO TO 9.

9. PERFORM STOP LAMP SWITCH INSTALLATION POSITION ADJUSTMENT

Perform stop lamp switch installation position adjustment. Refer to <u>BR-7, "Inspection and Adjustment"</u>.

>> GO TO 10.

**10.**CHECK STOP LAMP SWITCH (PART 2)

Check stop lamp switch. Refer to TM-160, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-17, "Exploded View"</u>.

11. CHECK HARNESS BETWEEN STOP LAMP SWITCH AND IGNITION SWITCH

Check continuity between stop lamp switch vehicle side harness connector terminal and ground.

Stop lamp switch vehicle side harness connector			Continuity
Connector	Terminal	Ground	Continuity
E115	3		Not existed

Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace damaged parts.

12. DETECT MALFUNCTIONING ITEMS

Check the following.

• 10A fuse (No.2)

 Harness for short or open between stop lamp switch and ignition switch (Refer to <u>PG-38, "Wiring Diagram -</u> <u>IGNITION POWER SUPPLY -"</u>.)

Ignition switch

Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-34, "Intermittent Incident"</u>.

NO >> Repair or replace damaged parts.

## Component Inspection (Stop Lamp Switch)

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

Check continuity between stop lamp switch connector terminals.

[CVT: RE0F08B]

#### < DTC/CIRCUIT DIAGNOSIS >

## [CVT: RE0F08B]

INFOID:0000000005062531

op lamp switch connector		Condition	Continuity
Terr	ninal	Condition	Continuity
1	2	Depressed brake pedal	Existed
I	2	Brake pedal not depressed	Not existed
2	4	Depressed brake pedal	Existed
3	4	Brake pedal not depressed	Not existed
	p lamp switch conne Terr 1 3	p lamp switch connector Terminal 1 2 3 4	p lamp switch connector     Condition       Condition       1     2     Depressed brake pedal       1     2     Brake pedal not depressed       3     4     Depressed brake pedal

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-17, "Exploded View"</u>.

#### Component Inspection (Shift Lock Solenoid)

#### 1. CHECK SHIFT LOCK SOLENOID

Apply voltage to CVT shift selector connector terminal and park position switch connector terminal then check that shift lock solenoid is activated.

#### **CAUTION:**

#### Before applying voltage, always install a fuse between battery positive terminal and CVT shift selector connector terminal.

With intelligent ke system

CVT shift sele	ctor connector	Park position switch connector		Condition	Statua
Connector	Terminal	Connector	Terminal	Condition	Status
M58	5	M325	1	Impress battery voltage to CVT shift selector connector terminal 5.	Shift lock solenoid operates
M58	5	M325	1	shift selector connector terminal 5.	operates

#### Vithout intelligent ke system

CVT shift sele	ector connector	Park position s	witch connector	Condition	Status	•
Connector	Terminal	Connector	Terminal	Condition	Status	
M57	5	M325	1	Impress battery voltage to CVT shift selector connector terminal 5.	Shift lock solenoid operates	

#### Is the inspection result normal?

YES >> INSPECTION END

>> Replace CVT shift selector. Refer to TM-204, "Exploded View". NO

## Component Inspection (Park Position Switch)

## 1. CHECK PARK POSITION SWITCH

Check continuity between park position switch connector terminals.

Par	k position switch connector				Ν
Connector	Terr	ninal	Condition	Continuity	
Maar	1	3	Park position switch: ON	Existed	0
101325	I	2	Park position switch: OFF	Not existed	0

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace park position switch. Refer to TM-204, "Exploded View". ТΜ

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INFOID:000000005062532

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## < ECU DIAGNOSIS INFORMATION > ECU DIAGNOSIS INFORMATION

## TCM

## **Reference Value**

INFOID:000000005062533

## VALUES ON THE DIAGNOSIS TOOL

Monitor item	Condition	Value / Status (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 en- gine speed.
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
SEC HYDR SEN	<ul><li>Selector lever: "N" position</li><li>Idle speed</li></ul>	0.8 V
	CVT fluid temperature: 20°C (68°F)	2.01 – 2.05 V
ATF TEMP SEN	CVT fluid temperature: 50°C (122°F)	1.45 – 1.50 V
	CVT fluid temperature: 80°C (176°F)	0.90 – 0.94 V
VIGN SEN	Ignition switch: ON	Battery voltage
VEHICLE SPEED	During driving	Approximately matches the speedometer reading.
PRI SPEED	During driving (Lock-up ON)	Approximately matches the en- gine speed.
SEC SPEED	During driving	50 X (Approximately matches the speedometer reading.)
ENG SPEED	Engine running	Closely matches the tachometer reading.
GEAR RATIO	During driving	2.56 - 0.43
ACC PEDAL OPEN	Released accelerator pedal - Fully depressed accelerator pedal	0.0/8 - 8.0/8
SEC PRESS	<ul><li>Selector lever: "N" position</li><li>Idle speed</li></ul>	0 – 1 MPa
	CVT fluid temperature: 20°C (68°F)	47
ATFTEMP COUNT <sup>*1</sup>	CVT fluid temperature: 50°C (122°F)	104
	CVT fluid temperature: 80°C (176°F)	161
STM STEP	During driving	-7 step - 171 step
	Lock-up "OFF"	0 A
130111	Lock-up "ON"	0.7 A
	Line pressure low	0.8 A
130L12	Line pressure high	0 A
ISOLT3	Secondary pressure low - Secondary pressure high	0.8 – 0 A
	Lock-up "OFF"	0 A
	Lock-up "ON"	0.7 A
SOLMON2	<ul><li>Selector lever: "N" position</li><li>Idle speed</li></ul>	0.8 A
	Stall speed	0.3 – 0.6 A

## TCM

#### < ECU DIAGNOSIS INFORMATION >

#### [CVT: RE0F08B]

Monitor item	Condition	Value / Status (Approx.)	_
SOLMON3	<ul><li>Selector lever: "N" position</li><li>Idle speed</li></ul>	0.6 – 0.7 A	— A
	Stall speed	0.4 – 0.6 A	R
	Depressed brake pedal	On	D
DRARESW	Brake pedal not depressed	Off	_
	Fully depressed accelerator pedal	On	С
FULL SVV	Released accelerator pedal	Off	_
	After engine is warmed up, release accelerator pedal	On	
IDLE SW	Fully depressed accelerator pedal	Off	— IM
	Press and hold overdrive control switch	On	
SPORT MODE SW	Other conditions	Off	E
	Selector lever: "L" position	On	
INDLRING	Other conditions	Off	
	Selector lever: "D" position	On	F
INDURING	Other conditions	Off	_
	Selector lever: "N" position	On	G
INDNRNG	Other conditions	Off	_ 0
	Selector lever: "R" position	On	
INDRRNG	Other conditions	Off	Н
	Selector lever: "P" position	On	_
INDPRNG	Other conditions	Off	_
	When overdrive OFF condition	On	_
SPORT MODE IND	Other conditions	Off	_
SMCOIL D	During driving	Changes On $\Leftrightarrow$ Off	J
SMCOIL C	During driving	Changes On $\Leftrightarrow$ Off	_
SMCOIL B	During driving	Changes On $\Leftrightarrow$ Off	_
SMCOIL A	During driving	Changes On $\Leftrightarrow$ Off	— K
	Selector lever: "P" and "N" positions	On	_
LUSEL SOL OUT	Wait at least for 5 seconds with the selector lever in "R", "D" and "L" positions	Off	L
	Selector lever: "P" and "N" positions	On	
LUSEL SOL MON	Wait at least for 5 seconds with the selector lever in "R", "D" and "L" positions	Off	M
	VDC operate	On	_
VDC ON	Other conditions	Off	Ν
TOS ON	TCS operate	On	_
TCS ON	Other conditions	Off	
	ABS operates	On	_ 0
ADS ON	Other conditions	Off	_
	Selector lever: "P" and "N" positions	N·P	P
DANCE	Selector lever: "R" position	R	
NAINGE	Selector lever: "D" position	D	
	Selector lever: "L" position	L	
	Selector lever: "L" position	On	
L POSITION SW	Other conditions	Off	_

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#### < ECU DIAGNOSIS INFORMATION >

#### [CVT: RE0F08B]

Monitor item	Condition	Value / Status (Approx.)
	Selector lever: "D" position	On
D POSITION SW	Other conditions       Selector lever: "N" position	Off
	Selector lever: "N" position	On
N POSITION SW	Other conditions	Off
	Selector lever: "R" position	On
R POSITION SW	Other conditions	Off
	Selector lever: "P" position	On
F FOSITION SW	Other conditions	Off

\*1: Means CVT fluid temperature. Convert numerical values for actual fluid temperature °C (°F). Refer to <u>TM-191, "ATFTEMP COUNT</u> <u>Conversion Table"</u>.

## TERMINAL LAYOUT



#### PHYSICAL VALUES

Term (Wire)	iinal color)	Descriptio	n		Condition	Value (Approx.)	
+	_	Signal name	Input/ Output		Condition		
1	1 Lir		Output	<ul> <li>Selector</li> <li>Idle spectrum</li> <li>After en erator pressure</li> </ul>	or lever: "N" position eed ngine is warmed up, release accel- oedal	5.0 – 7.0 V	
(G)	Ciouna	lenoid valve	Output	<ul> <li>Selector</li> <li>Idle spectration</li> <li>After en acceler</li> </ul>	or lever: "N" position eed ngine is warmed up, fully depress ator pedal	1.0 V	
2	Ground	Secondary pres-	Output	<ul> <li>Selector</li> <li>Idle spectrum</li> <li>After en erator pressure</li> </ul>	or lever: "N" position eed ngine is warmed up, release accel- pedal	5.0 – 7.0 V	
(SB)	Ground	valve	Output	<ul> <li>Selector</li> <li>Idle species</li> <li>After en acceler</li> </ul>	or lever: "N" position eed ngine is warmed up, fully depress rator pedal	3.0 – 4.0 V	
3		Torque converter		During	When CVT performs lock-up.	6.0 V	
(V)	Ground	clutch solenoid valve	Output	driving	When CVT does not perform lock-up	1.0 V	
1		bund Lock-up select solenoid valve		Ignition	Selector lever: "P" and "N" posi- tions	Battery voltage	
4 (O)	Ground		Output	switch: ON	Wait at least for 5 seconds with the selector lever in "R", "D" and "L" positions	0 V	

#### < ECU DIAGNOSIS INFORMATION >

## [CVT: RE0F08B]

Terminal Description (Wire color)		n		Condition	Value (Approx.)	А	
+	_	Signal name	Input/ Output		Contailon		
5 (L)	_	CAN-H	Input/ Output		_	_	В
6 (P)	_	CAN-L	Input/ Output		_	_	С
10 (R)	Ground	Power supply	Input	Ignition s	witch: ON	Battery voltage	
				Ignition s		0 V	ТМ
11 (GR)	Ground	Step motor A	Output	the time i	seconds after ignition switch ON, measurement by using the pulse asurement function (Hi level) of	30.0 msec	
12 (G)	Ground	Step motor B	Output	CONSUL *: Connection the vehic	r.T-III* ct the diagnosis data link cable to le diagnosis connector	10.0 msec	E
13 (Y)	_	ROM ASSY (SEL2)			_	_	F
14 (R)	_	ROM ASSY (SEL1)	—		_	_	0
15 (P)	_	ROM ASSY (SEL3)	_		_	_	G
18				Ignition	Selector lever: "P" position	Battery voltage	Ы
(L)	Ground	P RANGE SW	Input	switch: ON	Other conditions	0 V	11
19	Ground	Power supply	Input	Ignition s	witch: ON	Battery voltage	
(R)	Cround	i olici oappiy	mpar	Ignition s	witch: OFF	0 V	1
20 (LG)	Ground	Step motor C	Output	Within 2 s the time r	seconds after ignition switch ON, measurement by using the pulse	30.0 msec	.1
21 (Y)	Ground	Step motor D	Output	CONSUL *: Connection the vehic	T-III* ct the diagnosis data link cable to le diagnosis connector	10.0 msec	K
22			_	Ignition	Selector lever: "R" position	Battery voltage	
(Y)	Ground	R RANGE SW	Input	switch: ON	Other conditions	0 V	L
25 (B)	Ground	Ground	Output		Always	0 V	
26	Cround		lanut	Ignition	Selector lever: "N" position	Battery voltage	М
(GR)	Ground	N RANGE SW	Input	Switch: ON	Other conditions	0 V	1 V I
28 (Y)	Ground	Power supply (memory backup)	Input		Always	Battery voltage	Ν
29 (W)	Ground	Secondary speed sensor	Input	Selecto     While of	or lever: "L" position driving at 20 km/h (12 MPH)	570 Hz (V) 15 0 5 0 **2 ms JSDIA1305GB	O P
37 (P)	Ground	Secondary pres- sure sensor	Input	<ul><li>Selector</li><li>Idle sport</li></ul>	or lever: "N" position eed	0.8 V	

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## < ECU DIAGNOSIS INFORMATION >

## [CVT: RE0F08B]

(Wire color)		Descriptio	n		Condition	Value (Approx.)		
+	_	Signal name	Input/ Output		Condition			
38 (V)	Ground	Primary speed sensor	Input	<ul><li>Selector</li><li>While of</li></ul>	or lever: "L" position Iriving at 20 km/h (12 MPH)	1275 Hz (V) 6 2 0 1275 Hz 5 1275 Hz 1275 Hz 1275 Hz 1275 Hz 1275 Hz		
42 (O)	Ground	Sensor ground	Input		Always	0 V		
43	Ground		Input		Selector lever: "D" position	Battery voltage		
(SB)	Giouna	D TO MOL OW	mput	Ignition	Other conditions	0 V		
44	Ground	L RANGE SW	Input	ON ON	Selector lever: "L" position	Battery voltage		
(L)	Ciouna		input		Other conditions	0 V		
46	Ground	Sensor power	Output	Ignition s	witch: ON	5.0 V		
(BR)	Cround		Output	Ignition s	witch: OFF	0 V		
					CVT fluid temperature: 20°C (68°F)	2.01 – 2.05 V		
47 (LG)	Ground	CVT fluid temper- ature sensor	Input	Ignition switch: ON	CVT fluid temperature: 50°C (122°F)	1.45 – 1.50 V		
					CVT fluid temperature: 80°C (176°F)	0.90 – 0.94 V		
48 (B)	Ground	Ground	Output		Always	0 V		

#### NOTE:

Voltage value is reference value between each terminal and terminal 5 or terminal 42 (ground terminal).



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2009 Z12



JCDWM0578GB

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/R (INTELLIGENT POWER BUTION MODULE ENGINE ROOM)

> mector Name mector Type

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VIRE TO WIRE

![](_page_168_Figure_1.jpeg)

	Connector No. Connector Name	Connector Type		Terminal Color No. of Wire	2 LG	- 8 ;	0 II S	12 BR	15 SB 16 L	17 W	Connector No.	Connector Name	Connector Type	子 F F F F	10	Terminal Color No. of Wire	1 Y 2 LG 3 BR	8 L O	∘ 0 = T	12 L 13 SB	4			K
M				[Specification]	T		1 1	1 1	1 1	1		ent Power Jle Engine Room)		49 47	56 55 54	[Specification]	th CVT]							M
<b>TROL SYSTE</b>	E6 WIRE TO WIRE	65432	12 11 10 9 8	Signal Name							E15	IPDM E/R (INTELLIGE DISTRIBUTION MODU	NS16FW-CS	52 51 50	61 60 59 58 57	Signal Name	-[Wi							Ν
CON	r No.	r Type		Color of Wire	- 8	- > ?	<u>م</u> ا	88 89 S	۳ ۲	>	r No.	r Name	r Type		62	Color of Wire	α							0
5 Z	Connecto Connecto	Connecto		Terminal No.	1 2	04	ء و	8	9	=	Connector	Connecto.	Connecto	E HS.		Terminal No.	58							0

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Connector No. E115 Connector Name STOP LAMP SWITCH (WITH CVT) Connector Type M04FW-LC	Terminal Color     Signal Name [Specification]       1     Vire       2     W       3     O       4     G	Connector No.         F21           Connector Name         TRANISNISSION RANGE SWITCH           Connector Type         RK08FG           Miles         RK08FG	Terminal No.         Color of Wine 2         Signal Name [Speedfication]           1         R         -           2         W         -           3         R         -           4         GR         -           5         SB         -           7         Y         -           8         G         -
Connector No. E105 Connector Name WIRE TO WIRE Connector Type THEOMV-CS16-TMA	Terminal Color Ne. 1 V Viete Signal Name [Specification] 1 V Viete Signal Name [Specification] 2 W	Connector No. F19 Connector Name SECONDARY SPEED SENSOR Connector Type RK03FB	Terminal No.     Color of Ware     Signal Name [Specification]       1     1     -       2     G     -       3     R     -
н В В		18 43 8 7 8 1 1 1	
VT CONTROL SYSTEM meteor Nume tron (Transmission control MoDULE) meteor Type meteor Type 1224FGV 2526 28 29 43 44 42 2526 28 29 44 42 27 33 84 44 42 44	minual Base         Color Nume         Signal Name [Specification]           25         B         Color           26         V         -           28         V         -           29         W         -           38         V         -           41         L         -           46         BR         -           47         LG         -	meter No. F1 meter Type SAA36FB-R510-54/22 EAA36FB-R510-54/22 EAA36FB-R510-54/22 Eaa12 22 (10 22 22 22 22 22 22 22 22 22 22 22 22 22	minit b         Color Kine         Signal Name [Specification]           1         58         -           2         1 GS         -           3         R         -           8         G         -           10         L         -           11         Y         -           12         GR         -           13         G         -           14         G         -           15         W         -           16         Y         -           17         P         -           16         Y         -

JCDWM0580GB

Connector No.     F55       Connector Name     PRMARTY SPEED SENSOR       Connector Type     RRG3FB       Connector Type     RRG3FB	Terminal Io.     Color of Wires     Signal Name [Specification]       1     LG     -       2     V     -       3     R     -	Oometor No.         M58           Connector Name         CVT SHIFT SELECTOR (WITH           Connector Name         CVT SHIFT SELECTOR (WITH           Connector Name         INTELLIGENT KEY)           Connector Type         TKOBFW           MAS         6         1           6         1         3	Terminal No.     Color of Wire     Signal Name [Specification]       1     P     -       2     B     -	A B C
Connector Mu. F46 Connector Name WRE TO WIFE Connector Type RH1ZMS	Turnicul         Color         Signal Name (Specification)           0.         0         0         -           2         0         -         -           3         L         -         -           4         V         -         -           5         ER         -         -           7         Y         -         -           8         BR         -         -           9         W         -         -           10         R         -         -           11         G         -         -	Oomeetor No.         M57           Connector Name         CVT SHIFT SELECTOR (WITHOUT           Ormeetor Type         INTELLIGENT KEY)           Connector Type         INTELLIGENT KEY)           ALS         6 1 3 2	Taminal     Color     Signal Name [Specification]       No.     of Wire       2     B       -     -	F G
17     BR     ATF TEMP SENSOR       19     LG     SENSOR GND       20     0     SENS POWER SOURCE (5V)       23     L     SEG PRESS SENS		Oomeetor No.         M34           Connector Name         COMBINATION METER           Domeetor Type         TH40FWHH           Mail         State           Mail         State           Mail         State           Mail         State           Mail         State	Tarminal         Calor         Signal Name [Specification]           No.         of Wire         CANH-H           2         P         CANH-L           3         P         OVERDRYE CONTROL SWITCH SIGNAL	I J K
CONTROL SYSTEM No. 24 Name OvT UNIT Type Varaki 7283-8750-50	Color Wire         Signal Name [Specification]           Y         CHIP SELECTIGEL)           R         CHIP SELECTIGEL)           R         CHIP SELECTIGEL)           R         PLINEAR SOL           P         S.M-A           Y         S.M-A           Y         S.M-A           Y         S.M-C           G         S.M-C           G         S.M-C           G         S.M-C           G         S.M-C           G         CLOOKSEL2)           BR         LUUSELECT INMAR SOL           BR         LUUSELECT ON/OFF SOL           L         DATA/OSEL3)	No. M4 Name DATA LINK CONNECTOR Type BDIFFW	Color of Wirrs L L L - -	M
CVT ( Connector Connector H.S	Terminal No. 7 7 7 7 7 7 7 7 7 7 8 8 8 8 8 8 1 1 1 1	Connector Connector H.S.	No. 14	0

ТСМ

Revision: 2009 March

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JCDWM0581GB

## TM-172

minimize reduction of drivability so that durability of transmission assembly can be acquired.

#### 2009 Z12

JCDWM0582GB

INFOID:000000005062535

## Fail-safe

![](_page_171_Figure_7.jpeg)

Signal Name [Specifics

- 0 0 +

**WIRE TO WIRE** 

TCM

#### < ECU DIAGNOSIS INFORMATION >

DTC	Co	ndition	Vehicle behavior				
P0703		_	<ul><li>Start is slow</li><li>Acceleration is slow</li></ul>				
P0705			<ul> <li>Position indicator on combination meter is not displayed</li> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration at high load state is slow</li> <li>Overdrive off condition is not activated</li> <li>"L" position is not activated</li> </ul>				
	Engine coolant temperature	Open circuit is detected while ignition switch is OFF	<ul><li>Selector shock is large</li><li>Low is fixed</li></ul>				
P0710	when engine starts is 10°C (50°F) or more	Other than the above	<ul> <li>Selector shock is large</li> <li>Engine speed is high in middle and high speed range</li> </ul>				
F 07 10	Engine coolant temperature (50°F) or less	when engine starts is 10°C	<ul> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Vehicle speed is not increased</li> </ul>				
	Engine coolant temperature 31°F) or less	when engine starts is $-35^{\circ}C$ (–	Vehicle speed is not increased				
P0715			<ul> <li>Re-acceleration is slightly slow</li> <li>Re-start is slow after vehicle is stop by strong deceleration</li> <li>Overdrive off condition is not activated</li> <li>"L" position is not activated</li> <li>Lock-up is not performed</li> </ul>				
P0720		_	<ul> <li>Start is slow</li> <li>Re-acceleration is slow</li> <li>Re-start is slow after vehicle is stop by strong deceleration</li> <li>Overdrive off condition is not activated</li> <li>"L" position is not activated</li> <li>Lock-up is not performed</li> </ul>				
P0725		_	Lock-up is not performed				
P0740		_	<ul> <li>Selector shock is large</li> <li>Lock-up is not performed</li> </ul>				
P0744		_	Lock-up is not performed				
D0746	A malfunction is detected		<ul><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>				
F 0740	Function is excessively reduced	ced after a malfunction is detect-	<ul> <li>Start is difficult</li> <li>Drive is difficult</li> <li>Lock-up is not performed</li> </ul>				
P0778		_	Engine speed is high in middle and high speed range				
P0840		_	<ul><li>Start is slow</li><li>Acceleration at high load state is slow</li></ul>				
P0841		_	<ul><li>Start is slow</li><li>Acceleration is slow</li></ul>				
P0868		_	<ul> <li>Start is slow</li> <li>Acceleration is slow         <ul> <li>(Slow acceleration is subject to secondary pressure that is recognized by TCM)</li> </ul> </li> </ul>				
P1701		_	<ul><li>Start is slow</li><li>Acceleration at high load state is slow</li></ul>				
P1705		_	<ul><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>				

## < ECU DIAGNOSIS INFORMATION >

DTC	Condition	Vehicle behavior
P1722		Lock-up is not activated in coast state
	A malfunction is detected in primary pulley speed sensor side	<ul> <li>Acceleration is slow</li> <li>Re-start is slow after vehicle is stop by strong deceleration</li> <li>Overdrive off condition is not activated</li> <li>"L" position is not activated</li> <li>Lock-up is not performed</li> </ul>
P1723	A malfunction is detected in secondary pulley speed sensor	<ul> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Re-start is slow after vehicle is stop by strong deceleration</li> <li>Overdrive off condition is not activated</li> <li>"L" position is not activated</li> <li>Lock-up is not performed</li> </ul>
P1726	_	Acceleration is slow
P1740	_	<ul><li>Selector shock is large</li><li>Lock-up is not performed</li></ul>
	A malfunction is detected in low side (when vehicle is stopped)	<ul><li>Low is fixed</li><li>Lock-up is not performed</li></ul>
P1777	A malfunction is detected in high side (during driving)	<ul><li>Start is slow</li><li>Acceleration is low in low speed range</li><li>Lock-up is not performed</li></ul>
U1000		<ul><li>Start is slow</li><li>Acceleration is slow</li><li>Vehicle speed is not increased</li></ul>
U1010	_	<ul><li>Start is slow</li><li>Acceleration is slow</li><li>Vehicle speed is not increased</li></ul>

## **DTC Inspection Priority Chart**

INFOID:000000005062536

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

Priority	Detected items (DTC)
1	U1000, U1010
2	Except adove

## **DTC** Index

INFOID:000000005062537

When multiple malfunctions are detected simultaneously, perform inspection one by one according to DTC check priority list. Refer to <u>TM-174</u>, "<u>DTC Inspection Priority Chart</u>".

DT	<sup>-</sup> C <sup>*1</sup>	ltome			
MIL <sup>*2</sup> , "ENGINE" with CONSULT-III or GST	"TRANSMISSION" with CONSULT-III	(CONSULT-III screen terms)	Reference		
_	P0703	BRAKE SWITCH B	TM-98, "Description"		
P0705	P0705	T/M RANGE SENSOR A	TM-101, "Description"		
P0710	P0710	FLUID TEMP SENSOR A	TM-104, "Description"		
P0715	P0715	INPUT SPEED SENSOR A	TM-107, "Description"		
P0720	P0720	OUTPUT SPEED SENSOR	TM-110, "Description"		
_	P0725	ENGINE SPEED	TM-113, "Description"		
P0740	P0740	TORQUE CONVERTER	TM-114, "Description"		
P0744	P0744	TORQUE CONVERTER	TM-117, "Description"		

## ТСМ

#### < ECU DIAGNOSIS INFORMATION >

## [CVT: RE0F08B]

DT	°C*1	Itome		Δ
MIL <sup>*2</sup> , "ENGINE" with CONSULT-III or GST	"TRANSMISSION" with CONSULT-III	(CONSULT-III screen terms)	Reference	
P0745	P0745	PC SOLENOID A	TM-120, "Description"	В
P0746	P0746	PC SOLENOID A	TM-122, "Description"	-
P0776	P0776	PC SOLENOID B	TM-124, "Description"	_
P0778	P0778	PC SOLENOID B	TM-126, "Description"	С
P0840	P0840	FLUID PRESS SEN/SW A	TM-128, "Description"	
_	P0841	FLUID PRESS SEN/SW A	TM-130, "Description"	ТМ
_	P0868	FLUID PRESS LOW	TM-132, "Description"	
_	P1701	ТСМ	TM-135, "Description"	-
_	P1705	TP SENSOR	TM-138, "Description"	E
_	P1722	VEHICLE SPEED	TM-139, "Description"	-
_	P1723	SPEED SENSOR	TM-140, "Description"	F
_	P1726	THROTTLE CONTROL SIGNAL	TM-142, "Description"	
P1740	P1740	SLCT SOLENOID	TM-143, "Description"	-
P1777	P1777	STEP MOTOR	TM-146, "Description"	G
P1778	P1778	STEP MOTOR	TM-149, "Description"	-
U1000	U1000	CAN COMM CIRCUIT	TM-96, "Description"	
	U1010	CONTROL UNIT (CAN)	TM-97, "Description"	П

\*1: These numbers are prescribed by SAE J2012.

\*2: Refer to TM-91, "Diagnosis Description".

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## SYMPTOM DIAGNOSIS SYSTEM SYMPTOM

## Symptom Table

INFOID:000000005062538

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

No.	Item	Symptom	Condition	Diagnostic item	Reference
		Large shock.	ON vehicle	1. Engine idle speed	<u>EC-15</u>
				2. Engine speed signal	TM-113
				3. Accelerator pedal position sensor	TM-138
				4. CVT position	TM-203
				5. CVT fluid temperature sensor	TM-104
				6. CAN communication line	<u>TM-96</u>
1				7. CVT fluid level and state	<u>TM-194</u>
				8. Line pressure test	<u>TM-197</u>
				9. Torque converter clutch solenoid valve	TM-114
				10. Lock-up select solenoid valve	<u>TM-143</u>
				11. Transmission range switch	<u>TM-101</u>
			OFF vehicle	12. Control valve	<u>TM-223</u>
				13. Forward clutch	
		Large shock. ("N"→"R" position)	ON vehicle	1. Engine idle speed	EC-15
				2. Engine speed signal	<u>TM-113</u>
	Shift Shook			3. Accelerator pedal position sensor	TM-138
	Shift Shock			4. CVT position	<u>TM-203</u>
				5. CVT fluid temperature sensor	<u>TM-104</u>
				6. CAN communication line	<u>TM-96</u>
2				7. CVT fluid level and state	TM-194
				8. Line pressure test	<u>TM-197</u>
				9. Torque converter clutch solenoid valve	<u>TM-114</u>
				10. Lock-up select solenoid valve	<u>TM-143</u>
				11. Transmission range switch	TM-101
			OFF vehicle	12. Control valve	TM 222
				13. Reverse brake	1101-225
3		Shock is too large for lock-up.	ON vehicle	1. CVT position	TM-203
				2. Engine speed signal	<u>TM-113</u>
				3. CAN communication line	<u>TM-96</u>
				4. CVT fluid level and state	<u>TM-194</u>
			OFF vehicle	5. Control valve	TM-223
				6. Torque converter	<u>TM-227</u>

# < SYMPTOM DIAGNOSIS >

## [CVT: RE0F08B]

No.	Item	Symptom	Condition	Diagnostic item	Reference	
	Slips/Will Not Engage	'ill Vehicle cannot take off from "D" gage position.	ON vehicle	1. CVT fluid level and state	<u>TM-194</u>	A
				2. CVT position	<u>TM-203</u>	-
				3. CAN communication line	<u>TM-96</u>	В
				4. Line pressure test	<u>TM-197</u>	
				5. Stall test	<u>TM-196</u>	C TM
				6. Step motor	<u>TM-146</u>	
				7. Primary speed sensor	<u>TM-107</u>	
				8. Secondary speed sensor	<u>TM-110</u>	
4				9. Accelerator pedal position sensor	TM-138           TM-104           TM-126           TM-135	
				10. CVT fluid temperature sensor		-
				11. Secondary pressure sensor		E - F
				12. TCM power supply and ground		
			OFF vehicle	13. Control valve	- <u>TM-223</u>	
				14. Oil pump assembly		
				15. Forward clutch		
				16. Parking components		G

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#### < SYMPTOM DIAGNOSIS >

## [CVT: RE0F08B]

No.	Item	Symptom	Condition	Diagnostic item	Reference
			ON vehicle	1. CVT fluid level and state	<u>TM-194</u>
				2. CVT position	TM-203
				3. CAN communication line	<u>TM-96</u>
				4. Line pressure test	<u>TM-197</u>
				5. Stall test	<u>TM-196</u>
				6. Step motor	<u>TM-146</u>
				7. Primary speed sensor	<u>TM-107</u>
F		Vehicle cannot take off from "R"		8. Secondary speed sensor	<u>TM-110</u>
5		position.		9. Accelerator pedal position sensor	TM-138
				10. CVT fluid temperature sensor	<u>TM-104</u>
				11. Secondary pressure sensor	<u>TM-126</u>
				12. TCM power supply and ground	<u>TM-135</u>
				13. Control valve	<u>TM-223</u>
			OFF vehicle	14. Oil pump assembly	
			OFF venicle	15. Reverse brake	
	Slips/Will			16. Parking components	
	Not Engage	Does not lock-up.	ON vehicle	1. CVT fluid level and state	<u>TM-194</u>
				2. Line pressure test	<u>TM-197</u>
				3. Engine speed signal	<u>TM-113</u>
				4. Primary speed sensor	<u>TM-107</u>
				5. Torque converter clutch solenoid valve	<u>TM-114</u>
				6. CAN communication line	TM-96
				7. Stall test	<u>TM-196</u>
6				8. Step motor	<u>TM-146</u>
				9. Transmission range switch	<u>TM-101</u>
				10. Lock-up select solenoid valve	<u>TM-143</u>
				11. CVT fluid temperature sensor	<u>TM-104</u>
				12. Secondary speed sensor	<u>TM-110</u>
				13. Secondary pressure sensor	<u>TM-126</u>
			OFF vehicle	14. Torque converter	TM-227
				15. Control valve	<u>TM-223</u>
				16. Oil pump assembly	

#### < SYMPTOM DIAGNOSIS >

## [CVT: RE0F08B]

No.	Item	Symptom	Condition	Diagnostic item	Reference	
				1. CVT fluid level and state	<u>TM-194</u>	A
				2. Line pressure test	<u>TM-197</u>	•
				3. Engine speed signal	<u>TM-113</u>	В
				4. Primary speed sensor	<u>TM-107</u>	-
				5. Torque converter clutch solenoid valve	<u>TM-114</u>	
				6. CAN communication line	<u>TM-96</u>	С
			ON vehicle	7. Stall test	<u>TM-196</u>	-
7		Does not hold lock-up condi- tion.		8. Step motor	<u>TM-146</u>	TM
7				9. Transmission range switch	<u>TM-101</u>	
				10. Lock-up select solenoid valve	<u>TM-143</u>	-
	Slips/Will Not Engage			11. CVT fluid temperature sensor	<u>TM-104</u>	E
				12. Secondary speed sensor	<u>TM-110</u>	-
				13. Secondary pressure sensor	<u>TM-126</u>	
			OFF vehicle	14. Torque converter	<u>TM-227</u>	- F
				15. Control valve	<u>TM-223</u>	
				16. Oil pump assembly		G
		Lock-up is not released.	ON vehicle	1. CVT fluid level and state	<u>TM-194</u>	-
				2. Line pressure test	<u>TM-197</u>	
				3. Engine speed signal	<u>TM-113</u>	Н
				4. Primary speed sensor	<u>TM-107</u>	-
8				5. Torque converter clutch solenoid valve	<u>TM-114</u>	
				6. CAN communication line	<u>TM-96</u>	-
				7. Stall test	<u>TM-196</u>	
			OFF vehicle	8. Torque converter	<u>TM-227</u>	J
				9. Control valve	<u>TM-223</u>	
				10. Oil pump assembly		K

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#### < SYMPTOM DIAGNOSIS >

## [CVT: RE0F08B]

9         With selector lever in "D" position, acceleration is extremely poor.         0N vehicle         1. CVT fluid level and state         TM-194           9         With selector lever in "D" position, acceleration is extremely poor.         0N vehicle         6. Transmission range switch         TM-194           9         With selector lever in "D" position, acceleration is extremely poor.         0N vehicle         6. Transmission range switch         TM-194           9         With selector lever in "D" position, acceleration is extremely poor.         0N vehicle         6. Transmission range switch         TM-194           10. Secondary speed sensor         TM-194         10. Secondary speed sensor         TM-194           11. Accelerator pedal position sensor         TM-194         10. Secondary pressure sensor         TM-194           11. CVT fluid temperature sensor         TM-194         10. CVT fluid temperature sensor         TM-194           12. SilpsrWill         Not Engage         16. Control valve         16. Control valve         17. CVT fluid level and state         TM-194           13. Torque converter         TM-194         11. CVT fluid level and state         TM-194         11. CVT fluid level and state         TM-194           14. TCM power supply and ground         TM-194         11. CVT fluid level and state         TM-194         11. CVT fluid level and state         TM-194 <th>No.</th> <th>Item</th> <th>Symptom</th> <th>Condition</th> <th>Diagnostic item</th> <th>Reference</th>	No.	Item	Symptom	Condition	Diagnostic item	Reference
9         With selector lever in 'D' position, acceleration is extremely poor.         ON vehicle					1. CVT fluid level and state	<u>TM-194</u>
9 9 With selector lever in "D" position, accelerator lever in "D" position, accelerator lever in "D" position, accelerator is extremely poor. 9 Sips/Will No Vehicle 10 Number of the selector lever in "R" position, accelerator lever in "R" position, accelerator is extremely poor. 10 Number of the selector lever in "R" position, accelerator lever in "R" position, accelerator is extremely poor. 10 Number of the selector lever in "R" position, accelerator peak lever lever in TM-194 1. CVT fluid level and state 1. M-194 1. CVT fluid level and state 1. M-194 1. CVT fluid level and state 1. M-194 1. CVT position 1. M-194<					2. Line pressure test	<u>TM-197</u>
9 9 With selector lever in "D" position, accelerator lever in "D" position, accelerator lever in "D" position, accelerator is extremely poor. 9 Sipa/Will No tengage 9 Nine selector lever in "C" position, accelerator lever in "C" position, accelerator is extremely poor. 9 No tengage 9 Not Engage 10 Not Engage 10 Not Engage 10 OFF vehicle 11 OFF vehicle 12 OFF vehicle 14 CVT position 15 CVT position 16 Sipa/Will 17 OFF vehicle 18 Forward clutch 10 Vith selector lever in "R" position, accelerator is extremely poor. 10 OFF vehicle 10 OFF vehicle 11 OFF vehicle 12 OFF vehicle 13 CVT fluid level and state 14 IM-194 14 CVT position 15 Torque converter 16 Control valve 17. OUT position 18 Forward clutch 18 Forward clutch 19 OFF vehicle 10 OFF vehicle 10 OFF vehicle 10 OFF vehicle 10 OFF vehicle 11 OF Cortol valve 12 OFF vehicle 13 CVT fluid level and state 14 IM-194 14 CVT position 14 IM-194 14 CVT position 14 IM-194 15 Torque converter 14 IM-194 14 CVT position 14 IM-194 14 CVT position 14 IM-194 14 CVT position 14 IM-194 15 Cortol valve 16 Control valve 17 OFF vehicle 18 Step motor 10 IM-195 10 OFF vehicle 01 OFF vehicle 01 OFF vehicle 01 OFF vehicle 16 Control valve 17 OFF vehicle 18 Cortol valve 19 OFF vehicle 10 Reverse brake 10 IM-194 10 Reverse brake					3. Stall test	<u>TM-196</u>
9 9 With selector lever in "D" position, acceleration is extremely poor. 9 With selector lever in "D" position, acceleration is extremely poor. 9 With selector lever in "D" position, acceleration is extremely poor. 9 No vehicle 6. CAN communication line 6. Transmission range switch 7. CVT position 10. Secondary speed sensor 11. Accelerator padal position sensor 12. Secondary presensure sensor 13. CVT fluid temperature sensor 14. TCM power supply and ground 15. Torque converter 16. Control valve 17. Oil pump assembly 18. Forward clutch 10. Vehicle 10. Vehicle 10. Silps/Will 10. Silps/Will Not Engage Not Engage Not Engage Not engage 0. Vehicle 0. Prevince 1. CVT fluid level and state 1. CVT position 1. CVT position 1. CVT position 1. CVT position 1. CVT fluid level and state 1. M-194 3. Stall test 1. CVT position 1. CVT position 1. CVT position 1. CVT position 1. CVT fluid level and state 1. CVT fluid temperature sensor 1. M-101 1. Accelerator pedal position sensor 1. M-102 1. CVT fluid temperature sensor 1. M-102 1. CVT fluid temperature sensor 1. M-103 1. CVT fluid temperature sensor 1. M-104 1. Accelerator pedal position sensor 1. M-105 1. CVT fluid temperature sensor 1. M-104 1. Accelerator pedal position sensor <p< td=""><td></td><td></td><td>4. Accelerator pedal position sensor</td><td><u>TM-138</u></td></p<>					4. Accelerator pedal position sensor	<u>TM-138</u>
9 9 With selector lever in "D" position, acceleration is extremely poor. 9 With selector lever in "D" position, acceleration is extremely poor. 9 Not Engage 10 Sips/Will 10 Not Engage 11 Not Engage 12 Not Engage 13 Not Engage 14 Not Engage 15 Not Engage 16 Control valve 17 Oil pump assembly 18 Not Engage 19 Not Engage 10 Not Engage 11 Not Engage 12 Not Engage 13 Not Engage 14 Not Engage 15 Not Engage 16 Not Engage 17 Not Engage 18 Not Engage 19 Not Engage 19 Not Engage 10 Not Engage 11 A Engage 12 Not Engage 13 Not Engage 14 Not Engage 15 Not Engage 16 Control valve 17 Oil pump assembly 17 Not Engage 18 Not Engage 19 Not Engage 10 Not Engage 11 A Engage 12 Not Engage 13 Not Engage 14 Not Engage 15 Not Engage 16 Control valve 17 Not pump assembly 17 Not pump assembly 18 Reverse Bensor 17 Not pump assembly 19 Not Engage 10 Not Engage 10 Not Engage 10 Secondary speed sensor 11 N				ON vehicle	5. CAN communication line	<u>TM-96</u>
9         With selector lever in "D" position, acceleration is extremely poor.         0N vehicle         7. CVT position         TM-203           9         With selector lever in "D" position, acceleration is extremely poor.         0. Neohicle         8. Step motor         TM-107           10. Secondary speed sensor         TM-110         11. Accelerator pedal position sensor         TM-104           11. Accelerator pedal position sensor         TM-104         14. TCM power supply and ground         TM-126           13. CVT fluid temperature sensor         TM-104         14. TCM power supply and ground         TM-127           14. Accelerator pedal position sensor         TM-104         14. TCM power supply and ground         TM-128           15. Torque converter         TM-227         16. Ontrol valve         17. Oil pump assembly         TM-227           16. Not Engage         Not Engage         1. CVT fluid level and state         TM-194           10         Not engage         1. CVT fluid level and state         TM-194           2. Line pressure test         TM-194         1. Line pressure test         TM-194           3. Stall test         TM-194         1. CVT position         TM-223           3. Stall test         TM-194         1. Core pedal position sensor         TM-194           10. Secondary speed sensor         TM-					6. Transmission range switch	TM-101
9     With selector lever in "D" position, acceleration is extremely poor.     8. Step motor     1M-146       9. Primary speed sensor     1M-107       10. Secondary speed sensor     1M-110       11. Accelerator pedal position sensor     1M-1128       12. Secondary pressure sensor     1M-128       13. CVT fluid temperature sensor     1M-122       14. TCM power supply and ground     1M-223       15. Torque converter     1M-223       18. Forward clutch     1M-223       18. Forward clutch     1M-223       18. Forward clutch     1M-224       19. With selector lever in "R" position, acceleration is extremely poor.     1. CVT fluid level and state       10     With selector lever in "R" position, acceleration is extremely poor.     1. CVT fluid level and state       10     With selector lever in "R" position, acceleration is extremely poor.     1. CVT fluid level and state       10     With selector lever in "R" position, acceleration is extremely poor.     1. CVT fluid level and state       10     With selector lever in "R" position, acceleration is extremely poor.     1. CVT fluid level and state       11     Coelerator pedal position sensor     1M-132       12     Scondary speed sensor     1M-104       14. Accelerator pedal position sensor     1M-136       15. CAN communication line     1M-96       16. Control valve <td></td> <td>7. CVT position</td> <td><u>TM-203</u></td>					7. CVT position	<u>TM-203</u>
9 With selector lever in "C" posi- 10. Secondary speed sensor 11/110 11. Accelerator pedal position sensor 11/1126 12. Secondary pressure sensor 11/1126 13. CVT fluid temperature sensor 11/1126 14. TCM power supply and ground 11/1127 16. Control valve 17. Oil pump assembly 11/122 18. Forward clutch 10. CVT fluid level and state 11/1194 2. Lian pressure test 11/1194 2. Sila test 11/1194 3. Stall test 11/1126 13. CVT fluid temperature sensor 11/1126 14. CVT position sensor 11/1126 15. CAN communication line 11/194 2. Sila test 11/1194 2. Sila test 11/1127 3. Stall test 11/1126 10. Secondary speed sensor 11/1146 9. Primary speed sensor 11/1146 10. CVT fluid temperature sensor 11/1138 12. Secondary speed sensor 11/1146 11. Accelerator pedal position sensor 11/1138 12. Secondary speed sensor 11/1146 11. Accelerator pedal position sensor 11/1138 12. Secondary speed sensor 11/1138 13. CVT fluid temperature sensor 11/1138 14. TCM power supply and ground 11/1135 15. Torque converter 11/1227 16. Control valve 0FF vehicle 0FF vehicle 15. Torque converter 11/1227 16. Control valve 16. Control valve 17. Oil pump assembly 11/1227 18. Reverse brake					8. Step motor	<u>TM-146</u>
10       Note acceleration is extremely poor.       10. Secondary speed sensor       IM-110         11. Accelerator pedal position sensor       IM-138       12. Secondary pressure sensor       IM-138         12. Secondary pressure sensor       IM-138       12. Secondary pressure sensor       IM-138         13. CVT fluid temperature sensor       IM-104       14. TCM power supply and ground       IM-135         14. TCM power supply and ground       IM-135       15. Torque converter       IM-223         16. Control valve       16. Control valve       17. Oil pump assembly       IM-223         18. Forward clutch       11. CVT fluid level and state       IM-194         2. Line pressure test       IM-197       3. Stall test       IM-196         3. Stall test       IM-196       4. Accelerator pedal position sensor       IM-138         5. CAN communication line       IM-192       3. Stall test       IM-192         10       With selector lever in "R" position, acceleration is extremely poor.       ON vehicle       6. Transmission range switch       IM-101         11. CVT position       IM-203       8. Step motor       IM-138       12. Secondary speed sensor       IM-138         12. Secondary pressure sensor       IM-138       12. Secondary pressure sensor       IM-138         13. CVT fluid temper	0		With selector lever in "D" posi-		9. Primary speed sensor	<u>TM-107</u>
10         Not Engage         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector lever in "R" position, acceleration is extremely poor.         Image of the selector pedial position sensor image of the sensor	9		poor.		10. Secondary speed sensor	<u>TM-110</u>
10         Slips/Will         12. Secondary pressure sensor         TM-126           13. CVT fluid temperature sensor         TM-104           14. TCM power supply and ground         TM-125           15. Torque converter         TM-227           16. Control valve         TM-123           17. Oil pump assembly         TM-223           18. Forward clutch         TM-124           19. Vot Engage         1. CVT fluid level and state         TM-194           2. Line pressure test         TM-194           2. Line pressure test         TM-194           3. Stall test         TM-126           4. Accelerator pedal position sensor         TM-128           5. CAN communication line         TM-96           6. Transmission range switch         TM-101           7. CVT position         TM-203           8. Step motor         TM-116           9. Primary speed sensor         TM-126           10. Secondary pressure sensor         TM-126           11. Accelerator pedal position sensor         TM-126           12. Secondary pressure sensor         TM-126           13. CVT fluid temperature sensor         TM-126           14. TCM power supply and ground         TM-126           15. Corpue converter         TM-126					11. Accelerator pedal position sensor	<u>TM-138</u>
10         Slips/Will         IM-104         IM-104           Not Engage         IM-104         IM-104         IM-104           OFF vehicle         IS. Torque converter         IM-125           16. Control valve         IM-223         IB. Forward clutch         IM-223           18. Forward clutch         IM-194         IM-194         IM-223           18. Forward clutch         IM-194         IM-194         IM-194           2. Line pressure test         IM-194         IM-192         IM-194           3. Stall test         IM-194         IM-194         IM-194           4. Accelerator pedal position sensor         IM-194         IM-194           5. CAN communication line         IM-196         IM-196           6. Transmission range switch         IM-101         IM-203           8. Step motor         IM-102         IM-102           10. Secondary speed sensor         IM-102         IM-102           10. Accelerator pedal position sensor         IM-104         IM-102           11. Accelerator pedal position sensor         IM-102         IM-102           12. Secondary pressure sensor         IM-104         IM-104           14. TCM power supply and ground         IM-125         IM-104           14. TCM					12. Secondary pressure sensor	<u>TM-126</u>
10         14. TCM power supply and ground         TM-135           Slips/Will         I5. Torque converter         TM-227           16. Control valve         17. Oil pump assembly         TM-223           18. Forward clutch         TM-194           Not Engage         1. CVT fluid level and state         TM-194           2. Line pressure test         TM-194           3. Stall test         TM-196           4. Accelerator pedal position sensor         TM-138           5. CAN communication line         TM-96           6. Transmission range switch         TM-101           7. CVT position         TM-203           8. Step motor         TM-118           10. Secondary presure sensor         TM-1126           11. Accelerator pedal position sensor         TM-107           10. Secondary presure sensor         TM-1126           11. Accelerator pedal position sensor         TM-126           12. Secondary presure sensor         TM-126           13. CVT fluid temperature sensor         TM-126           14. TCM power supply and ground         TM-125           15. Torque converter         TM-227           16. Control valve         TM-223           17. Oil pump assembly         TM-223           18. Reverse brake <td></td> <td></td> <td rowspan="6"></td> <td></td> <td>13. CVT fluid temperature sensor</td> <td><u>TM-104</u></td>					13. CVT fluid temperature sensor	<u>TM-104</u>
10         Slips/Will Not Engage         Is. Torque converter         Image: I					14. TCM power supply and ground	<u>TM-135</u>
10         Slips/Will Not Engage         OFF vehicle         16. Control valve         TM-223           17. Oil pump assembly         18. Forward clutch         11. CVT fluid level and state         TM-194           2. Line pressure test         1M-192         3. Stall test         1M-192           3. Stall test         1M-192         3. Stall test         1M-192           6. Transmission range switch         1M-101         7. CVT position         1M-203           8. Step motor         1M-102         8. Step motor         1M-102           10. Secondary speed sensor         1M-102         10. Secondary speed sensor         1M-102           10. Secondary pressure sensor         1M-103         11. Accelerator pedal position sensor         1M-102           10. Secondary speed sensor         1M-102         10. Secondary speed sensor         1M-102           10. Secondary pressure sensor         1M-103         11. Accelerator pedal position sensor         1M-103           11. Accelerator pedal position sensor         1M-104         14. TCM power supply and ground         1M-135           12. Secondary pressure sensor         1M-103         15. Torque converter         1M-222           16. Control valve         17. Oil pump assembly         1M-223         18. Reverse brake					15. Torque converter	<u>TM-227</u>
Slips/Will       IN vehicle       17. Oil pump assembly       IM-223         Not Engage       18. Forward clutch       18. Forward clutch         Not Engage       1. CVT fluid level and state       IM-194         2. Line pressure test       IM-197         3. Stall test       IM-196         4. Accelerator pedal position sensor       IM-138         5. CAN communication line       IM-96         6. Transmission range switch       IM-101         7. CVT position       IM-203         8. Step motor       IM-102         10       With selector lever in "R" position, acceleration is extremely poor.         0N vehicle       9. Primary speed sensor         11. Accelerator pedal position sensor       IM-102         11. Accelerator pedal position sensor       IM-102         11. Accelerator pedal position sensor       IM-110         11. Accelerator pedal position sensor       IM-126         13. CVT fluid temperature sensor       IM-104         14. TCM power supply and ground       IM-135         15. Torque converter       IM-227         16. Control valve       IN-223         18. Reverse brake       IM-223				OFF vohiclo	16. Control valve	<u>TM-223</u>
Slips/Will Not Engage         Image         Image <thimage< th="">         Image         Image<!--</td--><td></td><td></td><td rowspan="2">OFF venicle</td><td>17. Oil pump assembly</td></thimage<>				OFF venicle	17. Oil pump assembly	
10       Not Engage       1. CVT fluid level and state       TM-194         1. CVT fluid level and state       TM-194         2. Line pressure test       TM-192         3. Stall test       TM-193         4. Accelerator pedal position sensor       TM-138         5. CAN communication line       TM-96         6. Transmission range switch       TM-101         7. CVT position       TM-203         8. Step motor       TM-104         9. Primary speed sensor       TM-107         10. Secondary speed sensor       TM-102         11. Accelerator pedal position sensor       TM-104         12. Secondary pressure sensor       TM-104         13. CVT fluid temperature sensor       TM-102         13. CVT fluid temperature sensor       TM-104         14. TCM power supply and ground       TM-126         13. CVT fluid temperature sensor       TM-126         13. CVT fluid temperature sensor       TM-126         14. TCM power supply and ground       TM-227         16. Control valve       TM-223         18. Reverse brake       TM-223		Slips/Will			18. Forward clutch	
10 With selector lever in "R" position, acceleration is extremely poor. ON vehicle With selector lever in "R" position, acceleration is extremely for the extremely of the extremely for the e		Not Engage	With selector lever in "R" posi- tion, acceleration is extremely poor.	ON vehicle	1. CVT fluid level and state	<u>TM-194</u>
10     3. Stall test     1M-196       4. Accelerator pedal position sensor     1M-138       5. CAN communication line     1M-96       6. Transmission range switch     1M-101       7. CVT position     1M-203       8. Step motor     1M-104       9. Primary speed sensor     1M-107       10. Secondary speed sensor     1M-102       11. Accelerator pedal position sensor     1M-102       12. Secondary pressure sensor     1M-104       14. TCM power supply and ground     1M-135       15. Torque converter     1M-227       16. Control valve     16. Control valve       17. Oil pump assembly     1M-223       18. Reverse brake     1M-223					2. Line pressure test	<u>TM-197</u>
10 With selector lever in "R" position, acceleration is extremely poor. With selector lever in "R" position, acceleration is extremely poor. With selector lever in "R" position, acceleration is extremely poor. With selector lever in "R" position, acceleration is extremely poor. With selector lever in "R" position, acceleration is extremely poor. N vehicle A Accelerator pedal position sensor M-104 10. Secondary speed sensor M-105 10. Secondary speed sensor M-104 11. Accelerator pedal position sensor M-104 12. Secondary pressure sensor M-104 14. TCM power supply and ground M-105 15. Torque converter M-104 16. Control valve M-105 10. Secondary pressure sensor M-104 14. TCM power supply and ground M-105 10. 207 10. 2					3. Stall test	<u>TM-196</u>
105. CAN communication line1M-966. Transmission range switch1M-1017. CVT position1M-2038. Step motor1M-1469. Primary speed sensor1M-10710. Secondary speed sensor1M-10211. Accelerator pedal position sensor1M-12613. CVT fluid temperature sensor1M-12614. TCM power supply and ground1M-13514. TCM power supply and ground1M-13515. Torque converter1M-22716. Control valve1M-22318. Reverse brake1M-223					4. Accelerator pedal position sensor	<u>TM-138</u>
106. Transmission range switchTM-1017. CVT positionTM-2038. Step motorTM-1469. Primary speed sensorTM-10710. Secondary speed sensorTM-11011. Accelerator pedal position sensorTM-13812. Secondary pressure sensorTM-12613. CVT fluid temperature sensorTM-10414. TCM power supply and groundTM-13515. Torque converterTM-22716. Control valve17. Oil pump assembly17. Oil pump assemblyTM-22318. Reverse brakeTM-223					5. CAN communication line	<u>TM-96</u>
10       With selector lever in "R" position, acceleration is extremely poor.       ON vehicle       7. CVT position       TM-203         10       With selector lever in "R" position, acceleration is extremely poor.       9. Primary speed sensor       TM-107         10. Secondary speed sensor       TM-110         11. Accelerator pedal position sensor       TM-138         12. Secondary pressure sensor       TM-104         14. TCM power supply and ground       TM-135         14. TCM power supply and ground       TM-227         16. Control valve       TM-223         17. Oil pump assembly       TM-223         18. Reverse brake       TM-223					6. Transmission range switch	<u>TM-101</u>
108. Step motorTM-1469. Primary speed sensorTM-10710. Secondary speed sensorTM-11011. Accelerator pedal position sensorTM-13812. Secondary pressure sensorTM-12613. CVT fluid temperature sensorTM-10414. TCM power supply and groundTM-13515. Torque converterTM-22716. Control valve17. Oil pump assembly18. Reverse brakeTM-223					7. CVT position	<u>TM-203</u>
10       With selector lever in "R" position, acceleration is extremely poor.       9. Primary speed sensor       TM-107         10. Secondary speed sensor       TM-110         11. Accelerator pedal position sensor       TM-138         12. Secondary pressure sensor       TM-104         14. TCM power supply and ground       TM-135         15. Torque converter       TM-227         16. Control valve       17. Oil pump assembly       TM-223         18. Reverse brake       TM-223					8. Step motor	<u>TM-146</u>
10 In the decent aligned sector alig					9. Primary speed sensor	<u>TM-107</u>
11. Accelerator pedal position sensor       TM-138         12. Secondary pressure sensor       TM-126         13. CVT fluid temperature sensor       TM-104         14. TCM power supply and ground       TM-135         15. Torque converter       TM-227         16. Control valve       16. Control valve         17. Oil pump assembly       TM-223         18. Reverse brake       TM-223	10				10. Secondary speed sensor	<u>TM-110</u>
12. Secondary pressure sensor       TM-126         13. CVT fluid temperature sensor       TM-104         14. TCM power supply and ground       TM-135         15. Torque converter       TM-227         16. Control valve       16. Control valve         17. Oil pump assembly       TM-223         18. Reverse brake       TM-223					11. Accelerator pedal position sensor	<u>TM-138</u>
13. CVT fluid temperature sensor       TM-104         14. TCM power supply and ground       TM-135         15. Torque converter       TM-227         16. Control valve       17. Oil pump assembly         18. Reverse brake       TM-223					12. Secondary pressure sensor	<u>TM-126</u>
OFF vehicle     14. TCM power supply and ground     TM-135       15. Torque converter     TM-227       16. Control valve     17. Oil pump assembly       18. Reverse brake     TM-223					13. CVT fluid temperature sensor	<u>TM-104</u>
OFF vehicle 15. Torque converter <u>TM-227</u> 16. Control valve 17. Oil pump assembly <u>TM-223</u> 18. Reverse brake					14. TCM power supply and ground	<u>TM-135</u>
OFF vehicle           OFF vehicle         16. Control valve           17. Oil pump assembly         TM-223           18. Reverse brake         18. Reverse brake				OFF vehicle	15. Torque converter	<u>TM-227</u>
17. Oil pump assembly     TM-223       18. Reverse brake     18. Reverse brake					16. Control valve	
18. Reverse brake					17. Oil pump assembly	<u>TM-223</u>
					18. Reverse brake	
#### < SYMPTOM DIAGNOSIS >

# [CVT: RE0F08B]

No.	Item	Symptom	Condition	Diagnostic item	Reference	
				1. CVT fluid level and state	<u>TM-194</u>	А
				2. Line pressure test	<u>TM-197</u>	
			3. Engine speed signal	<u>TM-113</u>	В	
				4. Primary speed sensor	<u>TM-107</u>	
				5. Torque converter clutch solenoid valve	<u>TM-114</u>	
				6. CAN communication line	<u>TM-96</u>	С
			ON vehicle	7. Stall test	<u>TM-196</u>	
44	Slips/Will			8. Step motor	<u>TM-146</u>	ТМ
11	Not Engage	Slips at lock-up.		9. Transmission range switch	<u>TM-101</u>	
				10. Lock-up select solenoid valve	<u>TM-143</u>	
				11. CVT fluid temperature sensor	<u>TM-104</u>	E
				12. Secondary speed sensor	<u>TM-110</u>	
				13. Secondary pressure sensor	<u>TM-126</u>	_
				14. Torque converter	<u>TM-227</u>	Г
			OFF vehicle	15. Control valve	TM 000	
				16. Oil pump assembly	<u>1 IVI-223</u>	G
				1.CVT fluid level and state	<u>TM-194</u>	
			ON vehicle	2. Line pressure test	<u>TM-197</u>	
				3. Accelerator pedal position sensor	<u>TM-138</u>	
				4. Transmission range switch	<u>TM-101</u>	
				5. CAN communication line	<u>TM-96</u>	I
				6. Stall test	<u>TM-196</u>	
				7. CVT position	<u>TM-203</u>	
				8. Step motor	<u>TM-146</u>	J
				9. Primary speed sensor	<u>TM-107</u>	
12	Othors	No croop at all		10. Secondary speed sensor	<u>TM-110</u>	K
12	Others	No creep at all.		11. Accelerator pedal position sensor	<u>TM-138</u>	
				12. CVT fluid temperature sensor	<u>TM-104</u>	
				13. Secondary pressure sensor	<u>TM-126</u>	L
				14. TCM power supply and ground	<u>TM-135</u>	
				15. Torque converter	<u>TM-227</u>	М
				16. Control valve		101
			OFF	17. Oil pump assembly		
				18. Gear system	<u>TM-223</u>	Ν
				19. Forward clutch		
			20. Reverse brake		0	

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#### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F08B]

No.	Item	Symptom	Condition	Diagnostic item	Reference	
				1. CVT fluid level and state	<u>TM-194</u>	
				2. Line pressure test	<u>TM-197</u>	
				3. Transmission range switch	<u>TM-101</u>	
				4. Stall test	<u>TM-196</u>	
				5. CVT position	<u>TM-203</u>	
			ONIversials	6. Step motor	<u>TM-146</u>	
			ON venicie	7. Primary speed sensor	<u>TM-107</u>	
				8. Secondary speed sensor	<u>TM-110</u>	
				9. Accelerator pedal position sensor	<u>TM-138</u>	
13		Vehicle cannot drive in all posi- tions.		10. CVT fluid temperature sensor	<u>TM-104</u>	
				11. Secondary pressure sensor	<u>TM-126</u>	
				12. TCM power supply and ground	<u>TM-135</u>	
				13. Torque converter	<u>TM-227</u>	
				14. Control valve		
				15. Oil pump assembly		
		thers	OFF vehicle	16. Gear system	<u>TM-223</u>	
				17. Forward clutch		
				18. Reverse brake		
	Others			19. Parking components		
				1. CVT fluid level and state	<u>TM-194</u>	
				2. Line pressure test	<u>TM-197</u>	
				3. Transmission range switch	<u>TM-101</u>	
				4. Stall test	<u>TM-196</u>	
				5. CVT position	<u>TM-203</u>	
			ON vehicle	6. Step motor	<u>TM-146</u>	
				7. Primary speed sensor	<u>TM-107</u>	
				8. Secondary speed sensor	<u>TM-110</u>	
14		With selector lever in "D" posi-		9. Accelerator pedal position sensor	<u>TM-138</u>	
17		tion, driving is not possible.		10. CVT fluid temperature sensor	<u>TM-104</u>	
				11. Secondary pressure sensor	<u>TM-126</u>	
				12. TCM power supply and ground	<u>TM-135</u>	
				13. Torque converter	<u>TM-227</u>	
				14. Control valve		
			OFF vehicle	15. Oil pump assembly		
				16. Gear system	<u>TM-223</u>	
				17. Forward clutch		
				18. Parking components		

#### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F08B]

No.	Item	Symptom	Condition	Diagnostic item	Reference	•
				1. CVT fluid level and state	<u>TM-194</u>	- A
			2. Line pressure test	<u>TM-197</u>	-	
				3. Transmission range switch	<u>TM-101</u>	В
				4. Stall test	<u>TM-196</u>	-
				5. CVT position	<u>TM-203</u>	-
			ONtrachists	6. Step motor	<u>TM-146</u>	С
			ON venicie	7. Primary speed sensor	<u>TM-107</u>	-
				8. Secondary speed sensor	<u>TM-110</u>	TM
45		With selector lever in "R" posi-		9. Accelerator pedal position sensor	<u>TM-138</u>	
15		tion, driving is not possible.		10. CVT fluid temperature sensor	<u>TM-104</u>	-
				11. Secondary pressure sensor	<u>TM-126</u>	E
				12. TCM power supply and ground	<u>TM-135</u>	-
				13. Torque converter	<u>TM-227</u>	-
				14. Control valve		- F
				15. Oil pump assembly		
		Net or o	OFF vehicle	16. Gear system	<u>TM-223</u>	G
				17. Reverse brake		
				18. Parking components		
	Others			1. CVT fluid level and state	<u>TM-194</u>	- H
				2. Engine speed signal	<u>TM-113</u>	-
				3. Primary speed sensor	<u>TM-107</u>	-
			ON vehicle	4. Secondary speed sensor	<u>TM-110</u>	-
16		Judder occurs during lock-up.		5. Accelerator pedal position sensor	<u>TM-138</u>	-
				6. CAN communication line	<u>TM-96</u>	- J
				7. Torque converter clutch solenoid valve	<u>TM-114</u>	-
			OFF	8. Torque converter	<u>TM-227</u>	ĸ
			OFF venicle	9. Control valve	<u>TM-223</u>	
	-			1. CVT fluid level and state	<u>TM-194</u>	-
			ON vehicle	2. Engine speed signal	<u>TM-113</u>	L
				3. CAN communication line	<u>TM-96</u>	-
				4. Torque converter	<u>TM-227</u>	- Г\ Л
17		Strange noise in "D" position.		5. Control valve		111
			OFF	6. Oil pump assembly		
			OFF venicle	7. Gear system	<u>TM-223</u>	Ν
				8. Forward clutch		
				9. Bearing		~

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#### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F08B]

No.	Item	Symptom	Condition	Diagnostic item	Reference
				1. CVT fluid level and state	<u>TM-194</u>
			ON vehicle	2. Engine speed signal	<u>TM-113</u>
				3. CAN communication line	<u>TM-96</u>
10		Strongo poice in "D" position		4. Torque converter	<u>TM-227</u>
10		Strange holse in R position.		5. Control valve	
			OFF vehicle	6. Oil pump assembly	TM 222
				7. Gear system	1101-223
				8. Reverse brake	
				1. CVT fluid level and state	<u>TM-194</u>
		Strange noise in "N" position.	ON vehicle	2. Engine speed signal	<u>TM-113</u>
	Others			3. CAN communication line	<u>TM-96</u>
19			OFF vehicle	4. Torque converter	<u>TM-227</u>
				5. Control valve	<u>TM-223</u>
				6. Oil pump assembly	
				7. Gear system	
-				1. CVT fluid level and state	<u>TM-194</u>
				2. CVT position	<u>TM-203</u>
				3. CAN communication line	<u>TM-96</u>
				4. Step motor	<u>TM-146</u>
20		Vehicle does not decelerate by	ON vehicle	5. Primary speed sensor	<u>TM-107</u>
20		engine brake.		6. Secondary speed sensor	<u>TM-110</u>
				7. Line pressure test	<u>TM-197</u>
				8. Engine speed signal	<u>TM-113</u>
				9. Accelerator pedal position sensor	<u>TM-138</u>
			OFF vehicle	10. Control valve	<u>TM-223</u>

#### < SYMPTOM DIAGNOSIS >

# [CVT: RE0F08B]

No.	Item	Symptom	Condition	Diagnostic item	Reference	
				1. CVT fluid level and state	<u>TM-194</u>	A
				2. Line pressure test	<u>TM-197</u>	-
				3. Accelerator pedal position sensor	<u>TM-138</u>	В
				4. CAN communication line	<u>TM-96</u>	-
			ON vohiolo	5. Stall test	<u>TM-196</u>	-
			ON venicle	6. Step motor	<u>TM-146</u>	С
				7. Primary speed sensor	<u>TM-107</u>	-
21		Maximum speed low.		8. Secondary speed sensor	<u>TM-110</u>	ТМ
				9. Secondary pressure sensor	<u>TM-126</u>	
				10. CVT fluid temperature sensor	<u>TM-104</u>	-
				11. Torque converter	<u>TM-227</u>	E
				12. Control valve		-
			OFF vehicle	13. Oil pump assembly	TM 222	F
				14. Gear system	<u> </u>	I
				15. Forward clutch		
		With selector lever in "P" posi-	ON vehicle	1. Transmission range switch	<u>TM-101</u>	G
	Others	tion, venicle does not enter parking condition or, with selec- tor lever in another position, parking condition is not can- celled.	ON Vehicle	2. CVT position	<u>TM-203</u>	-
22			tor lever in another position, parking condition is not can- celled.	OFF vehicle	3. Parking components	<u>TM-223</u>
	-			1. Transmission range switch	<u>TM-101</u>	-
			ON vehicle	2. CVT fluid level and state	<u>TM-194</u>	
22		Vehicle drives with CVT in "P" position.		3. CVT position	<u>TM-203</u>	-
23				4. Control valve		J
			OFF vehicle	5. Parking components	<u>TM-223</u>	
				6. Gear system	_	
				1. Transmission range switch	<u>TM-101</u>	K
			ON vehicle	2. CVT fluid level and state	<u>TM-194</u>	-
				3. CVT position	<u>TM-203</u>	
24		Vehicle drives with CVT in "N" position.		4. Control valve		
			OFF vehicle	5. Gear system	TM 222	
				6. Forward clutch	1 111-223	M
				7. Reverse brake		_

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#### < SYMPTOM DIAGNOSIS >

#### [CVT: RE0F08B]

No.	Item	Symptom	Condition	Diagnostic item	Reference
				1. CVT fluid level and state	<u>TM-194</u>
				2. Engine speed signal	<u>TM-113</u>
				3. Primary speed sensor	<u>TM-107</u>
			ON vehicle	4. Torque converter clutch solenoid valve	<u>TM-114</u>
25		Engine stall.		5. CAN communication line	<u>TM-96</u>
				6. Stall test	<u>TM-196</u>
				7. Secondary pressure sensor	<u>TM-126</u>
			OFF vehicle	8. Torque converter	<u>TM-227</u>
			OFF vehicle	9. Control valve	TM-223
				1. CVT fluid level and state	<u>TM-194</u>
				2. Engine speed signal	<u>TM-113</u>
			ON vehicle	3. Primary speed sensor	TM-107
26		Engine stalls when selector le-	ON Vehicle	4. Torque converter clutch solenoid valve	<u>TM-114</u>
20		ver is shifted "N" $\rightarrow$ "D" or "R".		5. CAN communication line	<u>TM-96</u>
				6. Stall test	<u>TM-196</u>
	Others		OFF vehicle	7. Torque converter	TM-227
				8. Control valve	<u>TM-223</u>
			1. CVT fluid level and state	<u>TM-194</u>	
			ON vehicle	2. Accelerator pedal position sensor	<u>TM-138</u>
27		Engine speed does not return to idle		3. Secondary speed sensor	<u>TM-110</u>
				4. CAN communication line	<u>TM-96</u>
			OFF vehicle	5. Control valve	TM-223
				1. CVT fluid level and state	<u>TM-194</u>
				2. CVT position	<u>TM-203</u>
				3. Line pressure test	<u>TM-197</u>
				4. Engine speed signal	<u>TM-113</u>
			ON vehicle	5. Accelerator pedal position sensor	<u>TM-138</u>
28		CVT does not shift.		6. CAN communication line	<u>TM-96</u>
				7. Primary speed sensor	<u>TM-107</u>
				8. Secondary speed sensor	<u>TM-110</u>
				9. Step motor	<u>TM-146</u>
			OFF vobicle	10. Control valve	TM 000
			OFF vehicle	11. Oil pump assembly	<u>1 IVI-223</u>

#### < SYMPTOM DIAGNOSIS >

# [CVT: RE0F08B]

No.	Item	Symptom	Condition	Diagnostic item	Reference	٥
29		Engine does not start in "NI" or		1. Ignition switch and starter	<u>PG-38,</u> <u>STR-7</u>	A
		"P" position.	ON vehicle	2. CVT position	<u>TM-203</u>	D
				3. Transmission range switch	<u>TM-101</u>	D
		Engine starts in positions other		1. Ignition switch and starter	<u>PG-38,</u> <u>STR-7</u>	C
30		than "N" or "P".	ON vehicle	2. CVT position	<u>TM-203</u>	0
				3. Transmission range switch	<u>TM-101</u>	
		When brake pedal is de-		1. Stop lamp switch		ΤM
31		Others pressed with ignition switch ON, selector lever cannot be shifted from "P" position to oth- er position.	ON vehicle	2. Shift lock solenoid	<u>TM-155</u>	
01	Others			3. CVT shift selector		E
		When brake pedal is not de- pressed with ignition switch ON, selector lever can be shift- ed from "P" position to other po- sition.	ON vehicle	1. Stop lamp switch	TM-155	
32				2. Shift lock solenoid		F
02				3. CVT shift selector		I
				1. Overdrive control switch	<u>TM-151</u>	G
33		Cannot be changed to over- drive OFF condition.	ON vehicle	2. CAN communication line	<u>TM-96</u>	
				3. Combination meters	<u>MWI-39</u>	
				1. CAN communication line	<u>TM-96</u>	Н
34		OD OFF indicator lamp is not turned ON.	ON vehicle	2. Combination meters	<u>MWI-39</u>	
	turnea ON.	lumea ON.		3. TCM power supply and ground	<u>TM-135</u>	I

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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:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SRS AIR BAG".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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

#### WARNING:

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

Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

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#### NOTE:

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

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

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

#### OPERATION PROCEDURE

1. Connect both battery cables. **NOTE:** 

Supply power using jumper cables if battery is discharged.

- 2. Turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
- 3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
- 4. Perform the necessary repair operation.

Revision: 2009 March

- 5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering А wheel will lock when the push-button ignition switch is turned to LOCK position.)
- 6. Perform self-diagnosis check of all control units using CONSULT-III.

### Precaution for Procedure without Cowl Top Cover

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

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

#### **CAUTION:**

< PRECAUTION >

- 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 Н 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 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-61, "TCM REPLACEMENT : Description".</u>
- To replace transaxle assembly, refer to TM-61, "TRANSAXLE ASSEMBLY REPLACEMENT : Description".

#### Precaution

#### NOTE:

If any malfunction occurs in the RE0F08B model transaxle, replace the entire transaxle assembly.

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







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#### < PRECAUTION >

#### [CVT: RE0F08B]

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



Perform TCM in-

put/output signal /

inspection before replacement.

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 Perform TCM input/output signal inspection and check whether TCM functions normally or not before replacing TCM. TM-162, "Reference Value".

- Perform "DTC Confirmation Procedure" after performing each TROUBLE DIAGNOSIS. If the repair is completed the DTC should not be displayed in
- the "DTC Confirmation Procedure". • Never disassemble transaxle unless it is described in this manual.
- Always use the specified brand of CVT fluid. Refer to MA-10, "Fluids and Lubricants".
- Use lint-free paper, not cloth rags, during work.
- Dispose of the waste oil using the methods prescribed by law, ordinance, etc. after replacing the CVT fluid.
- · Perform the work in a clean workplace.
- Before starting removal, check normal state in advance.
- During work, never allow dust, dirt, and others to enter in transaxle inside.
- Use genuine Nissan parts for replacement.
- Never reuse fluid that is drained.
- Always treat drained fluid, used flushing oil, and others as oil waste.
- Perform fluid level check and replacement while keeping the vehicle in horizontal state.
- Apply the specified fluid to O-ring and oil seal when installing them.

# Removal and Installation Procedure for CVT Unit Connector

#### REMOVAL

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



INSTALLATION





#### < PRECAUTION >

#### [CVT: RE0F08B]

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- 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).

CA	UTI	0	<b>N</b> :
UA	••••		•••

- 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.



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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-92, "CONSULT-III Function (TRANSMISSION)" for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.

Always perform the procedure on TM-91, "Diagnosis Description" to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to EC-85, "Diagnosis Description".

 Certain systems and components, especially those related to OBD, may use the new style slide-locking type harness connector. For description and how to disconnect, refer to PG-85.

### ATFTEMP COUNT Conversion Table

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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)

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#### < PRECAUTION >

# [CVT: RE0F08B]

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

# PREPARATION

# < PREPARATION >

# PREPARATION PREPARATION

# **Special Service Tools**

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

(Kent-Moore No.) Tool name		Description	С
— (OTC3492) Oil pressure gauge set	SCIA7531E	Measuring line pressure	τM
			F
Commercial Service Tools			INFOID:000000005062551
Commercial Service Tools Tool number Tool name		Description	INFOID:000000005062551
Tool number Tool name Power tool		Description Loosening nuts and bolts	G

	PBIC0190E		I
KV38107900		Installing drive shaft	0
( — )			
Protector a: 32 mm (1.26 in) dia.			K
			L
	PDIA1183J		
ST35325000		Installing differential side oil seal	
( — ) KV31103000 ( — )	ST 3532 5000		M
Drift a: 70 mm (2.75 in) dia. b: 59 mm (2.32 in) dia. c: 49 mm (1.92 in) dia.	ZZA0501D		Ν

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# PERIODIC MAINTENANCE

### Inspection

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[CVT: RE0F08B]

Level check

Check fluid level in HOT state [CVT fluid temperature is between 50 to 80°C (122 to 176°F)], according to the following procedures.

- 1. Visually check that CVT fluid leakage from transaxle assembly is not detected.
- After engine warms up, drive the vehicle in an urban area for approximately 10 minutes. NOTE:
   When ambient temperature is 20°C (68°E), driving vehicle for approximately 10 minutes in

When ambient temperature is 20°C (68°F), driving vehicle for approximately 10 minutes in an urban area ordinarily warms up CVT fluid temperature between 50 to 80°C (122 to 176°F).

- 3. Park the vehicle on a level surface.
- 4. Fully apply parking brake.
- 5. Adjust engine speed at idle state.
- 6. Shift selector lever through entire position from "P" to "D" while depressing brake pedal.
- 7. Press claw of CVT fluid level gauge lock to unlock.
- 8. Remove CVT fluid level gauge from CVT fluid charging pipe.
- Wipe CVT fluid that is on CVT fluid level gauge.
   CAUTION:
   Always use shop paper when wiping off CVT fluid level gauge.

Always use shop paper when wiping off CVT fluid that is on CVT fluid level gauge.



- 10. Rotate CVT fluid level gauge  $180^\circ$  from installed state.
- 11. Inset CVT fluid level gauge until it contacts CVT fluid charging pipe end.



12. Check that CVT fluid level is within the specified level of CVT fluid level gauge (MAX side).

#### CAUTION:

- After level check, when returning CVT fluid level gauge to the original state, insert CVT fluid level gauge to CVT fluid charging pipe until it is locked.
- Always use shop paper when wiping off CVT fluid that is on CVT fluid level gauge.

CVT FLUID CONDITION

# CVT FLUID

#### < PERIODIC MAINTENANCE >

#### [CVT: RE0F08B]

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Check CVT fluid condition.

- If CVT fluid is very dark or smells burned, check operation of transaxle assembly. Flush cooling system after repair of transaxle assembly.
- If CVT fluid contains frictional material (clutches, brakes, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of transaxle assembly. Refer to TM-219, "CVT FLUID COOLER HOSE : Exploded View".



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

# Changing

- 1. Remove drain plug from oil pan and then the CVT fluid.
- Remove drain plug gasket from drain plug.
- Install drain plug gasket to drain plug. 3. **CAUTION:**

Never reuse drain plug gasket.

Install drain plug to oil pan. 4.

#### : TM-213, "Exploded View" Ū

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

#### CVT fluid and fluid capacity : TM-228, "General Specification"

#### CAUTION:

- Always use the specified fluid. If use, misuse, or mixing of fluid other than the specified fluid occurs, original performance cannot be obtained or it may cause serious malfunctions.
- CVT fluid is not reusable. Never reuse CVT fluid.
- Always use shop paper. Never use shop cloth.
- After replacement, always perform CVT fluid leakage check.
- Delete CVT fluid deterioration date with CONSULT-III after changing CVT fluid. 6. After engine warms up, drive the vehicle in an urban area for approximately 10 minutes. 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).

- Check CVT fluid level and condition. Refer to <u>TM-194, "Inspection"</u>.
- 8. Repeat steps 1 to 6 if CVT fluid has been contaminated.

# STALL TEST

## Inspection and Judgment

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[CVT: RE0F08B]

#### INSPECTION

- 1. Inspect the amount of engine oil. Replenish the engine oil if necessary. Refer to LU-7, "Inspection".
- 2. After engine warms up, drive the vehicle in an urban area for approximately 10 minutes.

**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).

- 3. Inspect the amount of CVT fluid. Replenish if necessary.
- 4. Securely engage parking brake so that the tires do not turn.
- 5. Start the engine.
- 6. Apply foot brake, and shift selector lever to "D" position.
- 7. Gradually press down accelerator pedal while holding down the foot brake.
- 8. Quickly read off the stall speed, and then quickly remove your foot from accelerator pedal. CAUTION:

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

#### Stall speed

: TM-228, "Stall Speed"

- 9. Shift selector lever to "N" position.
- 10. Cool down the CVT fluid. CAUTION:

#### Run the engine at idle for at least 1 minute.

11. Repeat steps 7 through 10 with selector lever in "R" position.

#### JUDGMENT

	Selector lever position		Expected problem location
	"D"	"R"	Expected problem location
Stall rotation	Н	0	Forward clutch
	0	Н	Reverse brake
	L	L	<ul><li>Engine and torque converter one-way clutch</li><li>Accelerator pedal position sensor</li></ul>
	Н	Н	<ul> <li>Line pressure low</li> <li>Primary pulley</li> <li>Secondary pulley</li> <li>Steel belt</li> </ul>

• 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

- 1. Inspect the amount of engine oil. Replenish the engine oil if necessary. Refer to LU-7, "Inspection".
- 2. After engine warms up, drive the vehicle in an urban area for approximately 10 minutes.

**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).

- 3. Inspect the amount of CVT fluid. Replenish if necessary.
- 4. Remove oil pressure detection plug (A).
- Install oil pressure gauge [special service tool: (OTC3492)].
   NOTE:
   When using oil pressure gauge, he sure to use O-ring attached

When using oil pressure gauge, be sure to use O-ring attached to oil pressure detection plug.

- 6. Securely engage parking brake so that the tires do not turn.
- 7. Start the engine.
- 8. Measure the line pressure at both idle and the stall speed. CAUTION:

Keep brake pedal pressed all the way down during measurement.

#### Line pressure : <u>TM-228, "Line Pressure"</u>

- 9. Install O-rig to oil pressure detection plug. CAUTION:
  - Never reuse O-ring.
  - Apply CVT fluid to O-ring.
- 10. Install oil pressure detection plug.

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

#### JUDGMENT

Judgment		Possible cause	L
	Low for all positions ("P", "R", "N", "D", "L")	<ul> <li>Possible causes include malfunctions in the pressure supply system and low oil pump output.</li> <li>For example</li> <li>Oil pump wear</li> <li>Pressure regulator valve or plug sticking or spring fatigue</li> <li>Oil strainer ⇒ oil pump ⇒ pressure regulator valve passage oil leak</li> <li>Engine idle speed too low</li> </ul>	Μ
Idle speed	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.	Ν
	High	<ul> <li>Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function.</li> <li>For example</li> <li>Accelerator pedal position signal malfunction</li> <li>CVT fluid temperature sensor malfunction</li> <li>Line pressure solenoid malfunction (sticking in OFF state, filter clog, cut line)</li> <li>Pressure regulator valve or plug sticking</li> </ul>	O P

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[CVT: RE0F08B]

# LINE PRESSURE TEST

#### < PERIODIC MAINTENANCE >

Judgment		Possible cause	
	Line pressure does not rise higher than the line pressure for idle.	<ul> <li>Possible causes include a sensor malfunction or malfunction in the pressure adjustment function.</li> <li>For example</li> <li>Accelerator pedal position signal malfunction</li> <li>TCM malfunction</li> <li>Line pressure solenoid malfunction (shorting, sticking in ON state)</li> <li>Pressure regulator valve or plug sticking</li> </ul>	
Stall speed	The pressure rises, but does not enter the standard position.	<ul> <li>Possible causes include malfunctions in the pressure supply system and malfunction in the pressure adjustment function.</li> <li>For example</li> <li>Accelerator pedal position signal malfunction</li> <li>Line pressure solenoid malfunction (sticking, filter clog)</li> <li>Pressure regulator valve or plug sticking</li> </ul>	
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.	

# **ROAD TEST**

ROAD TEST	
Description	A
DESCRIPTION  • The purpose of the test is to determine the overall performance of CVT and analyze causes of problems.	В
<ul> <li>The road test consists of the following three parts.</li> <li>1. "Check Before Engine Is Started"</li> <li>2. "Check at Idle"</li> <li>3. "Cruise Test"</li> </ul>	С
<ul> <li>Before the road test, familiarize yourself with all test procedures and items to check.</li> <li>Perform tests for all the check items until a malfunction phenomenon is detected. Perform diagnosis for NG items after the completion of road tests. Refer to TM-176, "Symptom Table".</li> </ul>	TM
Check before Engine Is Started	
1.CHECK SHIFT POSITION INDICATOR	F
<ol> <li>Park vehicle on level surface.</li> <li>Shift selector lever to "P" position.</li> <li>Turn ignition switch OFF.</li> <li>Wait at least 5 seconds.</li> <li>Turn ignition switch ON.</li> </ol>	G
Never start the engine.	Н
Has shift position indicator been turned ON for about 2 seconds?         YES       >> GO TO 2.         NO       >> 1. Stop "Road Test".         2. Perform self-diagnosis. Refer to TM-176, "Symptom Table".	
2.CHECK OD OFF INDICATOR LAMP	J
<ol> <li>Turn ignition switch OFF.</li> <li>Wait at least 5 seconds.</li> <li>Turn ignition switch ON. CAUTION: Never start the engine.</li> </ol>	K
Has OD OFF indicator lamp been turned ON for about 2 seconds? YES >> 1. Turn ignition switch OFF.	L
<ul> <li>2. Go to <u>TM-199. "Check at Idle"</u>.</li> <li>NO &gt;&gt; 1. Stop "Road Test".</li> <li>2. Perform self-diagnosis. Refer to <u>TM-176. "Symptom Table"</u>.</li> </ul>	M
Check at Idle	
1.CHECK STARTING THE ENGINE (PART 1)	N
<ol> <li>Park vehicle on level surface.</li> <li>Shift selector lever to "P" or "N" position.</li> <li>Turn ignition switch OFF.</li> <li>Turn ignition switch to "START" position.</li> </ol>	0
<u>Is engine started?</u> YES >> GO TO 2. NO >> 1. Stop "Road Test". 2. Perform self-diagnosis. Refer to <u>TM-176, "Symptom Table"</u> .	Ρ
2.CHECK STARTING THE ENGINE (PART 2)	
<ol> <li>Furnignition switch ON.</li> <li>Shift selector lever to "D" or "R" position.</li> </ol>	

< PERIODIC MAINTENANCE >

# TM-199

# ROAD TEST

#### < PERIODIC MAINTENANCE >

3. Turn ignition switch to "START" position.

Does engine start with selector lever in one of these positions?

- YES >> 1. Stop "Road Test".
  - 2. Perform self-diagnosis. Refer to TM-176, "Symptom Table".
- NO >> GO TO 3.
- **3.**CHECK "P" POSITION FUNCTION
- 1. Shift selector lever to "P" position.
- 2. Turn ignition switch OFF.
- 3. Release parking brake.
- 4. Push vehicle forward or backward.

#### Does the vehicle move when it is pushed?

- YES >> 1. Apply parking brake.
  - 2. Record malfunction symptoms.
  - 3. GO TO 4.
- NO >> 1. Apply parking brake. 2. GO TO 4.
- **4.**CHECK "N" POSITION FUNCTION
- 1. Start the engine.
- 2. Shift selector lever to "N" position.
- 3. Release parking brake.

#### Does vehicle move?

- YES >> 1. Record malfunction symptoms.
  - 2. GO TO 5.
- NO >> GO TO 5.
- 5. CHECK SHIFT SHOCK
- 1. Apply foot brake.
- 2. Shift selector lever from "N" to "R" position.

#### Is an excessive shock detected?

- YES >> 1. Record malfunction symptoms. 2. GO TO 6.
- NO >> GO TO 6.
- **6.**CHECK "R" POSITION FUNCTION

Release foot brake pedal for several seconds.

#### Does vehicle back up?

YES >> GO TO 7.

- NO >> 1. Record malfunction symptoms. 2. GO TO 7.
- **1**.CHECK "D" POSITION FUNCTION

Shift selector lever to "D" position.

Does the vehicle move forward?

YES >> Go to <u>TM-200, "Cruise Test"</u>.

>> 1. Stop "Road Test".

2. Perform self-diagnosis. Refer to TM-176, "Symptom Table".

Cruise Test

#### CAUTION:

NO

#### Always drive vehicle at a safe speed.

**1.**CHECK VEHICLE SPEED WHEN SHIFTING GEARS (PART 1)

- Drive vehicle for approximately 10 minutes to warm engine oil and CVT fluid up to operating temperature. CVT fluid operating temperature: 50 – 80°C (122 – 176°F)
- 2. Park vehicle on level surface.
- 3. Shift selector lever to "P" position.

Revision: 2009 March

#### TM-200

INFOID:000000005062560

# **ROAD TEST**

<ol> <li>Start the engine.</li> <li>Shift selector lever to "D" position.</li> <li>Accelerate vehicle at 2/8 throttle opening.</li> <li>Check "Vehicle Speed When Shifting Gears" Refer to TM-228 "Vehicle Speed When Shifting Gears"</li> </ol>	A
With CONSULT-III	В
Read "ACC PEDAL OPEN", "VEHICLE SPEED" and "ENG SPEED".      Is the inspection result normal?	
YES >> GO TO 2. NO >> 1. Record malfunction symptoms.	С
2. GO TO 2.	
2.CHECK VEHICLE SPEED WHEN SHIFTING GEARS (PART 2)	TM
<ol> <li>Park vehicle on level surface.</li> <li>Shift selector lever to "D" position.</li> <li>Accelerate vehicle at 8/8 throttle opening.</li> <li>Check "Vehicle Speed When Shifting Gears". Refer to <u>TM-228, "Vehicle Speed When Shifting Gears"</u>.</li> <li>With CONSULT-III</li> <li>Read "ACC PEDAL OPEN" "VEHICLE SPEED" and "ENG SPEED"</li> </ol>	E
Is the inspection result normal?	F
YES >> GO TO 3. NO >> 1. Record malfunction symptoms. 2. GO TO 3.	G
3.CHECK OVERDRIVE OFF CONDITION (PART 1)	_
<ol> <li>Park vehicle on level surface.</li> <li>Push overdrive control switch.</li> <li>Accelerate vehicle at 2/8 throttle opening.</li> </ol>	Н
<ul> <li>Check "Vehicle Speed When Shifting Gears". Refer to <u>TM-228, "Vehicle Speed When Shifting Gears"</u>.</li> <li>With CONSULT-III</li> <li>Read "ACC PEDAL OPEN", "VEHICLE SPEED" and "ENG SPEED".</li> </ul>	I
Is the inspection result normal?	J
<ul> <li>YES &gt;&gt; GO TO 4.</li> <li>NO &gt;&gt; 1. Record malfunction symptoms.</li> <li>2. GO TO 4.</li> </ul>	V
4.CHECK OVERDRIVE OFF CONDITION (PART 2)	K
<ol> <li>Park vehicle on level surface.</li> <li>Push overdrive control switch.</li> <li>Accelerate vehicle at 8/8 throttle opening.</li> <li>Check "Vehicle Speed When Shifting Gears". Refer to <u>TM-228, "Vehicle Speed When Shifting Gears"</u>.</li> <li>With CONSULT-III</li> <li>Read "ACC PEDAL OPEN". "VEHICLE SPEED" and "ENG SPEED".</li> </ol>	L
Is the inspection result normal?	
YES >> GO TO 5. NO >> 1. Record malfunction symptoms. 2. GO TO 5.	Ν
5. CHECK "L" POSITION FUNCTION (PART 1)	0
<ol> <li>Park vehicle on level surface.</li> <li>Shift selector lever to "L" position.</li> <li>Accelerate vehicle at 2/8 throttle opening.</li> <li>Check "Vehicle Speed When Shifting Gears". Refer to <u>TM-228, "Vehicle Speed When Shifting Gears"</u>.</li> <li>With CONSULT-III</li> <li>Read "ACC PEDAL OPEN", "VEHICLE SPEED" and "ENG SPEED".</li> </ol>	Ρ
<u>Is the inspection result normal?</u> YES >> GO TO 6. NO >> 1. Record malfunction symptoms. 2. GO TO 6.	

< PERIODIC MAINTENANCE >

# TM-201

#### < PERIODIC MAINTENANCE >

# **6.**CHECK "L" POSITION FUNCTION (PART 2)

- 1. Park vehicle on level surface.
- 2. Shift selector lever to "L" position.
- 3. Accelerate vehicle at 8/8 throttle opening.

4. Check "Vehicle Speed When Shifting Gears". Refer to <u>TM-228</u>, "Vehicle Speed When Shifting Gears".

• Read "ACC PEDAL OPEN", "VEHICLE SPEED" and "ENG SPEED".

Is the inspection result normal?

- YES >> GO TO 7.
- NO >> 1. Record malfunction symptoms.
  - 2. GO TO 7.

# 7. CHECK ENGINE BRAKE FUNCTION

#### Check engine brake.

Does engine braking effectively reduce vehicle speed in "L" position?

- YES >> 1. Stop vehicle.
  - 2. Perform "Self Diagnostic Results" in "TRANSMISSION".
- NO >> 1. Record malfunction symptoms.
  - 2. Perform self-diagnosis. Refer to TM-176, "Symptom Table".

#### < PERIODIC MAINTENANCE >

# CVT POSITION

## Inspection and Adjustment

#### Inspection

- 1. Shift selector lever to "P" position, and turn ignition switch ON.
- 2. Check that selector lever can be shifted to other than "P" position when brake pedal is depressed. Also check that selector lever can be shifted from "P" position only when brake pedal is depressed.
- 3. Shift selector lever and check for excessive effort, sticking, noise or rattle.
- 4. Check that selector lever stops at each position with the feel of engagement when it is shifted through all the positions. Check that the actual position of selector lever matches the position shown by shift position indicator and manual lever on the transaxle.
- The method of operating selector lever to individual positions correctly should be as shown.
- 6. When selector button is pressed in "P", "R", "N", "D" or "L" position without applying forward/backward force to selector lever, check button operation for sticking.
- 7. Check that back-up lamps illuminate only when selector lever is placed in the "R" position.
- When in "R" position, check that back-up lamps do not illuminate even when the selector lever is in the "P" position. CAUTION:

#### Check the lighting without pressing shift button.

 Check that back-up lamps do not illuminate when selector lever is pushed toward the "R" position when in the "P" or "N" position.

#### CAUTION:

#### Check the lighting without pressing shift button.

- 10. Check that the engine can only be started with selector lever in the "P" and "N" positions.
- 11. Check that transaxle is locked completely in "P" position.

#### Adjustment

- Shift selector lever to "P" position. CAUTION: Turn wheels more than 1/4 rotations and apply the park lock.
- 2. Remove lock nut ( ) and release control cable (1).

2 : Transmission range switch

- 3. Place manual lever (A) to "P" position.
- 4. Release control cable and temporarily tighten lock nut.
- Tighten lock nut to the specified torque. Refer to <u>TM-207</u>, <u>"Exploded View"</u>.

#### CAUTION:

Never apply any force to manual lever after lock nut is tightened. (Especially forward and rearward)

6. Check CVT position.





: Press selector button to

operate selector lever, while depressing

: Press selector button to

 $\leq$ : Selector lever can be

selector button.

operate selector lever.

operated without pressing

JPDIA0343GE

brake pedal.

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INFOID:000000005062561

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

Exploded View

INFOID:000000005062562



- 4 CVT shift selector
- 7. Selector button
- Park position switch

Dust cover

- - 8. 11.
    - Selector button return spring
- 9. Lock pin

10. Overdrive control switch Refer to GI-4, "Components" for symbols in the figure.

# Removal and Installation

#### INEOID:000000005062563

REMOVAL **CAUTION:** 

1.

#### Make sure that parking brake is applied before removal and installation.

- Disconnect the battery cable from the negative terminal. Refer to <u>PG-95, "Removal and Installation"</u>.
- 2. Shift selector lever knob in "N" position.
- 3. Slide knob cover downward. **CAUTION:**

#### Be careful not to damage selector lever knob.

- 4. Pull out lock pin from selector lever knob.
- 5. Remove selector lever knob and knob cover as a set from selector lever. **CAUTION:**

#### Never press selector button.

Remove center console assembly. Refer to IP-22, "Exploded View". 6.

Revision: 2009 March

# TM-204

# **CVT SHIFT SELECTOR**

#### < REMOVAL AND INSTALLATION >

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- 7. Disconnect CVT shift selector connector.
- Disconnect key interlock cable from CVT shift selector assembly. Refer to <u>TM-209</u>, "Exploded View". A (Without intelligent Key system)
- 9. Remove the bolts from the CVT shift selector assembly.
- 10. Remove exhaust front tube, center muffler and heat plates. Refer to <u>EX-5, "Exploded View"</u>.
- 11. Remove the plate from the CVT shift selector assembly.
- 12. Remove the lock plate from the control cable. Refer to <u>TM-207, "Exploded View"</u>.
- 13. Remove control cable from the CVT shift selector assembly. Refer to TM-207, "Exploded View".
- 14. Insert flat-bladed screwdrivers at points (A) and (B) as shown, and press both tabs (E) and (F) at the front (C) and rear (D) slightly toward the center of the CVT shift selector assembly to remove the CVT shift selector assembly from the underside of the vehicle.
  - : Vehicle front
- 15. Remove CVT shift selector assembly from vehicle.



#### INSTALLATION

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

 When installing control cable (1) to CVT shift selector assembly (2), check that control cable is fully pressed in with the ribbed (A) surface facing upward.

 $\triangleleft$  : Vehicle front



- Refer to the followings when installing the selector lever knob to the CVT shift selector assembly.
- Install the lock pin (1) to the selector lever knob (2).
- Install the knob cover (3) to the selector lever knob.
- Shift selector lever in "N" position.
- Insert the shift lever knob into the shift lever until it clicks. CAUTION:
  - Install it straight, and never tap or apply any shock to install it.
  - Never press selector button.



#### < REMOVAL AND INSTALLATION >

#### **Disassembly and Assembly**

#### DISASSEMBLY

 Remove overdrive control switch, selector lever button, and selector button return spring from selector lever knob.
 CAUTION:

#### Be careful not to damage selector lever knob.

- 2. Remove dust cover from CVT shift selector assembly.
- 3. Insert a flat-bladed screwdriver to (A) (at 4 locations) as shown, and bend each hook slightly to raise position indicator plate (1) and remove from CVT shift selector assembly (2).



4. Remove park position switch (1) from CVT shift selector assembly.



ASSEMBLY Assembly is in the reverse order of disassembly.

Inspection

INFOID:000000005062564

INSPECTION AFTER INSTALLATION Check the CVT position. Refer to TM-203, "Inspection and Adjustment".

# < REMOVAL AND INSTALLATION >

# CONTROL CABLE

# **Exploded View**

INFOID:000000005062565

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# **CONTROL CABLE**

#### < REMOVAL AND INSTALLATION >

When installing control cable (1) to CVT shift selector assembly (2), check that control cable is fully pressed in with the ribbed (A) surface facing upward.



Inspection

INFOID:000000005062567

INSPECTION AFTER INSTALLATION Check the CVT position. Refer to <u>TM-203</u>, "Inspection and Adjustment".

# **KEY INTERLOCK CABLE**

# < REMOVAL AND INSTALLATION >

# **KEY INTERLOCK CABLE**

**Exploded View** 

INFOID:000000005062568

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Е : Key interlock rod

2. 3.



Remove steering column cover lower and instrument driver lower panel. Refer to IP-12. "Exploded View". 4.

#### TM-209

#### 2009 Z12

# **KEY INTERLOCK CABLE**

#### < REMOVAL AND INSTALLATION >

- 5. Pull out the lock plate (A) from the holder (B).
- 6. Remove the key interlock cable (1) from the key cylinder (2).
- 7. Remove clip and remove key interlock cable.

Inspection

#### Slide the slider (A) toward the key interlock rod (D) while pressing the pull lock (B) down to securely connect the adjust holder (C) with the key interlock rod (D). **CAUTION:**

- Never press tabs when holding slider.
- Never apply any force at a right angle to key interlock rod when sliding.

Check the CVT position. Refer to TM-203, "Inspection and Adjustment".







(B

#### INSTALLATION

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

Temporarily install adjust holder (A) to key interlock rod (B). Install casing cap (C) to cable bracket (D) on CVT shift selector assembly.

#### **CAUTION:**

- Never bend or twist key interlock cable excessively when installing.
- · Check that casing cap is firmly secured in cable bracket on CVT shift selector assembly after installing key interlock cable to cable bracket on CVT shift selector assembly.

INSPECTION AFTER INSTALLATION

#### [CVT: RE0F08B]

INFOID:000000005062570

#### < REMOVAL AND INSTALLATION >

# ТСМ

# Exploded View

INFOID:00000000506257

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[CVT: RE0F08B]



#### < REMOVAL AND INSTALLATION >

# AIR BREATHER HOSE

#### Removal and Installation

INFOID:000000005062574

[CVT: RE0F08B]

#### REMOVAL

- 1. Remove clip from air cleaner assembly.
- 2. Remove air breather hose from transaxle assembly.

#### INSTALLATION

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

#### **CAUTION:**

- Check that air breather hose is not collapsed or blocked due to folding or bending when installed.
- Fix clip to mounting hole.
- Check that insertion allowance of hose to transaxle tube is end reaches radius curve end.
- When inserting air breather hose to transaxle tube, check that paint mark faces vehicle upper side.

# **OIL PAN**

**Exploded View** 

INFOID:000000005062575

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# **Removal and Installation**

#### REMOVAL

- 1. Remove engine under cover.
- Remove drain plug from oil pan and then drain the CVT fluid. 2.
- Remove oil pan fitting bolts (+), and then remove oil pan and oil 3. pan gasket.

 $\triangleleft$ : Vehicle front

Remove magnets from oil pan. 4.



#### **INSTALLATION**

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

Μ

- Never reuse oil pan gasket, drain plug gasket and oil pan fitting bolts.
- Completely remove all moisture, oil and old gasket, etc. from the oil pan gasket mounting surface of transaxle case and oil pan.

#### Inspection

INFOID:000000005062577

#### INSPECTION AFTER REMOVAL

Check oil pan for foreign material.

- If a large amount of worn material is found, clutch plate may be worn.
- If iron powder is found, bearings, gears, or clutch plates may be worn.

• If aluminum powder is found, bushing may be worn, or chips or burrs of aluminum casting parts may enter. Check points where wear is found in all cases.

#### **INSPECTION AFTER INSTALLATION**

Check for CVT fluid leakage and check CVT fluid level. Refer to TM-194, "Inspection".

#### < REMOVAL AND INSTALLATION >

# PRIMARY SPEED SENSOR

# Exploded View

INFOID:000000005062578

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[CVT: RE0F08B]



# < REMOVAL AND INSTALLATION >

# SECONDARY SPEED SENSOR

# Exploded View

INFOID:000000005062581

[CVT: RE0F08B]



1. Secondary speed sensor

Apply CVT Fluid NS-2.

Refer to <u>GI-4, "Components"</u> for symbols not described above.

## Removal and Installation

#### REMOVAL

- 1. Remove air duct (inlet). Refer to EM-24, "Exploded View".
- 2. Disconnect secondary speed sensor connector.
- 3. Remove secondary speed sensor.
- 4. Remove O-ring from secondary speed sensor.

#### INSTALLATION

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

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

#### Inspection

INSPECTION AFTER INSTALLATION Check for CVT fluid leakage and check CVT fluid level. Refer to <u>TM-194, "Inspection"</u>. INFOID:000000005062582

INFOID:000000005062583
# DIFFERENTIAL SIDE OIL SEAL

# < REMOVAL AND INSTALLATION >

# DIFFERENTIAL SIDE OIL SEAL

# **Exploded View**

INFOID:000000005062584

А



**INSPECTION AFTER INSTALLATION** 

Check for CVT fluid leakage and check CVT fluid level. Refer to TM-194. "Inspection".

# TM-217

< REMOVAL AND INSTALLATION >

# CVT OIL WARMER SYSTEM WATER HOSE

WATER HOSE : Exploded View

INFOID:000000005062587

[CVT: RE0F08B]



Refer to <u>GI-4, "Components"</u> for symbols in the figure.

# WATER HOSE : Removal and Installation

INFOID:000000005062588

#### 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 this step engine is cold.

- 1. Remove air duct (inlet). Refer to EM-24, "Exploded View".
- 2. Remove hose clamps, and remove CVT water hose A.
- 3. Remove hose clamps, and remove CVT water hose B.
- 4. Remove hose clamps, and remove CVT water hose C.
- 5. Remove CVT water tube.

#### INSTALLATION

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

# Revision: 2009 March

#### dimension "A" from the hose edge.

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

• Insert CVT water hose according to dimension "A" described

• Set hose clamps (1) at the both ends of fluid cooler hose (2) with

Hose clamp should not interfere with the bulge.

< REMOVAL AND INSTALLATION >

below.

CVT water hose (1)

CVT water hose A

CVT water hose B

CVT water hose C

CVT water hose	Hose end	Paint mark	Position of hose clamp*	
CV/T water been A	Water inlet-outlet side	Facing forward	А	I
CVT water hose A	CVT oil warmer side	Facing forward	А	
CVT water hose B	CVT oil warmer side	Facing to the right of the vehicle	В	J
	CVT water tube side	Facing forward	А	
CVT water hose C	CVT water tube side	Facing forward	A	
	Water pump side	Facing upward	С	K

\*: Refer to the illustrations for the specific position of each hose clamp tab.

The illustrations indicate the view from the hose ends.

- <⊐D : Vehicle front
- <⊐E : Vehicle upper
- · When installing hose clamps the center line of each clamp tab should be positioned as shown in the figure.

# WATER HOSE : Inspection

**INSPECTION AFTER INSTALLATION** Start and warm up the engine. Visually check that there is no leakage of engine coolant and CVT fluid. CVT FLUID COOLER HOSE

TM-219

**CVT FLUID COOLER HOSE : Exploded View** 

COMPONENT PARTS LOCATION

Insert side tube (2)	Dimension "A"	
Water inlet-outlet		
CVT oil warmer		
CVT oil warmer	End reaches the energy parties (D)	
CVT water tube	End reaches the spool portion (B)	
CVT water tube		
Water pump		







# INFOID:000000005062589

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INFOID:000000005062590

В

[CVT: RE0F08B]



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# **CVT OIL WARMER SYSTEM**

#### < REMOVAL AND INSTALLATION >



- 1. CVT fluid cooler hose A
- 2. Hose clamp

- 4. Gasket
- 5. Transaxle assembly
- 7. CVT fluid cooler hose B 8. CVT oil warmer
- Refer to GI-4, "Components" for symbols in the figure.

# CVT FLUID COOLER HOSE : Removal and Installation

#### REMOVAL

- 1. Remove air duct (inlet). Refer to EM-24, "Exploded View".
- 2. Remove hose clamps, and remove CVT fluid cooler hose A.
- 3. Remove hose clamps, and remove CVT fluid cooler hose B.
- 4. Remove CVT fluid cooler tube A and CVT fluid cooler tube B.

#### INSTALLATION

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

• When installing CVT fluid cooler tube (1) and (2) to transaxle assembly, install them so that CVT fluid cooler tube rotation stopper (A) and (B) touch to transaxle case (C) and (D).

> $\triangleleft$ : Vehicle front



6. CVT fluid cooler tube B

# **CVT OIL WARMER SYSTEM**

# < REMOVAL AND INSTALLATION >

· Insert CVT fluid cooler hose according to dimension "A" described below.

CVT fluid cooler hose (1)	Insert side tube (2)	Dimension "A"	
CVT fluid cooler bose A	CVT fluid cooler tube	End reaches the 2-stage bulge (B)	
	CVT oil warmer		
	CVT oil warmer		
	CVT fluid cooler tube		



[CVT: RE0F08B]

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

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

• Hose clamp should not interfere with the bulge.



CVT fluid cooler hose	Hose end	Paint mark	Position of hose clamp*
C)/T fluid cooler base A	CVT fluid cooler tube side	Vehicle front	A
CVT IIUId Cooler hose A	CVT oil warmer side	Vehicle front	A
C)/T fluid cooler base D	CVT oil warmer side	Vehicle front	A
	CVT fluid cooler tube side	Vehicle front	A

\*: Refer to the illustrations for the specific position of each hose clamp tab.

• The illustrations indicate the view from the hose ends.

#### ⊲⊐в : Vehicle front

· When installing hose clamps the center line of each clamp tab should be positioned as shown in the figure.



# **CVT FLUID COOLER HOSE : Inspection**

**INSPECTION AFTER INSTALLATION** Check for CVT fluid leakage and check CVT fluid level. Refer to TM-194, "Inspection". **CVT OIL WARMER** 

INFOID:000000005062592

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# **CVT OIL WARMER SYSTEM**

# < REMOVAL AND INSTALLATION >

# **CVT OIL WARMER : Exploded View**

INFOID:000000005062593

[CVT: RE0F08B]

# **SEC. 310** 19.6 (20, 14) 39.2 (4.0, 29) ന 19.6 (20, 14) 39.2 (4.0, 29) JPDIA0725GE

1. CVT oil warmer 2. Bracket Refer to GI-4, "Components" for symbols in the figure.

3. Transaxle assembly

# CVT OIL WARMER : Removal and Installation

#### 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 this step engine is cold.

- Remove CVT water hose from CVT oil warmer. Refer to <u>TM-218, "WATER HOSE : Exploded View"</u>.
- 2. Remove CVT fluid cooler hose from CVT oil warmer. Refer to TM-219, "CVT FLUID COOLER HOSE : Exploded View".
- 3. Remove CVT oil warmer.
- 4. Remove bracket.

#### **INSTALLATION**

Install in the reverse order of removal.

#### CVT OIL WARMER : Inspection

#### INSPECTION AFTER INSTALLATION

- Check for CVT fluid leakage and check CVT fluid level. Refer to <u>TM-194</u>, "Inspection".
- Start and warm up the engine. Visually check that there is no leakage of engine coolant and CVT fluid.

INFOID:000000005062595

# < UNIT REMOVAL AND INSTALLATION >

# UNIT REMOVAL AND INSTALLATION TRANSAXLE ASSEMBLY

# **Exploded View**

INFOID:0000000005062596 B

[CVT: RE0F08B]

**SEC. 310** ന 0 10 (1.0, 7) ТΜ Ε F 3 **2 E** 2 Н 4 Κ JSDIA1185GE 1. CVT fluid level gauge 2. CVT fluid charging pipe 3. O-ring 4. Transaxle assembly L

A. : Tightening must be done following the installation procedure. Refer to <u>TM-223, "Removal and Installation"</u>.
 Refer to <u>GI-4, "Components"</u> for symbols in the figure.

# Removal and Installation

#### 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 this step engine is cold.
- When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM. Refer to <u>TM-61, "TCM REPLACEMENT : Special Repair Requirement"</u>.

#### REMOVAL

- 1. Remove battery. Refer to PG-95, "Exploded View".
- 2. Remove air duct (inlet), air duct and air cleaner case. Refer to EM-24, "Exploded View".
- 3. Remove air breather hose.
- 4. Remove battery bracket.
- Disconnect following harness connector and wire harness.
   CVT unit connector. Refer to <u>TM-190, "Removal and Installation Procedure for CVT Unit Connector"</u>.

# TM-223

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# TRANSAXLE ASSEMBLY

#### < UNIT REMOVAL AND INSTALLATION >

- Transmission range switch connector
- Primary speed sensor connectorSecondary speed sensor connector
- Ground
- 6. Remove control cable and bracket from transaxle assembly. Refer to TM-207, "Exploded View".
- 7. Remove CVT water hoses. Refer to TM-218, "WATER HOSE : Exploded View".
- 8. Remove CVT water tubes. Refer to TM-218, "WATER HOSE : Exploded View".
- 9. Remove CVT fluid level gauge.
- 10. Remove CVT fluid charging pipe.
- 11. Remove O-ring from CVT fluid charging pipe.
- 12. Remove starter motor. Refer to <u>STR-21, "Exploded View"</u>.
- 13. Remove engine under cover.
- 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 front drive shafts. Refer to FAX-15, "Exploded View".
- 16. Remove heat insulator. Refer to <u>EM-29, "Exploded View"</u>.
- 17. Support transaxle assembly with a transmission jack. CAUTION:

#### When setting the transmission jack, be careful not to collide against drain plug.

- 18. Remove engine mounting insulator (LH). Refer to EM-74, "Exploded View".
- 19. Remove engine mounting bracket support (LH). Refer to EM-74, "Exploded View".
- 20. Remove rear engine mounting bracket. Refer to EM-74, "Exploded View".
- 21. Remove rear torque rod. Refer to EM-74, "Exploded View".
- 22. Support engine assembly with a transmission jack. CAUTION:

#### When setting the transmission jack, be careful not to collide against drain plug.

- 23. Remove engine mounting bracket (LH). Refer to EM-74, "Exploded View".
- 24. Remove bolts fixing transaxle assembly to engine assembly.
- 25. Remove transaxle assembly from vehicle.

#### **CAUTION:**

- Secure torque converter to prevent it from dropping.
- Secure transaxle assembly to a transmission jack.
- 26. Remove CVT fluid cooler tubes. Refer to TM-219, "CVT FLUID COOLER HOSE : Exploded View".

#### INSTALLATION

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

- Never reuse O-ring.
- Apply grease to O-ring.
- Check fitting of dowel pins (A) when installing transaxle assembly to engine assembly.



# TRANSAXLE ASSEMBLY

#### < UNIT REMOVAL AND INSTALLATION >

• Rotate torque converter so that the stud bolt (A) for mounting the drive plate location guide of torque converter aligns with the mounting position of starter motor.

tion guide of drive plate aligns with the mounting position (B) of starter motor. **CAUTION:** 

Rotate crankshaft so that the hole (A) for inserting drive plate loca-

- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- Be careful that torgue converter stud bolt is aligned to drive plate hole position. Otherwise stud bolt contacts drive plate. NOTE:

Insert stud bolt of torque converter into the hole of drive plate, aligning the drive plate hole position and torgue converter.

Temporally tighten drive plate and torque converter connecting nuts and tighten to the specified torque.

> : 51 N·m (5.2 kg-m, 38 ft-lb) (U)

#### **CAUTION:**

- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the nuts for the torque converter after fixing the crankshaft pulley bolts, confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to EM-43, "Removal and Installation".
- When installing transaxle assembly to the engine assembly, attach the fixing bolts in accordance with the following.

Bolt position	А	В
Insertion direction	Transaxle assembly to engine assembly	Engine assembly to transaxle assembly
Number of bolts	2	2
Bolt length mm (in)	55 (2.17)	50 (1.97)
Tightening torque N⋅m (kg-m, ft-lb)	62.0 (6.3, 45.7)	



# Inspection and Adjustment

#### INSPECTION BEFORE INSTALLATION

After inserting a torque converter to transaxle assembly, check dimension "A" within the reference value limit.

В	: Scale	
С	: Straightedge	

Dimension "A" : TM-228, "Torque Converter"





#### [CVT: RE0F08B]

А

В

ТΜ

F

Н

Κ

Ν

Ρ

#### < UNIT REMOVAL AND INSTALLATION >

# INSPECTION AFTER INSTALLATION

Check the following.

- Check for CVT fluid leakage and check CVT fluid level. Refer to TM-194, "Inspection".
- Check CVT position. Refer to <u>TM-203</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

Erase TCM data.

- Erase CVT fluid degradation level data. Refer to <u>TM-92</u>, "CONSULT-III Function (TRANSMISSION)".
- Perform "TRANSAXLE ASSEMBLY REPLACEMENT: Special Repair Requirement". Refer to <u>TM-61</u>. "TRANSAXLE ASSEMBLY REPLACEMENT : Description".

# **TORQUE CONVERTER**

#### < UNIT DISASSEMBLY AND ASSEMBLY >

# UNIT DISASSEMBLY AND ASSEMBLY TORQUE CONVERTER

## Disassembly

- 1. Remove transaxle assembly. Refer to <u>TM-223</u>, "Exploded View".
- 2. Remove torque converter from transaxle assembly. **CAUTION:**

#### Never damage bushing inside of torque converter sleeve when removing torque converter.

#### Assembly

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

Attach the pawl (A) of the torque converter to the inner gear hole (B) on the oil pump side.

#### CAUTION:

- Rotate the torque converter for installing torque converter.
- Never damage the bushing inside the torque converter sleeve when installing the converter housing oil seal.



Inspection

#### **INSPECTION AFTER INSTALLATION**

After inserting a torque converter to transaxle assembly, check dimension "A" within the reference value limit.

- B : Scale
- C : Straightedge

Dimension "A" : <u>TM-228, "Torque Converter"</u>



INFOID:000000005062599

INFOID:0000000005062600

А

В

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# SERVICE DATA AND SPECIFICATIONS (SDS)

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# **General Specification**

INFOID:000000005062602

[CVT: RE0F08B]

Applied model		MR18DE
Drive type		2WD
CVT model		RE0F08B
CVT assembly model code n	umber	1XC6B
	D range	2.561 – 0.427
Transmission gear ratio	Reverse	2.619
	Final drive	5.473
Recommended fluid		Genuine NISSAN CVT Fluid NS-2
Fluid capacity liter (US qt, Im	p qt)	7.4 (7-7/8, 6-1/2)*

#### CAUTION:

- Use only Genuine NISSAN CVT Fluid NS-2. Never mix with other fluid.
- Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the NISSAN new vehicle limited warranty.

\*: The fluid capacity is the reference value. Check the fluid level with CVT fluid level gauge.

# Vehicle Speed When Shifting Gears

INFOID:000000005062603

			Unit: rpm
Throttle position	Shift pottorn	Engine speed	
	Shin pattern	At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
	"D" position	1,300 – 3,100	1,400 – 3,500
2/8	Overdrive OFF condition	2,200 - 3,000	2,800 - 3,600
	"L" position	3,100 - 4,000	3,800 - 4,700
	"D" position	3,600 - 4,500	4,400 - 5,300
8/8	Overdrive OFF condition	3,600 - 4,500	4,400 - 5,300
	"L" position	3,600 - 4,500	4,400 - 5,300

#### CAUTION:

Lock-up clutch is engaged when vehicle speed is approximately 18 km/h (11 MPH) to 90 km/h (56 MPH).

#### Stall Speed

INFOID:000000005062604

Unit: rpm

#### Stall speed

#### Line Pressure

INFOID:0000000005062605

2.300 - 2.850

# Unit: kPa (kg/cm<sup>2</sup>, psi) Select position Engine speed Line pressure "R", "D" Idle speed 650 (6.63, 94.3) Stall speed 4,250 (43.35, 616.3)

#### Torque Converter

INFOID:000000005062606

Dimension "A" between end of converter housing and torque converter 14.4 mm (0.57 in)

